

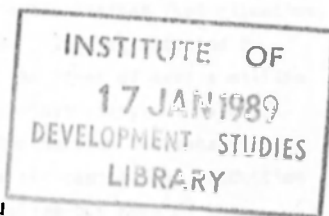
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**INTEGRATION OF NUTRITION INTO AGRICULTURAL AND
RURAL DEVELOPMENT PROJECTS**

Proceedings of Inter-Country Seminar held from
2nd to 7th September 1985 at Sirikwa Hotel,
Eldoret, Kenya

edited by
George M. Ruigu



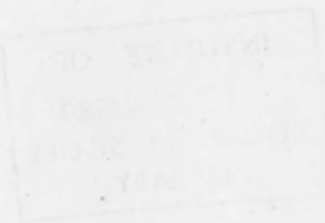
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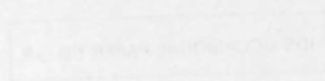
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PREFACE

This report presents the proceedings of a workshop which was held from 2nd to 7th September, 1985 to appraise the experiences in introduction of nutrition considerations into agricultural and rural development projects.

This Seminar stemmed from the special concern over the precarious nature of the African food situation in the 1980s and beyond. The severe drought of 1984 served to dramatise the general deterioration of the African food situation. The decline in the African food situation, however, dated further back to the early 1970s. This is attested by the famines in Sahelian countries which took the lives of over a million people, and at the same time left others in serious status of malnutrition and ill-health. Moreover, in the last two decades Sub-saharan Africa was the only region of the world where per capita food production declined. There are many reasons for this decline but some of them arise from inappropriate policies and strategies for agricultural and rural development.

Even where growth rates for food production were adequate to meet overall demand, some sections of the population continued to suffer problems of malnutrition. The reasons for this unsatisfactory state of affairs are, inter alia, the lack of purchasing power of households and the failure to specifically incorporate nutrition dimensions into agricultural and development projects. The premise of the workshop was that improved food consumption and the reduction of malnutrition can only occur when nutrition is specifically integrated into agricultural and rural development projects. This also stems from the recognition that just as trickle down effects do not automatically occur in economic development there is a need to design specific nutrition programmes. Consequently nutrition considerations should be introduced in the entire planning process -- from project identification, design, implementation, monitoring and evaluation. In essence, while projects are geared to achieving multiple objectives -- income growth, increased employment, improvement in social amenities -- nutrition targets must be included to ascertain

(ii)

improvements in nutritional status of the people or, at the very minimum, to ensure that projects do not contribute to the deterioration of the nutrition status of the people.

The intercountry workshop was a tripartite undertaking of the FAO, the Food and Nutrition Planning Unit of the Ministry of Planning and National Development and the Institute for Development Studies of the University of Nairobi. The participants were drawn from eight African countries viz, Ethiopia, Kenya, Somalia, Sudan, Tanzania, Uganda, Zambia and Zimbabwe. The specific objectives of the workshop were:

- a) To discuss experiences in integrating food consumption and nutrition into agricultural and rural development planning and to compare and contrast these experiences among countries, planners, nutritionists and social scientists.
- b) To evaluate, collate, summarise and reach an agreement on the methodology and modalities of strengthening at national and intercountry levels of incorporating nutrition into agricultural and rural development projects.

The seminar proceeded on the basis of commissioned country papers and other papers commissioned to cover various subjects. The seminar was preceded by a day field trip in the Baringo Semi-Arid Area Pilot project. The participants were provided with a good opportunity to see first hand the constraints that had to be overcome and to evaluate the successes and failures that had been achieved in the pilot project in incorporating nutrition dimensions in a development project.

We are grateful to the FAO for providing the IDS with the funds which enabled us to organize the workshop and to disseminate the findings. Our sincere thanks and deep appreciation to Dr. Abraham Besrat of the FAO, Mr. James Otieno, and Mr. Luke Wasonga, both of the Ministry of Planning and National Development, and Dr. George Ruigu of the IDS. This team and the Director of IDS constituted the Steering Committee that oversaw the preparation of the Workshop.

(iii)

The Institute would also like to thank the Hon. Phillip Odupoy, M.P. Assistant Minister Ministry of Planning and National Development, for sparing time from his busy schedule to open the Workshop. Thanks also to Prof. Ole Karei, Chief Academic Officer, who closed the workshop. Special appreciation goes to Mr. Bundotich, Baringo Semi-Arid Area Project Coordinator, and his team for arranging the field visit. Our sincere thanks to all the workshop participants for an active exchange and sharing of ideas which made the workshop a wonderful experience for critical review, reflection and mutual learning.

Finally, the Institute would like to thank Dr. George Ruigu and Mr. Tony Troughear for editing the proceedings of this workshop. Special tribute to all the members of the IDS Staff who worked tirelessly to make the workshop a success and in particular to Mr. Samson Otieno and his staff at the typing pool who ably typed this manuscript.

Dr. K. Kinyanjui
Director, IDS.

November, 1986.

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1. INTRODUCTION TO THE SEMINAR

1.1 ORIENTATION ADDRESS

Abraham Besrat
FAO Nutritionist

On behalf of the Director of the Food Policy and Nutrition Division of FAO, I would like to welcome all of you to this Inter-Country Seminar. The seminar is a tripartite operation, with the Food and Nutrition Planning Unit (FNPU) of the Ministry of Planning and National Development the Institute for Development Studies (IDS) of the University of Nairobi, and FAO. This seminar is organized and managed by the Institute for Development Studies under the sponsorship of FNPU and with technical and financial assistance from FAO. I would like to take this opportunity to express my appreciation to Dr. Kabiru Kinyanjui, Director of the Institute for Development Studies, Mr. J. Otieno, Deputy Chief Planning Officer, Mr. L. Wasonga, Head of FNPU, Dr. K. Kwofie, FAO Nutrition Expert and the other members of the Seminar Co-ordinating Committee for their dedicated efforts in organizing this seminar.

It is now believed that significant improvements in food consumption and the reduction of malnutrition will only be realized through the insertion of nutritional considerations into national policy, programmes and projects, rather than through isolated investments in nutrition. This is especially true in the case of agricultural and rural development projects, which are used as vehicles to bring about the improvement of the quality of life of the rural people who represent a large proportion of the malnourished.

In recognition of the need to integrate nutrition into agriculture, the 19th Session of the FAO Conference in 1977 requested the Director-General of FAO "to suggest methods for ensuring that nutritional considerations are, when appropriate, adequately included in FAO's planning and execution of agricultural projects and programmes". The World Conference on Agrarian Reform and Rural Development (WCARRD) in 1979 resolved that nutritional considerations should be explicitly considered in the planning, design and implementation of rural development projects. It is in

response to these concerns that FAO developed a methodology for integrating nutrition into agriculture. The methodology was subsequently field tested in 1980 with projects which were recently undertaken, or are now in the planning stage, in 6 countries: Kenya, Zambia, Sri Lanka, Phillipines, Haiti and Peru. The experience from the case studies demonstrated the practicability of the methodology. Manuals Nos. 1 and 2, Nutrition in Agriculture, describe the methodology and the 6 case studies, respectively. These documents are included in the seminar package distributed to each of you.

Manual No. 1 is intended to equip the planner with a methodology for influencing design and for organizing available information and for seeking more. It should be used as a guideline only to sharpen and supplement the judgement of the planner on the project site, not replace it. The methodology is intended to equip the planner with answers to questions such as:

What groups of the population in the project area are malnourished?
• For which nutrients? How severe is the malnutrition? Does it have seasonal characteristics?

What is being done already about malnutrition in terms of government planning and nutrition intervention measures?

What can the project realistically do to alleviate the nutrition problems?

This seminar has the following purposes:

- 1) to provide a forum for communicating the FAO methodology to planners, policy-makers, nutritionists, social scientists and others in allied professions through the case study approach, using the experience gained in the Baringo Pilot Semi Arid Area Project (BPSAAP);
- 2) to summarize experiences in integrating food and nutrition issues into agricultural and rural development projects and to compare and contrast these experiences among countries;

- 3) to discuss ways of strengthening, both at the national and regional levels, the integration of nutrition into development projects and programmes.

This seminar was originally planned to take place at this same location in 1983. However, due to various circumstances, it could not be organized until now. Meanwhile three other seminars on the same subject have been organized. The first seminar took place in Manila, Philippines in October 1983, with four countries in that region participating. This was followed by the seminar in Brazzaville, Congo, in November 1983, for 10 Francophone countries in Africa. The last one took place in Mbabane, Swaziland, in November 1984, with five countries in Southern Africa participating. Unlike the first two, the Swaziland seminar attempted to introduce the case study approach in demonstrating the application of the FAO methodology.

The seminar which is about to be officially opened will focus mainly on the Kenyan experience in the integration of nutrition into BPSAAP and on how this experience has helped to strengthen food and nutrition planning in Kenya. It is my hope that at the end of this seminar we shall all become appreciative of the need to integrate nutrition into the planning and implementation of agricultural and rural development projects. I would like to close this brief introduction by expressing FAO's commitment to extending assistance to Member Nations in the application of the methodology for preventing hunger and malnutrition.

1.2 OFFICIAL OPENING

Hon. P.L. Odupoy
Assistant Minister for Planning and National Development

DISTINGUISHED GUESTS, LADIES AND GENTLEMEN,

I have the pleasure to welcome you to this most important seminar on nutrition in agriculture and rural development. I am glad to note that eight countries in the Eastern region of Africa have been invited to attend. To those from outside Kenya, I say "KARIBUNI"! You should feel at home while in Kenya and I hope that there will be free exchange of information and experiences from the participating countries.

Your main task is to discuss ways of incorporating nutritional factors into agriculture and rural development projects. In the process you will also discuss the food and nutrition situation in the region, together with food and nutrition policies. You will further attempt to get to grips with the problem through case studies.

This seminar comes at a time when our attention is being directed more concentratedly towards basic needs strategies in many developing countries. The topic you have chosen to discuss in this seminar is nutrition and its role in the development process. Nutritional considerations in development projects are important components of a basic needs strategy.

It is therefore, important that an explicit case should be made for the role of nutrition in the mainstream of development. The complex multi-sectoral and multi-policy nature of nutritional problems should be appreciated and addressed.

It should be appreciated that in Africa, and indeed in the Eastern region of the continent, nutrition is not the only problem. There are other matters which must receive equal attention since they directly, or indirectly, influence the nutritional status of the population.

Problems within the region, such as recurrent drought, growing debt, high inflation and adverse terms of trade, together with production subsidies and distorted distribution systems, all have a bearing on, and aggravate the problems of food production and industrialization which we are all encountering.

Agriculture and rural development are the sectors responsible for food production in the region. It is true that unless efforts are made to produce more food to feed the poor in the Eastern region of Africa, there will be an escalation of the problems of famine, of refugee movements and of general health and nutrition decay. The recent widespread drought, in many places the worst in this century, decimated herds and brought small farmers to poverty and hunger.

The countries in the region must therefore make efforts to improve their agricultural production through clear development strategies. Kenya has established its policies and strategies in Sessional Paper No. 4 of 1981 on the National Food Policy. Efforts which go towards implementing the strategies laid down in that paper are aimed at achieving self-sufficiency in food production and to ensuring that the population has accessibility to a nutritious diet.

On rural development, it should be noted that the bulk of the population in the region lives in the rural areas. Efforts to direct development resources to these areas will thus go a long way towards reaching the most vulnerable groups. The District Focus for Rural Development Strategy, which has been adopted in Kenya, is aimed at improving production in the rural sector and thereby improving the balance in regional development.

It is well to draw your attention the fact that the Kenya experience shows that population density and nutritional status are not correlated. High population growth rates, while putting pressure on the available land and thereby threatening nutritional status, seem to also affect land use patterns, since the parts of Kenya with the highest population density are also the wealthiest. We must not fall into the trap of requiring every district to be self sufficient, since the efficient

use of a region's resources - both land and manpower - normally requires trading surpluses of products that the region produces with comparative advantage.

Concentrating further on agricultural programmes, I wish to state that high priority should be given to the allocation of resources directed to increasing food production. In establishing priorities for programmes, weight should be given to encouraging those programmes which have direct effects on small farmers and those that directly provide for the immediate requirements of the population. Efforts should therefore be made to direct resources towards productive research programmes which will enhance the production of traditional drought-resistant crops.

The solution to the problems of hunger and malnutrition lies with smallholder farmers in the rural areas. Agriculture remains, to a large extent, in the hands of smallholders. It is they who can produce the food that is most needed. Adequate food, and the consequent political stability of the region, will only come when the smallholder farmers are assisted, by ensuring that they have effective access to the necessary factors of production.

Hunger and poverty are worsened when considered merely as technical issues without reference to the people who are in the intricate web of social and economic relationships. Hunger and poverty are often consequences of complex problems that relate to inefficient social and economic structures that distort and restrain the process of development. Attempts to tackle hunger and poverty in the region must therefore take these factors into account.

Specific efforts to alleviate hunger and malnutrition in the region must incorporate efforts to understand their causes. Their consequences are well documented. These include apathy, mental impairment, early death and gross negative effects on national economic development. It is because of these adverse consequences that the consideration of nutrition problems should be given serious consideration in the development process.

During your deliberations you should examine the role of traditional crops like millet , sorghum and cassava in relation to nutrition and food security. These crops have been neglected in the past, yet they provide a significant portion of essential nutrients, especially in the diet of the poorest groups. They contribute to the stability of food supplies and provide a food cushion in ecological zones which are unfavourable to other crops.

I hope that the deliberations during this seminar will lead to an understanding of the methodology of incorporating nutritional factors into development strategies. You, the participants, will also have learnt from each other the variety of field experiences within the region.

Finally, I wish to commend the Food and Agriculture Organization of the United Nations for the assistance it has given to bring about this seminar. This is not the first collaborative activity between the Government of Kenya and the FAO. There have been other activities before this, especially in the field of agriculture. Specifically, I wish to underscore the generous assistance the Organization has accorded the Government in the development of a system for food and nutrition planning. This is currently providing us with valuable information. We look forward to increasing such collaborative efforts in the interests of helping to find solutions to the planning problems of the country. This effort should be encouraged so that work in the universities of the region will be of immediate relevance, and will be applicable to solving the problems of development in our countries.

With these few words, Ladies and Gentlemen, I declare this seminar officially open.

Thank you.

2. COUNTRY PAPERS

2.1 THE FOOD AND NUTRITION SITUATION IN ETHIOPIA

Yemane Kidane
Ethiopian Nutrition Institute

Demissie G. Michael
Ministry of Agriculture

Introduction

Ethiopia is predominantly a subsistence agricultural society in which about 90 per cent of its people live in rural areas, engaged in agriculture. Agriculture contributes about 47 per cent of the GDP and over 85 per cent of all exports. Of the total area of 122 million hectares, 8 million (7 per cent) is under cultivation, 9 million is forest, 71 million (58 per cent) is rough pasture, including woodland, 12 million (10 per cent) is water and watercourses, and 17 million (14 per cent) is barren and built-up.

There are about 6 million peasant families farming 94 per cent of the cultivated land, each with an average holding of less than two hectares. Cereal production takes up about 80 per cent of the cultivated land and the major cereal grains, teff, wheat, barley, maize and sorghum, account for about 80 per cent of the total crop production. In addition, cereals, together with pulses and oil seeds, are the main sources of nutrient supply for the Ethiopian population. They account for about 85-90 per cent of the calorie and protein intake.

Agricultural production in general and food grain production in particular cannot meet the food demands of the population. As a result, severe malnutrition due to food shortages is currently the most serious national problem, from which millions of people are suffering.

This paper discusses very briefly the general food and nutrition situation in Ethiopia and the Government's policy in dealing with the problem. The paper is divided into four parts. The first deals with the availability of food from food production; the second part deals with the nutrition situation; the third part deals with the government's policy in tackling food and nutrition problems; and the final part looks at possible constraints and problems in reaching desired objectives.

1. Food Availability

In spite of the country's agricultural potential, fertile land, rich water resources, and hard-working peasantry and the introduction of radical land reforms in 1974, Ethiopia is not yet self-sufficient in food production, and as a result a large number of its people suffer from seasonal food shortages. Production of cereals, pulses and oil seeds, in gross terms, either declined or remained stagnant over the 13 years between 1970/71 and 1983/84. The average annual decline has been 19 per cent, as compared to a 2.8 per cent increase in population.

As shown in Table 1 and Figure 1, food grain production registered slight increases in the 1971/72, 1979/80 and 1982/83 production years only; in the remaining 9 production years, production declined drastically. Oil seeds have shown the greatest decline, followed by cereals. It is misleading to look only at the gross agricultural output. Agricultural production should be viewed in the context of a growing population. This gives the reader an overview of the per capita production of food grains.

As shown in Table 2, per capita Kcal production of the three major crops, cereals, pulses and oil seeds, declined conspicuously from a total of 2540 Kcal per day in 1970 to only 1845 Kcal in 1983. The lowest per capita Kcal production was in 1979 and 1978, which were 1215 and 1284 Kcal per day respectively.

FIGURE 1: A comparison of population and production growth

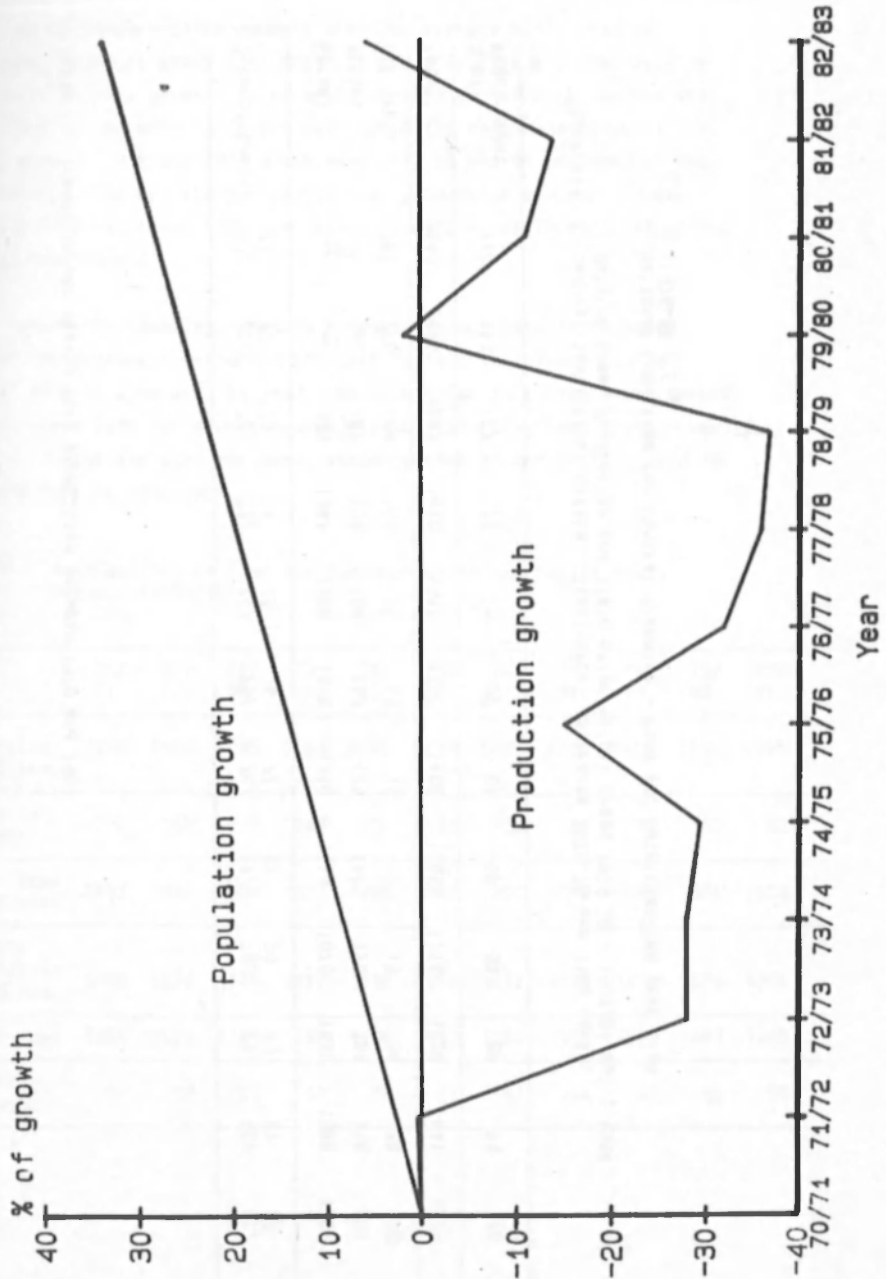


Table 1. Trends in Food Grain Production of Major Crops between 1970 and 1983, in thousand tons

Type of Grain	70/ 71	71/ 72	72/ 73	73/ 74	74/ 75	75/ 76	76/ 77	77/ 78	78/ 79	79/ 80	80/ 81	81/ 82	82/ 83
Cereals	6829.0	6822.0	4483	4459	4420	4361	361	4150	4081	6397	5605	5388	6711
Pulses			581	593	618	556	628	521	470	1010	848	820	965
Oil Seeds	528	564	231	241	147	162	46	54	49	89	102	82	122
Totals	7358	7386	5295	5293	5185	6242	5035	4725	4600	7496	6556	6297	7798
Production Rate	100	100.4	72	72	71	85	68	64	63	102	89	86	106
P.G.R.	100	102.8	105.6	108.4	111.2	114	116.8	119.6	122.4	125.2	128.0	130.8	133.6

- Sources:
1. Central Statistical Office - Statistical Abstracts 1970-78 and Time series data on Area, Production and Yield of principal crops 1979/80-1983/84.
 2. National Committee for Central Planning-Food and Nutrition Ten Year Plan (1976-85 E.C.)

Table 2: Trends in per capita Kcal production between 1970 and 1983

Type of Grain	70/ 71	71/ 72	72/ 73	73/ 74	74/ 75	75/ 76	76/ 77	77/ 78	78/ 79	79/ 80	80/ 81	81/ 82	82/ 83
Cereal	2280	2213	1393	1347	1298	1578	1210	1119	1070	1630	1388	1297	1570
Pulses			182	134	186	163	179	144	126	164	216	203	232
Oil Seeds	261	270	108	109	65	69	19	22	19	34	38	30	43
Total	2540	2484	1683	1640	1549	1810	1408	1235	1215	1928	1641	1529	1845
% of Requirement	116	113	77	75	70	32	64	58	53	88	75	70	84

Sources: 1. Central Statistical Office - Statistical Abstracts 1970-78 and Time series Data on Area, Production and Yield of principal crops 1979-80 - 1983/84 Vol. I 1984.

2. National Committee for Central Planning - Food and Nutrition-Ten year plan (1976-85 E.C.)

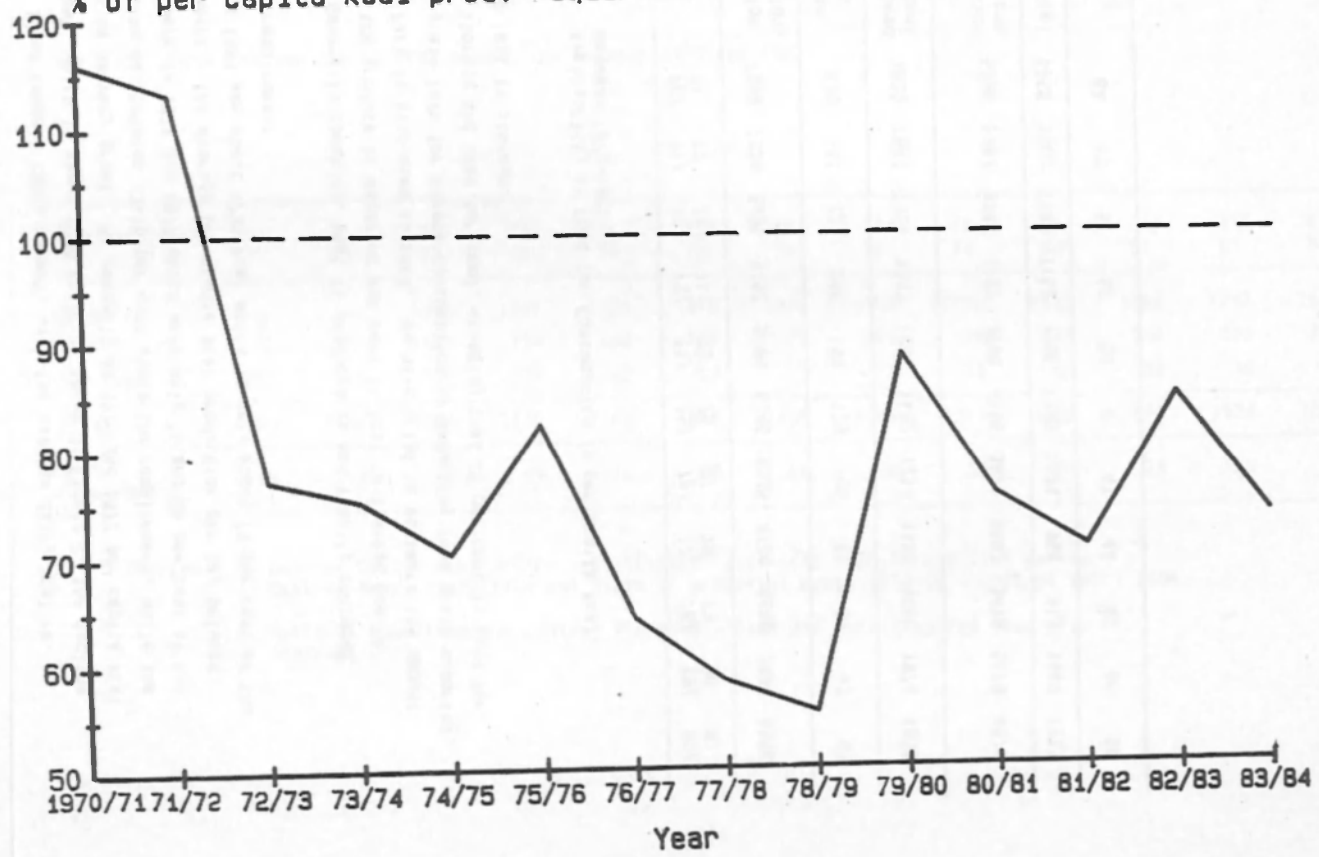
If we compare these amounts with the average daily Kcal requirement, which is about 2200 Kcal³ as shown in Figure 2, the decline is seen to be very great. As recently as 1970 and 1972 per capita Kcal production was between 13-16 per cent above the requirement, while the lowest were in 1978 and 1977 which were only 55 and 58 per cent of the requirement. The average per capita Kcal production per day between 1970 and 1983 was about 1735 Kcal which is only about 79 per cent of the average requirement.

Generally speaking, what is produced is not totally consumed. Part of the produce is exported and part is lost in storage due to pests. Part is also used as seed. We have tried to estimate the amount of food grain left for direct consumption by deducting food grain exported, lost in storage and used for seed, assuming that 25 per cent is used for seed and lost in storage.²

Table 3. Availability of Food for Consumption in per capita Kcal, between 1970-1981

	70/ 71	71/ 72	72/ 73	73/ 74	74/ 75	75/ 76	76/ 77	77/ 78	78/ 79	79/ 80	80/ 81
Production in 000 tons	7358	7336	5295	5293	5185	6246	5035	4724	4600	7496	6556
Export in 000 tons	120	151	227	248	191	129	105	61	32	43	43
Loss + Seed in 000 tons	1839	1847	1324	1323	1296	1562	1259	1182	1450	1874	1639
Food for consumption in 000 tons	5398	5382	3744	3722	3698	4556	3671	3482	3418	5579	4874
Per Ca Kcal	1855	1802	1189	1152	1106	1330	1034	956	913	1449	1233
% of Requirement	84	82	54	52	50	61	47	44	42	66	56

% of per capita kcal prod. requirement



As stated earlier, the average per capita Kcal production between 1970 and 1983 was about Kcal (79 per cent of requirement) but the average per capita Kcal available food for consumption, as shown in Table 3 and Figure 3, is only 1274.6 Kcal, which is only about 58 per cent of the average requirement. The maximum per capita Kcal was 84 per cent of the requirement while the minimum was only 912.9 Kcal per day, 42 per cent of the requirement.

Generally speaking agriculture is a complex undertaking, and the factors associated with low agricultural productivity are in themselves many and complex. However, possible major factors must include the following:

- i) Farming equipment is primitive;
- ii) Agricultural production is totally dependent on rainfall and as a result Ethiopia has been vulnerable to natural disasters, particularly drought, for many centuries;
- iii) Although the potential of water resources is high, use of irrigation is minimal;
- iv) Forest depletion is so high as to lead to climatological imbalances, and exposure of soils to wind and water erosion;
- v) Settlement patterns of farmers are not conducive to large-scale agricultural intervention;
- vi) Under-exploitation of available cultivable land. As stated in the introduction, it is only about 7 per cent of the total area in the country that is used for cultivation. As shown in Table 4, the area under cultivation of major food grains in 1973 had decreased some 11 per cent by 1982. Whereas the population has increased by about 28 per cent in the last decade, the area under cultivation for food grains has decreased by about 11 per cent. In some years it declined by about 23 per cent.

FIGURE 3: Availability of food for consumption between 1970-1981

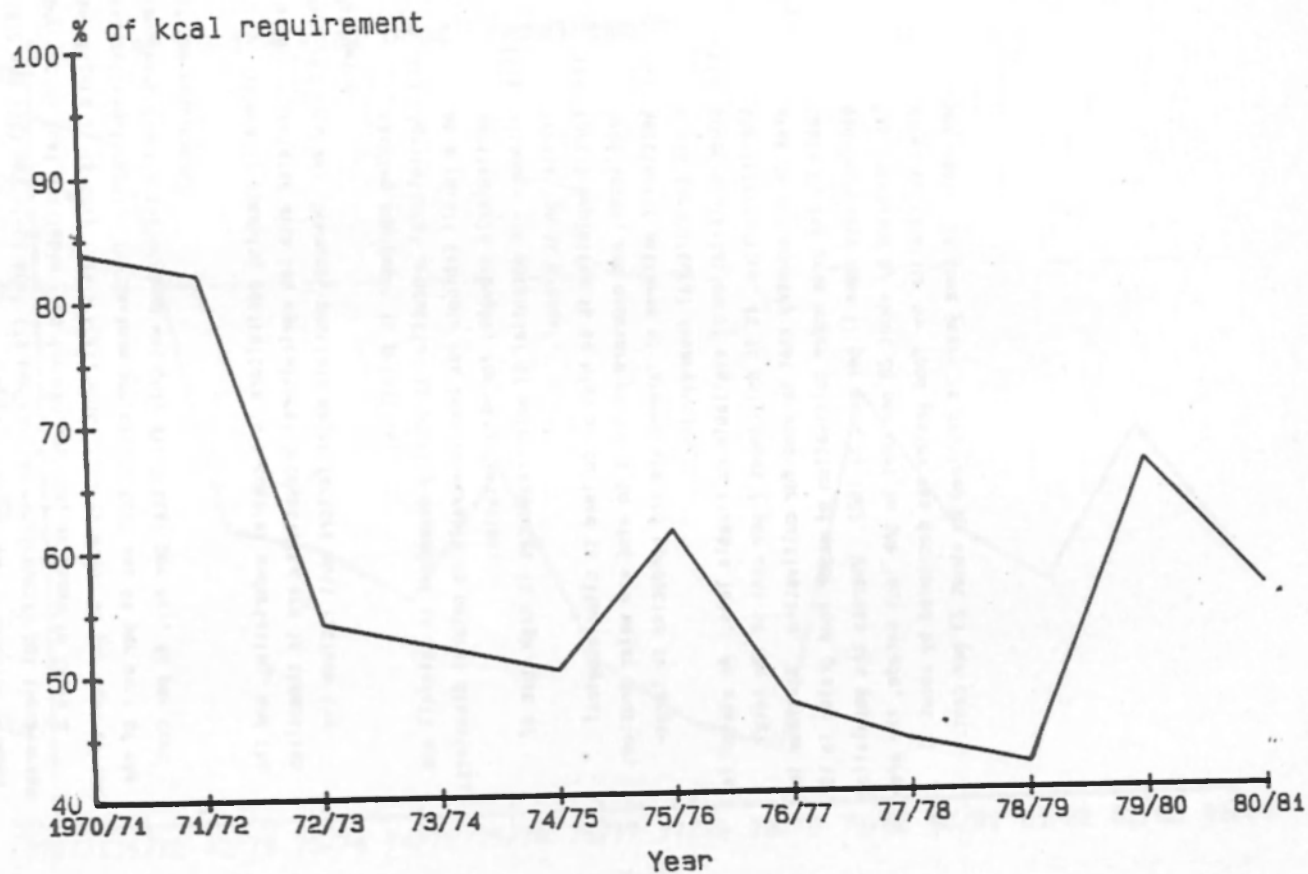


Table 4. Area under cultivation in thousand hectares

Type of Grain	72/73	73/74	74/75	75/76	76/77	77/78	78/79	79/80	80/81	81/82	82/83
Cereals	5470	5538	4592	4585	4427	4644	4615	5023	4712	4629	5029
Pulses	882	897	791	662	689	645	644	847	743	793	799
Oil Seeds	501	529	145	308	173	147	160	187	223	230	260
Total	6853	6964	5523	5555	5289	5436	5419	6057	5677	5653	6088
% of Growth	100	102	81	81	77	79	79	88	83	83	89

Source: Central Statistical Office-Statistical Abstracts and Time series Data on Area, production and yield of principal Crops 1979/80-1983/84.

2. Nutrition Situation

Malnutrition is undoubtedly the biggest socio-economic problem for the majority of Ethiopia's people. As stated earlier, food production cannot meet the demand of the people for food. Also, the purchasing power of many people in the urban areas is very low. As a result nutrient intakes (mainly calorie) of the majority of the people are so low as to lead to different forms of malnutrition.

Recent surveys conducted by ENI show that, on average, calorie intakes were below the recommended daily allowances even during the so-called normal production periods. The intakes were also highly affected by seasonal variations and the inadequacies were more pronounced among children less than three years of age.^{4,5,6} Calorie intakes of children between six months and 3 years were only about 40 per cent of requirement during the hungry season and about 60 per cent during the harvest period. The same studies also indicated that calorie intakes for children above the age of three years, and for adults, were about 70 and 95 per cent of their daily requirement during the hungry and harvest seasons respectively.

Nutritional status studies conducted by ENI in the past indicate that 2-5 per cent of children between the ages of 6 months and 5 years suffer from severe protein-calorie malnutrition and a considerable number (between 30-60 per cent) of the same age group suffer from mild to moderate PCM.^{7,8,9,6} These studies also indicated that infants follow a normal growth curve until they reach six months of age. This is basically during so-called "normal" periods. In disaster situations such as drought, the degree of malnutrition increases greatly. According to the nutritional status surveys conducted in drought-affected areas of Ogaden and Woolaita in 1974 and in Tigrai in 1984 and 1985 it was found that about 15 per cent of children were severely malnourished (that is less than 70 per cent Weight-For-Height) and between 30-50 per cent were moderately malnourished (that is between 70-80 per cent Weight-For-Height)^{10,11,12}

During normal situations breast milk is said to be sufficient for babies under six months of age. Some reports indicate that this is the case for Ethiopian babies of this age category which show a normal growth curve.⁷ However, recent survey results from shelters in Tigrai showed that all babies under six months of age were found to be underweight, at less than 80 per cent Weight-For-Age, and 60 per cent of them were severely malnourished, at under 60 per cent Weight-For-Age.¹¹ A comparison of two types of data, one from a normal period site and the second from severely drought affected areas, is presented in Figures 4 and 5.

Other nutritional deficiency diseases prevalent in Ethiopia are goiter, Vitamin A deficiency, and Vitamin D deficiency.

Different studies have shown that prevalence of goiter ranges from about 4 to 54 per cent.^{8, 13} The prevalence is said to be severe in high altitude areas, reaching as much as 71 per cent. According to a nation-wide survey conducted by ENI,¹⁴ the prevalence of vitamin A deficiency was about 3.8 per cent. Another deficiency disease is rickets. Despite abundant sunshine, rickets is common because infants in the first few months of their life are not exposed to sunshine due to fear of

Figure 4:

Body weight of infants under 6 months of age in a rural area
(normal period)

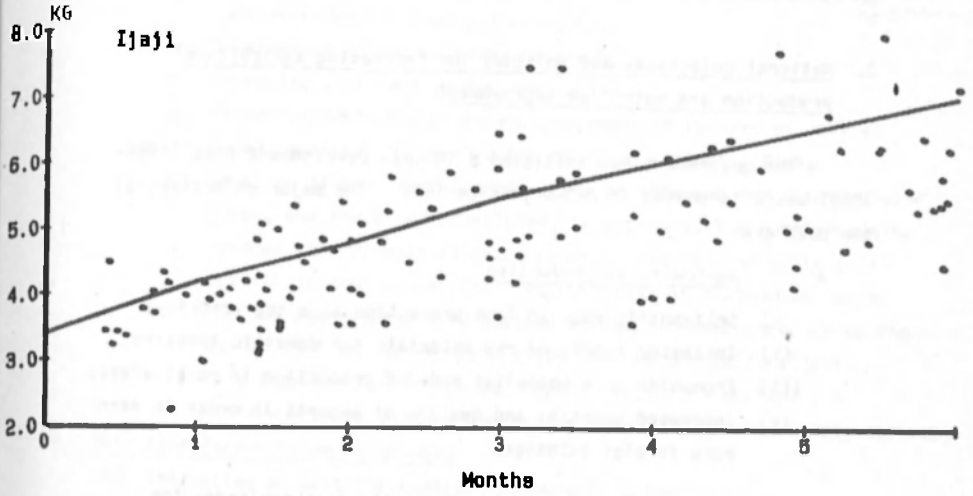
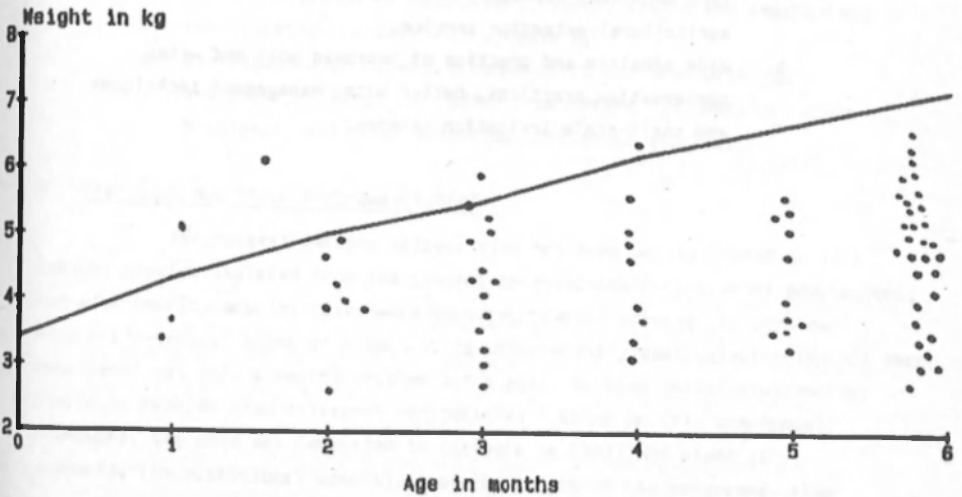


Figure 5:

Body weight of infants under 6 months of age in
shelters in Tigray



the evil eye. According to a survey conducted by ENI,⁸ the prevalence of epiphyseal enlargement in the 0-23 months age group varied between 23.8 - 66.7 per cent.

3. National objectives and policies for increasing agricultural production and nutrition improvement

The government has initiated a 10-year Development Plan (1984-1993) which is phased in 2-3-5 year-periods. The major objectives of the plan are:

A. Agricultural production

- i) Self-sufficiency in food production as a top priority;
- ii) Increased supply of raw materials for domestic industry;
- iii) Promotion of a socialist mode of production in rural areas;
- iv) Increased quantity and quality of exports in order to earn more foreign exchange.

In order to fulfil these objectives the plan envisages the agricultural sector growing by 4.3 per cent annually, and cereal production by 6.1 per cent. This jump in production is expected to materialize as a result of the following undertakings:

- a. Increased productivity and output through better use of improved agricultural inputs (fertilizers, farm chemicals, farm machinery services) and establishment of a better agricultural extension service;
- b. Wide adoption and practice of improved soil and water conservation practices, better water management techniques and small-scale irrigation schemes;

- c. Promotion of co-operative development to mobilize rural resources;
- d. Development of horticulture in both rural and urban areas for supplementing the food grain supply;
- e. Enhancement of agricultural research;
- f. Improving livestock production;
- g. Fisheries development and encouragement of farmers as well as urban dwellers, to develop the habit of consuming fish;
- h. Settling farmers from drought-prone or affected and overpopulated areas, and the urban unemployed, to places with a more promising ecology and reliable climate, so as to enable them to be self-reliant in food production. 40,000 heads of households, with 160,000 dependents, were settled in 83 different sites up to the end of 1984 and 57 of these sites have become self-reliant. This year the government developed a plan for settling 1.5 million drought victims and so far over 500,000 are already settled.

B. Nutrition Intervention Programmes

- (i) Iodization of salt for controlling endemic goiter.
- (ii) Prevention of vitamin A deficiency through:
 - a. Expansion of nutrition education through primary health workers and other extension agents;
 - b. Encouraging families to produce and consume, as much as possible, local foods rich in vitamin A;
 - c. Introduction of appropriate technology for preparation and preservation of foods, particularly fruits and vegetables;
 - d. Fortification of salt with vitamin A;
 - e. Distribution of vitamin A capsules to children 0-14 years and those children who suffer from severe PCM, measles, night blindness, and other infectious childhood diseases;

C. The Joint Nutrition Programme (JNSP)

For several decades malnutrition has been mainly looked on as a medical problem isolated from the general socio-economic context of populations, and as a result measures taken were directed towards solving the problem from a bio-medical point of view. It is only recently that malnutrition has been considered not only a health problem but a multi-faceted social problem that should be tackled from different perspectives. Based on this conceptual framework, the JNSP was developed in Ethiopia in 1983-1984 aimed at improving the nutritional conditions of the people of the programme area

(Sidama Awraja) collaborating with existing developmental programmes. The programme is financed by WHO/UNICEF and run by the Ethiopian Government. The main objectives of the programme as outlined in the plan of operation are¹³:

(i) Impact objectives

- a. Decreased infant mortality rates currently estimated at 136/1000, by the end of the programme period, that is at the end of the fifth year, and further reductions to less than 75/1000 by the end of the tenth year through various developmental interventions;
- b. Decreased child mortality from the present rate of 200/1000 by the end of the tenth year;
- c. Reduced protein-calorie-malnutrition, which is currently 60 per cent below Weight-For-Age for children under five to 40 per cent at the end of the programme period, and a further improvement by 40 per cent by the end of the tenth year;
- d. Improvement of birth weight by 20 per cent by the end of the programme period and a further improvement by 40 per cent by the end of the tenth year.

(ii) Operational Objectives

- a. Improvement in capacity for planning and policy formulation in food and nutrition;
- b. Developing and strengthening the technical, planning and training capacities of the ENI;
- c. Support for sectoral efforts to ensure convergence of their activities in food and nutrition, through the development of mechanisms for intersectoral action and active community involvement;
- d. Obtaining of reliable and accurate information to draw lessons from this intersectoral and mass involvement endeavour for future replication and expansion in other parts of the country.

(iii) Strategies

- a. Mobilization of human and material resources locally;
- b. Involvement of community members through their mass organisations;
- c. Support for existing activities leading to an improved nutritional status of mothers and children, with emphasis on primary health care programmes;

- d. Promotion of convergence of national and sectoral activities and services in the programme area, including those that receive international support;
- e. Optimal use of available communication channels in as many local languages as possible;
- f. Use of community level workers, such as CHA and TBA, and the use of appropriate technology;
- g. Integrating JNSP into the national scheme for development.

(iv) Programme Area Level Activities

a. Agriculture:

Develop, expand, and promote nutritious crops and horticulture; the production and promotion of weaning foods; the development of small-scale irrigation schemes.

o. Health:

Expanding and upgrading of health infrastructure; constructing health stations; constructing health centres. Strengthening community health services in regard to:

Child growth monitoring through regular weight-taking and use of growth charts; EPI; promotion of oral rehydration therapy; training and support to 160 CHA, 120 TBA, and community volunteers; breast feeding and weaning practices.

c. Children and Development:

Promotion and support for expansion of day care centres; introduction of growth-monitoring and nutrition education; support for local production of recreational and educational materials.

d. Water supply sanitation:

Support for community self-help construction of water supply, excreta and garbage disposal systems (that is, protection of at least 400 spring/wells, 8 roof-catchment and 4 subsurface dams, construction of 500 garbage disposal facilities and 500 latrines.

e. Support for appropriate community and household technology development, including the development of :

about 250 Ensete processing devices and about 100 model food storage facilities.

v) Training

- a. Improvement of health and nutrition curricula for pre- and primary schools and literacy classes.
- b. Inservice training for school teachers and agricultural extension workers.
- c. Training for community health agents (CHA), traditional birth attendants (TBA) and nutrition community volunteers.
- d. Training of local artisans for the development of income-generating activities.
- e. Training in health, nutrition, and child care for mothers.
- f. Seminars for community leaders and Government officials at the national, regional, and programme area levels, concerning the programme.

vi) Monitoring and Evaluation System

- a. It is a system of collecting timely and relevant community-based information on day-today activities for indicating the degree to which the programme is achieving its goal.
- b. Necessary data for monitoring

Input data:

Personnel, supplies and equipment, delivery of services, budget, installations.

Output data:

Household food security, prevalence of childhood infectious diseases, nutritional status, changes in knowledge, attitude and practice, infant mortality, child mortality, growth and development, maternal nutrition (birth weight).

4. Constraints and problems

Self-sufficiency in food is the prime objective of the national plan.

The basic strategy calls for intensification of agricultural production.

Success in this objective is constrained by the following major problems:

- a. Plans tend to be overambitious and unrelated to resource availability and capacity for implementation;
- b. There is a weak data base for planning;
- c. Inadequate funding of projects;
- d. Managerial/technical personal shortage, and institutional inefficiency;

- e. Inflexibility of agricultural policies (land and income taxes, marketing and pricing);
- f. Exclusion of a population policy from the plan;
- g. Duplication of effort among different agencies in agricultural production;
- h. No food and nutrition policy.

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Discussion: Kidane's paper.

prof. Bwibo: Malnutritions related to many factors not only to food production. Cultural factors are important. Are there any cultural barrier to the intensification of fish eating?

The population growth rate is rapid Defeciency in calorie intake e.g. 40 and 60% of normal requirement may not permit growth in children. Growth monitoring can be used as a tool of malnutrition detection.

The food produced is consumed or exported and some goes into wastage (pests consume 5%?). There is a need for increased Storage efficiency to reduce food loss.

Cultural changes slow among adults even when superior foods are available we need to change food habits among the very young especially in schools.

Dr. Ochetim. Plans tend to be overambitious but what is being done to accommodate this? Is the desired rate of agricultural growth feasible.

Chikamba: Social agricultural development (p11), cooperative development (p 4) how is this being done?

Kidane: Socialist model is govt policy and has been in place in the last 9 years. Settlement programmes: one of the strategies of combating food shortages is to settle people from drought prone areas to virgin areas. There are 53 settlement areas in full production. The Highlands are also over crowded and forestly depleted. Northern Ethiopia is arid and badly eroded needs rehabilitation - farmers settled in the West and the south of the country. Socialization: abolition of feudal landownership has been effected. The right of land use belong to peasant organizations and cooperatives. Sales of produce is to state marketing boards or to private agencies.

2.2 SOMALI NUTRITIONAL CONSIDERATIONS IN AGRICULTURAL AND DEVELOPMENT PROJECTS

PROJECTS

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Ministry of Agriculture

INTRODUCTION

The importance of nutrition has been long neglected, not only in the context of agricultural development but also in the drawing up of national development plans. High priority was given to agricultural production in the first two Somali development plans of 1963-67 and 1968-70, but little attention was paid to the role of nutrition as an important parameter in food production and consumption. The following three-year development programme (1971-73) witnessed the intensification of development activity in the livestock sector, specially in animal production, disease control and eradication, and marketing and industrial processing, while at the same time the intensification of crop production, agricultural diversification and reorganization continued.

The next five-year development plan, 1974-78, was in fact a continuation of the strategies and policies of both crop and livestock production set out in the previous development plans, with special attention being given to the mobilization of the rural masses and the introduction of integrated rural development projects.

The three-year development plan of 1979-81 envisaged the consolidation of the activities of the 1970s programmes with a recognition of the need to integrate regional plans with national plans, so that it would be possible to have better co-ordination for plan preparation, implementation and follow-up at the district and regional levels.

The present development plan, 1982-86, is geared to maintaining the pattern of development of the past decades, with special attention being given to increased food production and improvement of producers' incomes.

In short, even though the previous development plans did not spell out the need to improve the dietary habits of the population, they were geared towards the attainment of self sufficiency in food production and the elimination of food shortages through the improvement of farm practices and liberalization of producer prices.* However, no attention was given to the inclusion of nutritional aspects in the preparation of development projects.

Periodic drought is frequently still problematic; the drought of 1974-75 caused a long period of suffering and since then the government has been spending a considerable part of its resources in attempting to effect a permanent remedy for such natural calamities.

The objectives of this paper are:

- 1) To overview the food production systems in Somalia;
- 2) To overview the nutritional aspects of food consumed in Somalia;
- 3) To assess the role of early-warning systems in forecasting future food supply; and
- 4) To recommend strategies for better food and nutrition planning.

The paper is organized as follows:

Section I states the problems, and outlines the importance attached to nutritional factors in the development programmes of the 1970s and 1980s.

Section II summarizes the climatology and topography of Somalia. In addition, the chapter provides an overview of the agricultural sector in Somalia, with particular attention given to grain production systems in the country.

* Price liberalization has been underway since 1981. Before that the Government of Somalia had full control, through the agricultural Development Corporation (ADC) and the National Trading Agency (ENC), over the prices of major food items. Government price controls had a negative impact on total areas cropped and consequently on total food production in the country. For more details on the impact of price controls see: Yassin Weheliye: An analysis of effects of Government food grain price policies in Somalia 1971-1983. Research paper submitted for Ms Degree in Agricultural Economics. Dept of Agricultural Economics, Michigan State University, 1984.

Section III briefly reviews food production policies and strategies, special consideration being given to the institutions serving agricultural production and the relative role of each of these institutions.

Section IV discusses government food policies in the 1970s and summarizes the role each government agency played in food production and marketing. The chapter also highlights the current changes in food production and marketing policies.

Section V reviews early warning systems, the possibility of forecasting food surplus/shortages, and drought monitoring, through systematic collection of meteorological data.

Section VI presents the integration of nutritional factors into agricultural development projects. This chapter is an assessment of the current integration of nutritional factors in a number of agricultural production projects and the possible ways in which the integration can be improved in the future.

Section VII presents a summary and conclusion and makes certain recommendations.

I. Problems and Objectives

Currently, the population of Somalia is estimated to be 6.5 million with an annual average growth rate of 2.8% (World Bank 1982). The population increases at a rate of 4.6% per year in the densely populated area between and along the two rivers, Shabelle and Juba, while in Mogadishu, and probably also Hargeisa, the population is increasing faster than the riverine areas, about 4.9% (Collison and Dijkerman 1983). Close to one third of the total population are refugees, originating from Ethiopia, a situation which heavily drains the limited resources of the country as well as occupying the good agricultural lands of the riverine area.

In a good harvest year Somalia is self-sufficient in maize and sorghum. Rice production is in the initial stages, while all the

wheat consumed in the country has to be imported. In bad harvest years Somalia also imports maize in addition to rice and wheat.

In addition to the persistent food shortages and periodic droughts, the country has experienced in the past total or localized crop failures every two or three years which worsen the chronic food shortages.

Since the consumption level of calorie and protein is related to the quantity and quality of food consumed, and because Somalia is short of staple foods, even in good harvest years, it is to be expected that the Somali population is under-nourished.

Due to the nomadic and semi-nomadic nature of the Somali economy, the rainfall variability from one year to another, and from one area to another in the same year, bad or good harvest years drastically affect the nutritional patterns of not only the nomadic population but also the urban and semi-settled population.

II. Some General Features of Somalia

Somalia is situated in the Horn of Africa with an area of 638,000 km² and a coastline of 3000 km. The topography consists mainly of plateaux that slope to the Indian Ocean in the east and the Gulf of Aden to the north. The plateaux are broken by chains of mountains in the north and end in a relatively broad coastal plain in the south.

Somalia can be divided into three climatic zones: a northern zone with a semi-Mediterranean climate and average annual rainfall of 400 mm; a central zone, and a southern zone which has a hot climate and annual rainfall of 400-600 mm. Thus, throughout the country rainfall is low. It is also irregular in its total quantity and its incidence.

Out of the whole territory, 8.15 million hectares (13%) are suitable for crop production, another 28.85 million hectares (45%) are rangelands. The remaining land cannot be used for any agricultural purposes due to climatic and geographical constraints (Table 1). At present, about one million hectares of arable land is under cultivation, when double cropping is taken into account (Table 2).

Table 1: Land Base and Use Profile (1000 hectares)

	1970	1975	1980	1985 (Est)
Total Area	63766	63766	63766	63766
Land Area	62734	62734	62734	62734
Agricultural Area	29872	29905	29516	29927
Arable Land and Permanent Crops	1022	1055	1066	1077
Permanent Crops	12	15	16	17
Arable Land	1010	1040	1050	1060
Irrigated	162	165	165	165
Permanent Pasture	28850	28850	28850	28850
Forest and Woodland	9390	9130	8860	8590
Other land	23472	23698	23958	24217

Source: Agricultural sector survey, 1985. Agricultural statistical Handbook.

Table 2: Land Use in Somalia by Regions (Mean wet & dry season survey)

Region	(Hectares)					
	Rainfed		Irrigated land & Flood cropping		All managed land	
	Current	Future	Current	Future	Current	Future
N. Somalia	64560	139478			64560	12945
C. Somalia	123869	431264	1246	1541	125295	43280
S. Somalia	789127	1136472	90979	106745	880106	124325
Total Somalia	977556	1707214	92405	108287	1069961	161550

Source: Southern Rangelands Surveys Vol.4 page 240, R.M. Watson, Resources Management and Research Table 4.54.

Agriculture, including livestock, crops, forestry and fisheries, is the predominant feature of Somalia's economy. Over 80 % of Somalia's 6.5 million (1985) people depends directly on agriculture for their livelihood.* Three-fourths of these, 60 % of the total population, are nomads. Rural income is relatively low and highly variable due to erratic rainfall and periodic drought.

By far the most important of the agricultural sub-sectors is livestock production, followed by crop production, forestry and fisheries. Livestock production provides over 60 % of total employment, about 50% of the gross domestic product (GDP) and over 80 % of all export earnings. The livestock sub-sector also provides 30 % of the total food (meat & milk) consumed in Somalia. Livestock production is based on nomadic pastoralism; there is limited mixed farming of livestock and crops, some specialized production near the urban areas, and some large-scale production units.

III. An Overview of Food Production

Major food crops produced in Somalia are cereals (maize, sorghum and rice), oil crops, (sesame, groundnuts, sunflower and safflower, fruits (banana, citrus papaya and mango), pulses (cowpeas and mung beans), vegetables and industrial crops such as sugar and cotton.** Sorghum is predominantly cultivated in rainfed areas. Maize is cropped both in rainfed and irrigated land, where commercial and industrial crops, as well as vegetables, are mainly under irrigation.

a. Rainfed Crops

In terms of area occupied and consumption, sorghum is the most important rainfed crop in the country. It is primarily cultivated in the Bay Region, which accounts for more than 70 % of the total sorghum

* Official statistical figures issued mid-1985 indicate that the total population of Somalia is 6.5 million, which includes the domestic population, plus refugees. Domestic population figures were obtained by the projection of 3.6 million people reflected in the 1984 official census to 1985, using 2.8 % as the natural annual growth rate.

** Citrus and papaya are also sometimes considered industrial crops; banana on the other hand is a commercial (export) crop.

produced in Somalia. The overall area covered by sorghum, is estimated to be about 55% of all cultivated lands and the crop provides over 44 % of the total food produced domestically. Other rainfed crops of importance are maize, which is the second most important staple food crop, sesame, cowpeas and groundnuts. Maize is planted both under irrigated and rainfed conditions. Traditional farmers grow local varieties while those farmers in the vicinities of research stations benefit from improved varieties and therefore attain higher yields per unit of land.

Out of eighteen regions, rainfed agriculture is practised in thirteen. According to recent studies, the area under rainfed crops is about 540,000 ha out of a potential 7,700,000 ha which could be brought into rainfed cultivation.

As indicated in Table 3 the area under rainfed cultivation can be doubled in the future, though rainfed cropping is an unreliable business due to the low precipitation (100-600 mm) and periodic drought. Yet in the future the pastoralists might extend their economic activities into rainfed cropping. A recent paper (1985)*, discusses this issue and concludes that the future expansion of rainfed farming will primarily depend on the increased involvement of the pastoralists in the Northwestern, Central and Southern regions in settled cultivation. The author also adds that future planning for the expansion of rainfed farming should integrate the development of cultivation and stock raising. Such policies would increase food production both from livestock and crops, and raise the income of rural areas.

b. Irrigated Crops

Irrigation is practised along the Shabelle and Juba rivers as well as in the Northwest Region. Controlled and flood irrigation are the common irrigation practices in both Juba and Shabelle valleys. Controlled irrigation accounts for 50,000 ha, while flood irrigation covers about 110,000 ha.

* Fadal, A, (1985) Land Resources, Farm Structure and Size, Somalia paper prepared for Agricultural Sector Review of Somalia.

Table 3: Cultivated Land in 1000

Type of Agriculture	Total potential area (1000 ha)	Actual Cropped Area (1000 ha)	Cultivable but not yet cultivated areas
1. Rainfed	7,790	540	7,250
2. Flood Irrigation	110	110	-
3. Controlled Irrig.	250	50	200
a. Shabelle River	(86)	(35)	(51)
b. Juba River	(160)	(14)	(146)
c. N.W. Region	(4)	(1)	(3)
Total	8,150	700	7,450

Source: Compiled from Agricultural Statistical Handbook prepared for agriculture sector, Review of Somalia, July 1985.

Controlled irrigation was first introduced into Somalia in the first quarter of the twentieth century when the Italian colonial government established large and medium sized plantations, initially by constructing barrages and gravity distribution systems and later by introducing water pumps for lifting the irrigation water from the rivers. Italian irrigation schemes were first concentrated in Middle Shabelle where a sugar plantation was established, Lower Shabelle where banana production was intensified, and Lower Juba for the same purpose.

In addition to the private plantations first established along the rivers, state farms, co-operatives, crash programmes and settlement farms were also developed in the area (Tables A7, A8, A9 in Appendix).

Presently 35,000 ha of land is under controlled irrigation in the Shabelle valley and the area under controlled irrigation in the Juba valley is about 14,000 ha. In Northwestern Region about 1000 ha are under controlled irrigation (Agricultural Sector Survey, 1985).

Some private small farmers who grow vegetables and rice in the Shabelle and Juba valleys also practice controlled irrigation as well.

The crops successfully grown under controlled irrigation are: Bananas, sugar-cane, citrus fruits, maize, groundnuts and vegetables.

Flood irrigation is a method of uncontrolled irrigation in which the seasonal floods of the Shabelle and Juba Rivers make possible the cultivation of some seasonal food crops. Flood water is impounded over a considerable period of time in a depressed area, prior to sowing. As it dries up it gives way to the growth of deep rooting seasonal crops such as maize, sorghum, sesame, cotton. This type of irrigation is preferred by most of the small farmers in the riverine areas as it requires low cost inputs for production.

Breeches are frequently cut along the river by local farmers to increase the flow of water into the flood irrigated areas, but on many occasions, because the amount of water cannot be controlled, excessive water enters the fields requiring the farmers to wait too long for their fields to dry up, and also leading to higher salinity in the long run.

The area under flood irrigation varies greatly from one year to another, according to the variability in flood levels. In addition, yields of crops under flood irrigation are low because crops are subject both to a shortage of water when the river is low and to an excess of water due to poor drainage during floods.

Flood irrigation has been of primary importance for small farmers in the past decades and remains important for two reasons; firstly because flood irrigation involves staple food crops such as maize, sorghum and sesame; and secondly because flood irrigation does not require energy inputs, which are too expensive and sometimes unavailable for the majority of small farmers. The technology is simple for small farmers, as it is in rainfed crop production.

Although the top priority of the country's agricultural sector is the need to increase domestic food production, particularly maize and sorghum, output of the two commodities declined considerably in the early 1970s, from 122.1 to 96.8 thousand metric tons of maize (1970-74), and from 158.1 to 125.7 thousand metric tons of sorghum in the same period. From 1975 to 1980 maize production increased slightly (from 103.8 to 110 thousand mt) while sorghum production increased from 134.7 to 140 thousand metric tons. Maize production increased from 142.0 to 270.0 thousand metric tons between 1981-4. However, sorghum production declined slightly from 222.0 to 221.2 thousand metric tons in the same period, though production increased tremendously during the Gu season of 1985.

The increased output of maize and sorghum early in the 1980s can be attributed mainly to the releasing of grain marketing from the monopoly of public agencies, and the higher rainfalls of the past few years.

Table 4 shows food output and relative area cropped from 1970 to 1984. Average grain output and consumption in 1976-78, 1981-83 and 1984 is shown in table A1 of the Appendix. Table A2, A3, A4 and A5 show respectively the production, imports, exports, total and per capita consumption of maize, sorghum, rice and wheat from 1970 to 1984. Increased population figures are also indicated in the same tables.

Table A6 summarizes the previous tables, showing the aggregate production, imports, exports and consumption of grains as a whole.

IV. Food Policies and the Role of Government

The Government's stated objectives for the agricultural sector include: i) self sufficiency in maize, sorghum and oil; ii) increased production of rice, cotton and sugar; iii) increased exports of live-stock, fish and bananas; iv) development of new export crops such as mango, grapefruits, papaya and vegetables; and v) protection of the

Table 4: Production (1000 tons) and area (1000 ha) of Grains 1970-1984

Year	MAIZE		SORGHUM		RICE		WHEAT	
	Area 1000ha	Output 1000Mt	Area 1000ha	Output 1000Mt	Area 1000ha	Output 1000Mt	Area 1000ha	Output 1000Mt
1970	133.0	122.1	290.0	158.1	1.3	2.0	0.9	0.7
1971	102.0	99.4	280.0	128.7	1.4	1.6	0.6	0.3
1972	117.0	114.9	390.0	149.1	1.2	2.3	0.8	0.6
1973	101.0	98.9	345.0	128.4	1.2	2.3	3.5	1.0
1974	99.0	96.8	330.0	125.7	1.4	2.7	3.5	1.2
1975	106.0	103.8	400.0	134.7	1.6	3.3	3.5	1.2
1976	119.0	107.6	490.0	139.9	1.8	3.6	3.5	1.2
1977	150.6	111.3	458.3	145.1	4.4	5.6	3.5	1.2
1978	148.7	107.7	420.1	141.1	9.0	8.0	3.5	1.2
1979	147.5	108.2	460.8	140.0	4.8	8.7	3.5	1.2
1980	109.0	110.0	456.8	140.0	5.9	11.3	3.5	1.2
1981	197.0	142.0	517.0	222.0	5.7	12.7	3.5	1.0
1982	209.0	150.0	540.0	235.0	6.0	13.3	3.5	1.2
1983	300.0	235.0	475.0	120.0	1.0	2.0	3.6	1.3
1984	350.0	270.0	445.0	221.2	1.3	2.8	3.6	1.3

Source: Compiled from Agricultural Statistical Handbook (1985) prepared for Agricultural Sector Survey.

country against drought by the establishment of buffer stocks for emergency relief. To realize these objectives the Government of Somalia set up certain institutions to promote the food production sector.

Crop producers are served by the Ministry of Agriculture (MOA) through its departments of Production and Extension, Land and Water Resources, Plant Protection and Locust Control, Planning, Statistics and Training, and Administration and Research. The MOA is assisted by three parastatals: the Agri-Development Corporation (ADC), Farm

Machinery and Agricultural Services Organization (ONAT), and the National Banana Board. The Agricultural Crash Programme and Agricultural Settlements, which have been created for specific purposes, are now under the responsibility of the Ministry of Agriculture. Following is a summary of the objectives and functions of these institutions and programmes.

a. Farm Machinery and Agricultural Services Organization (ONAT)

ONAT is an autonomous agency which mainly provides tractor services to both private and public farms. ONAT was established under Law No. 23 of November 18, 1983, which makes ONAT one of the oldest parastatals created for the promotion of agricultural production in the country.

The main objectives of the agency are:

- i) The hiring out of agricultural machinery and equipment for land development to the private sector, small farmers, and the public sector,
- ii) Repair and maintenance of agro-machinery and equipment,
- iii) Training agricultural machinery operators and technicians.

ONAT rents bull-dozers, earth moving machinery, farm tractors and agricultural machinery and implements. Besides its headquarters in Mogadishu, ONAT maintains a network of six stations with workshops and service facilities in six towns of the important agricultural regions of Somalia. State farms, agricultural development projects, co-operatives and some medium scale farms have their own machinery which they also rent out. ONAT has been reorganized and will in the future probably be limited to the supply of heavy equipment. The agency may establish a joint venture with other foreign or local bodies to overcome the serious management difficulties which the agency has been suffering in the past decades.

b. Agricultural Crash Programme

The Agricultural Crash Programme was conceived as a means for the Government to implement its policy of self reliance, by inculcating

proper work attitudes and using to the full the available human resources. It is a multi-purpose programme which contains political, ideological, social, training and production components. Initially it was created to provide job opportunities and training for unemployed youth in a variety of mechanical and agricultural skills.

Until 1972, the Agricultural Crash Programme was under the responsibility of the Ministry of Agriculture. It subsequently became a government agency under the Bureau of the Somali Revolutionary Socialist Party. The agency was shifted back to the MOA early in the 1980s. Up to the end of 1984 the Agricultural Crash Programme agency had been operating a total cultivated land area of about 20,000 Ha. The programme now grows mainly food crops such as sorghum, wheat, sesame, rice, pulses and vegetables, as well as bananas and cotton. In previous years tobacco and sunflower were also grown.

Late in 1984 and early 1985 most of the crash programme lands were distributed to small-scale producers, mainly because the programme was not self-sustaining. In addition, the cropped area has experienced low productivity and consequently the agency required continuous financial inputs from the government (Table A9).

c. Agricultural Settlement

Following the 1974-75 drought which severely affected some 250,000 people, the Government of Somalia moved swiftly to assist the population by establishing the National Relief Committee. The National Rural Development Campaign was also integrated into the drought relief effort, introducing health, literacy and general education components. Some 90 relief centres were opened throughout the country, supported by grants and food provided by the international community. The centres soon became too great a burden on the country's balance of payments and it was decided in 1975 to close them down. Some 103,000 nomads from the relief centres were relocated, on a voluntary basis, to three agricultural settlements between the Juba and Shabelle rivers.

Another 15,000 were settled along the coast. The Government mobilized and concentrated most of the country's heavy equipment on three agricultural settlements and developed the land for the newly-settled people.

In 1975 a Settlement Development Agency (SDA) was established in order to plan and implement the settlement programmes. As with the Agricultural Crash Programme, SDA comes under the responsibility of the Ministry of Agriculture, but unlike the Crash Programme SDA is partly financed by international organizations (Arab Fund, IDA).

d. Projects

Since the beginning of the 1960s the Government of Somalia has invested in several development projects for the promotion of crop production and better services to the agricultural sector. Among these are irrigation projects along the Shabelle and Juba Rivers, production projects in the form of state farms, and service projects. Irrigation projects include Balad Irrigation Project, Afgoye-Mordinle Project in the Shabelle valley, and the Fanole and Mugambo Irrigation Projects in the Juba valley. Production projects include the Tog-Wagale project established in the late 1960s, Barrowayne rice production project and others.

Most of the irrigation projects are production projects. Afgoye-Mordinle and Balad Irrigation Projects can be cited. Service projects include input supply, research, seed improvement and multiplication and, more importantly, extension projects.

The Government of Somalia has been reviewing its production policies and as a consequence state farms are being divided up and allocated to small-scale producers on a tenancy basis.

Government state farms, irrigation projects and some of the production projects are listed in the appendix. The respective holdings of each, state farm and/or projects is also indicated (Table A7).

e. Marketing Institutions

The major public institutions dominating Somalia's crop marketing system were the Agricultural Development Corporation (ADC), the National Trading Agency (ENC) and the National Banana Board (NBB). ADC and ENC were created to market grains produced domestically and imported from abroad, whilst the NBB was created for exporting Somali bananas to foreign markets.

ADC was established in 1971 and given a monopoly over the trade and distribution of cereals in the country. Under Law No. 51, by which ADC was established, the purchase, storage and distribution of maize and sorghum by private persons for commercial purposes was prohibited. Farmers were authorized to store for domestic use up to one quintal of maize and sorghum per season for each member of their family. The responsibility for the trade, storage, import and export of maize and sorghum was given to the ADC.

The specific provision which stated that farmers were not allowed to retain more than one quintal per household member imposed a great food risk on the farmers (Weheliye, 1984). In view of the unreliability of rainfall and frequent crop failures, the provision raised the possibility that farmers would run out of family grain supplies before the next harvest. The result was that many farmers left their fields and joined the urban population. As discussed in a previous section the low performance in crop production, particularly in production of staple foods, was caused by unrealistic government policies relating to the food producers. ADC's monopoly over the marketing of grains is now history, as the role of private traders has been restored.

The National Trading Agency (ENC) has a monopoly over the concessionally imported commodities such as sugar, edible oils, tea, coffee, pasta products, and wheat and rice. The agency delivers these products to regional municipalities which distribute them to the villages and licensed retailers.

Commodity prices are periodically fixed by the government and the ENC releases the products for which it is responsible at uniform prices throughout the country.

The importance of the ENC as a food-marketing agency has declined considerably, as the ENC is now limited to supplying subsidized food to public institutions.

V. The Early Warning System

Since December 1979, at the request of the Democratic Republic of Somalia, the government of the Federal Republic of Germany has been assisting the Somali Ministry of Agriculture to set up crop forecasting systems.

The aim of the Food Early Warning Systems Project is to predict the quantity and quality of local crop harvest as early as possible and to enable the Somali government to take the necessary decisions for additional food supply before a critical situation arises.

The project is within the Ministry of Agriculture and has at its disposal a country-wide network of 23 meteorological stations.

In the past, the project has put much effort into developing nationwide statistics on agricultural land use and crop cultivation, and yield analyses of the most important food crops such as maize, sorghum, sesame, peanuts, and pulses. The fact that rainfall is the primary limiting factor for cropping in Somalia necessitated the implementation of the project's own network of meteorological stations to collect information (data on rainfall, temperature, sunshine duration, and wind-speed).

After the establishment of the network the Food Early-Warning Systems Project started to introduce a system of agricultural observation areas with sample farms based on periodic land use statistics

and the registration of meteorological and agricultural observations. A crop prognosis - two months before the harvest - and a postharvest estimation are drawn up. The results of the prognosis and harvest estimation are cross-checked with micro-and macro-economic parameters.

At present, the prognosis and estimation system is based on a small number of indicators and parameters. The surveys will be intensified in the second phase of the project, which is due to begin in October 1985, and long-term data series will be employed. When the technical assistance is terminated local qualified staff, trained during the project life, will be in place.

The project is world wide and is the only project of this kind. Keeping in mind the fact that in many arid countries such as Somalia food monitoring and forecasting is given high priority, the project is viewed as the key to future food production, not only in Somalia but also for the rest of drought-prone of Africa.

The present crop forecasting system enables Somalia:

- i) To identify a critical food supply situation in time;
- ii) To adjust the national and regional stocking of crops independently of current local production;
- iii) To plan the commercial and non-commercial imports of staple food independently of local production; and
- iv) To balance the regional crop market.

In general, the project is there to warn of emergency food supply situations and to facilitate a better allocation of available food.

Secondary effects of the project are as important as the main effects. The statistical data compiled for the project gives the Somali Government a solid basis for planning for the agricultural sector.

The food early warning system aims at ensuring a normal supply

situation for the population of Somalia. Based on analyses of local production, and a monitoring of commercial and non-commercial imports and exports, the system aims to warn decision-makers in the Somali Government of imminent national or regional agricultural shortages or surpluses of food.

The beneficiaries of the project in first place are the Somali consumers, but the international community which expends much effort to assure a normal food supply to Somalia is also vitally involved in the benefits of the system.

The high growth rate of the population and the migration to urban centres requires increased agricultural production and better distribution.

As there are different methods of forecasting the food supply situation the project first applied a micro-economic parameter method only. The result was not satisfactory. The present approach is based on correlated meteorological and agricultural observations. To apply this approach, long-term agricultural data series and observations are necessary.

In Somalia such information is not presently available. Therefore in phase two of the project, this approach will be further developed.

At present the implementation of the early warning system has arrived at a level where it can be said that the most important hardware is in place:

- a) A network of 23 met-stations have been built;
- b) Thirty-five additional rain gauge stations in the agricultural observation centres are in place;
- c) A computerized programming system has been introduced;
- d) Technical staff have been trained.

In the future the project will concentrate on analysis of the factors modifying yields, such as soil quality, cultivation methods,

seed quality, and so on. In addition, the project will introduce permanent monitoring of rainfall variations, temperature changes, and other climatic variables.

VI. Integrating Nutritional Factors into Agricultural Projects

Food production and consumption is clearly fundamental to the nutritional status of the population of Somalia. The state of natural food production, which is mainly influenced by climatic factors, the state of technology, as well as the availability of investment funds, are factors of primary importance. In good harvest years, as noted above, Somalia is self-sufficient in maize and sorghum, while rice and wheat need to be imported, even in exceptionally good harvest years.

Past experience reveals that the production of the primary agricultural food products including maize, sorghum, rice, oil and sugar, is insufficient to meet the national food consumption requirements.

Major constraints on increased staple food production are:

- i) Rainfall variability;
- ii) Unavailability of adequate farm inputs for increasing yields;
- iii) Discontinuity in crop research and improvement;
- iv) Embryonic extension service;
- v) Unavailability of a strong credit system.

In describing the nation's nutritional pattern the population of Somalia can be grouped according to distribution and dietary habits. Another consideration is the types and quantities of food consumed annually in the country and seasonal food intake variability (dry vs wet, good season vs bad one).

On the basis of preliminary information from the 1985 agricultural sector survey*, the population of Somalia is estimated to be 6.5 million (July 1985) with an annual growth of 2.8 per cent. Somalia's

* The Agricultural Sector Survey is still going on but preliminary Statistical Tables are already available, though they need Government of Somalia and World Bank clearance.

agricultural sector review of 1981 subdivided the population into four categories: a) non-agricultural population, defined as the population of the regional and district capitals; b) settled farmers, the people who live in permanent villages including crop farmers and people who may live in permanent settlements but who derive the principal part of their income from pastoral activities; c) the nomadic population, including all those who live outside permanent settlements; d) the urban population, defined as those who live in big cities such as Mogadishu, Hargeisa, Burao, Marka, Kismayu, and so on.

Another important aspect of the subject is the need for information on food production, the geographic distribution of food produced domestically and the distribution of concessionally and commercially imported food items, and more importantly, information on total and per capita food consumption. Such information is not available, though some general information is to be had.

One way of dealing with these controversial issues is to pose many assumptions before the researchers draw any conclusion. Another way would be to examine the total food available for consumption, which is the sum of domestic production and the total imports. This approach is useful for the calculation of an undernourished population such as that of Somalia. (For further discussion on this approach, see Abikar, 1984).

In the light of these concepts the nutritional status of each category of the Somali population can be briefly discussed.

Jobe* (1982) has discussed the issue and gives some guidelines on consumption patterns, nutritional composition of diets and gross dietary deficiencies.

The author subdivided the country into four areas which roughly correspond to the population groups: nomadic, mixed farming/semi-nomadic,

* Jobe, P.I. 1982, "Nutritional patterns in Somalia". In Dr. Abbas, A.S. (ed) Food and Nutrition in Somalia, proceedings of the first national food and nutrition conference held at Mogadishu.

farming and urban. The author based this subdivision on the fact that these groups, though, represented in most regions, present clear dominances in particular areas.

Togdheer, Sanag, Bari, Nugal, Mudug, G/Guduud and Gedo regions were listed in the nomadic category. Regions such as North-west, Hiran, Middle Shabelle, and Bakol were considered mixed farming/semi-nomadic due to the mixture livestock production and farming in these regions. Lower Shabelle, Bay, Lower and Middle Juba were listed as farming regions. The only region that could be categorized as an urban region was Mogadishu (though other big towns can be considered urban centers) due to the large population of nomads in the areas surrounding other urban concentrations.

The author has calculated the calorie and protein contents of major staple foods consumed in Somalia such as dairy and meat products, local cereals, fruit and vegetables, rootcrops, beans, groundnuts, eggs and fish. The calculation of calorie and protein consumption of staple foods consumed by each population subdivision was based on the total population of each area, taken from official Somali population statistics published by the Ministry of National Planning (1975). A relative nutrition pattern was drawn up.

Average calorie consumption in nomadic regions was estimated to be about 1,800 units/person/day, two thirds of which come from livestock production. It is important to note that the availability of such calories varies considerably throughout the year (wet vs dry season) and from year to year. Protein intake was the highest of all groups. A small group of urban dwellers (within the group) was noted in which the consumption of cereals was higher than that of the nomadic society.

The author indicated that the calorie consumption of farming/semi-nomadic regions is higher than in nomadic regions, but with only 40 per cent coming from livestock products.

With calorie carry-over possible in the form of locally grown cereals, the variation in consumption is not likely, however, to be so extreme. Nevertheless rainfall in these areas is marginal for dry-land farming with high variation in yields from year to year. The quantities of available calories from locally grown crops will change significantly from good to bad years. Protein availability, though less than in nomadic regions, is still reasonable. Overall, the mixed/semi-nomadic population would seem to have a better all round nutritional intake throughout the year than those in nomadic areas, but could suffer as much as, if not more, in very poor years, at least where settlements restrict movement of livestock and population in the search for improved grazing.

The average calorie intake in farming regions is good, with three-quarters coming from vegetable sources. The protein intake is also reported to be similarly high. In view of the higher rainfall and the possibility of some irrigated agriculture, nutritional intake is more secure than in any other area of the country. Protein availability is less variable since in the dry season, when vegetable calories are less, animal calories increase with migration of stock to the rivers.

In urban regions the level of calorie consumption is not clear, although it seems as high or higher than the rest of the country. Protein intake levels on the other hand are lower, with very little from animal sources. Protein quality would seem to be very poor. Availability of calorie is unlikely to fluctuate throughout the year.

Though staple food production has increased by an average of 8 per cent per year in the past few years (since 1981) consumption levels are still a third below the "need" level. The protein content of the diet looks quite adequate. Fat content levels suggest that a large part of the population, perhaps half or more, are not adequately fed and nourished.*

* R. Dally. 1985 Agriculture and the economy, preliminary analysis of the statistical tables compiled for the Agricultural Sector Review.

Total food consumption (grains) fluctuated drastically from 1970 to 1979 but has increased steadily since 1981. This can be attributed to the good harvests from 1981 through to the Gu season of 1985, resulting from the better rainfall and price liberalization - consequently the per capita food consumption increased from 83.6 kcal in 1980 to 126.3 kcal in 1984.

There are over 30 agricultural projects being implemented under the Ministry of Agriculture. Most of these projects are geared to increasing staple food production by improving agricultural practices, quality of seeds, water management, and so on.

These projects include, crop production, irrigation, water and soil conservation, seed multiplication, seed improvement, on-farm research and integrated rural development projects. Most of these projects focus on increased food production, but neglect the nutritional factor which is essential for any development of the food production sector. An exception is the Agricultural and Farm Management and Training Project (AFMET), which has a nutrition education component.

The nutrition education part of the project has the overall objective of helping low income families, especially those with young children, to acquire knowledge, skills, attitudes, and changed behaviour.

Specific objectives of the program are:

- i) To improve diets and health of the family;
- ii) To increase knowledge of the essentials of food habits;
- iii) To increase ability to prepare and serve palatable meals;
- iv) To improve safety techniques and food sanitation.

The project area includes three regions, namely Bay, Lower Shabelle and Middle Shabelle where many low-income families are concentrated.

The AFMET project provides financial support, office space and equipment, nutrition specialists, materials for nutrition education, and other essential facilities.

In the near future nutrition is expected to be one of the major factors in preparing and designing food-oriented projects.

VII. Summary and suggestions

- i) Food production and distribution has been mainly the responsibility of the government. Presently the production and marketing of domestic foods are entirely left to the private sector, though the government is still involved in encouraging producers in a variety of ways. Some sort of co-ordination among the different agencies involved in the food sector is highly desirable. The Government Farms Interministerial Group's responsibilities include the co-ordination of Government institutions involved in food production, as well as the setting out of well-defined policies for food production, distribution and consumption. Private traders have been out of business for the past fifteen years, and the Interministerial Group will help them organize themselves and provide some assistance when needed.
- ii) Though food production has increased by about 8 per cent per year since the beginning of this decade, the consumption level is still below the need level. More domestic production is needed to improve consumption levels and reduce imports.
- iii) Protein consumption levels seem adequate throughout the country, except in marginal areas, farming areas and the major towns. Some qualitative improvement in urban protein intake is needed.
- iv) Calorie intake is variable, particularly due to the large dependence on milk. In the dry season difficulties in nomadic, and to some extent semi-nomadic, areas occur regularly, becoming

serious in prolonged droughts. However in recent years the distribution of powdered milk in deficit areas during dry seasons has been adequate. The continuation of an improved system of milk powder distribution, particularly during dry seasons, is suggested.

- v) The distribution of additional cereals in deficit areas has been adequate since the beginning of the 1970s, though during shortages in either domestic or imported cereals the supply has been problematic. This was mainly due to the need for construction of a transportation network throughout the country and better and uniform nationwide distribution by the ENC and ADC. This system should be continued and further improved.
- vi) Research on food and nutrition policies is scanty. More systematic research should be conducted in the future.
- vii) Macro-and micro-level analyses of food production, consumption and nutrition contents of both domestically produced and imported foods are needed. This should include some projections of food requirements in the future and the changing attitudes of the consumers. The early warning system could play an important role in this respect.

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APPENDICES

Table A1: Somalia's Agriculture: A Statistical Profile-Crop Output and Consumption.

Items	1976-78 Average	1981 Average	1983% Growth	1984 Average
Food Crop Output**	640	808	4.5	958
Index 1977 = 100	98.6	127.2	3.2	142.6
Area in Crops (1000ha)	742	929	4.6	982
Grain Production**	258	379	8.0	495
Domestic Use**	391	731	13.3	854
Imports**	136	355	21.2	359
Per cent Imported	35	48		42
Grain Area (1000ha)	604	754	4.5	200
Grain Yield (Mg/ha)	427	503	3.3	619
Maize Real Price/Kg	1.24	1.45	3.2	3.12
Sorghum Real Price (Kg)	1.24	1.56	4.7	2.45
Rice/Sorghum Price ratio	3.6	1.9	-11.2	1.37
Rice Real Price (Kg)	4.48	3.01	-7.5	4.44
Flour/Sorghum Price ratio	2	1.29	-9.4	1.21
Flour Real Price (Kg)	2.5	1.91	-5.0	2.82
Rice Consumption (Kg)	9.3	15.1	10.2	4.4
Wheat Consumption (Kg)	16.9	25	8.2	3.1
Maize Consumption (Kg)	28.5	33.7	10.1	4.1
Sorghum Consumption (Kg)	28.1	30.1	1.1	3.5
Total	82.8	110.3	5.9	1.3

Source: Statistical Tables prepared for Agricultural Sector Review, July 1985.

** In 1000 metric tonnes.

Table A2: Maize Production, Trade and Consumption (1000 metric tonnes)

Year	Production	Imports		Consumption		
	Output	Aid /	Total	Total	Per Capita	Population
1970	122.1	-	1.0		29.8	3640.0
1971	99.4	-	27.5	109.0	29.3	3725.0
1972	111.9	-	-	96.0	25.2	3810.0
1973	98.9	-	-	96.6	24.8	3900.0
1974	96.8	-	11.0	100.5	25.2	1995.0
1975	103.8	-	50.6	116.0	28.4	4089.0
1976	107.6	-	51.8	139.7	33.3	4196.0
1977	111.3	-	23.0	114.2	26.5	4305.0
1978	107.7	-	15.0	113.1	25.6	4417.0
1979	108.2	12.9	30.0	129.6	26.6	4872.0
1980	110.0	48.2	110.0	143.7	26.7	5373.0
1981	142.0	68.8	90.8	148.0	25.0	5912.0
1982	150.0	0.0	25.0	214.5	35.0	6124.0
1983	235.0	150.0	175.0	368.7	59.0	6248.0
1984	270.0	84.9	105.0	245.2	54.0	6393.0

Source: Statistical Tables prepared for Agricultural Sector Review, 1985. Checked with official reports issued by the Ministry of Agriculture.

Table A3: Sorghum: Production, Trade and Consumption (1000 Metric Tonnes)

Year	<u>Production</u>	<u>Imports</u>		<u>Consumption</u>		
	Output	Aid	Total	Total	Per/Cap.	Population (in 000s)
1970	158.1		0.5	145.1	39.9	3640.0
1971	128.1		12.0	115.6	31.0	3725.0
1972	149.1		0.0	83.8	22.0	3810.0
1973	128.4		0.0	140.5	36.0	3900.0
1974	125.7		0.0	147.0	36.8	3995.0
1975	134.7		7.0	121.2	29.6	4089.0
1976	139.9	NIL	9.0	126.7	30.2	4196.0
1977	145.1		1.0	115.4	26.8	4305.0
1978	141.1		6.0	120.5	27.3	4417.0
1979	140.0		0.0	128.6	26.4	4872.0
1980	140.0		0.0	127.3	23.7	5373.0
1981	222.0 ^a		11.0	130.5	30.5	5912.0
1982	235.0		10.0	193.1	31.5	6124.0
1983	120.0		25.0	185.1	29.6	6248.0
1984	221.0		10.0	214.2	35.5	6393.0

Source: Statistical Tables prepared for Agricultural Sector Review, 1985.

Table A4: Rice Production, Trade and Consumption (100 Metric Tonnes)

Year	<u>Production</u>	<u>Imports</u>			<u>Consumption</u>		
	Output 1000Mt	Aid	Total	Export	Total	Per Cap.	Population (in 1000s)
1970	2.0	0.0	23.3	2.0	13.2	3.6	3640.0
1971	1.6	0.0	36.2	5.0	42.7	11.5	3725.0
1972	2.3	0.0	26.6	0.0	13.8	4.9	3810.0
1973	2.3	5.0	29.8	10.0	32.0	8.2	3900.0
1974	2.7	3.0	16.9	2.0	17.6	4.4	3995.0
1975	3.3	5.8	37.0	0.0	30.2	7.4	4089.0
1976	3.6	10.1	20.3	1.0	22.7	3.4	4196.0
1977	5.6	0.0	56.0	0.0	68.3	15.9	4305.0
1978	8.0	16.1	18.0	0.0	28.8	6.5	4417.0
1979	8.0	27.2	29.0	0.0	87.4	17.9	4872.0
1980	11.3	41.3	100.0	0.0	86.0	16.0	5373.0
1981	12.7	26.2	85.0	0.0	91.3	15.4	5912.0
1982	13.3	37.0	86.0	0.0	105.9	17.3	6124.0
1983	2.0	29.3	52.0	0.0	77.9	12.5	6248.0
1984	2.8	49.1	39.1	0.0	91.7	14.3	6393.0

Source: Statistical Tables prepared for Agricultural Sector Review, 1985.

Table A5: Wheat: Production, Trade and Consumption (1000 Metric Tonnes)

Year	<u>Production</u>	<u>Imports</u>			<u>Consumption</u>		
	Output 1000Mt	Aid	Total	Export	Total	Per Cap.	Population (in 1000s)
1970	0.7	10.3	31.4	0.0	32.0	8.8	3640.0
1971	0.3	8.0	47.7	0.0	47.9	12.9	3725.0
1972	0.6	15.0	41.7	0.0	42.0	11.0	3810.0
1973	1.0	16.0	20.3	0.0	21.0	5.4	3900.0
1974	1.2	9.0	14.3	0.0	15.2	3.8	3995.0
1975	1.2	45.7	70.2	0.0	71.1	17.4	4089.0
1976	1.2	41.4	68.0	0.0	68.9	16.4	4196.0
1977	1.2	43.9	93.8	0.0	79.7	18.5	4305.0
1978	1.2	33.9	48.3	0.0	69.2	15.7	4417.0
1979	1.2	40.7	100.1	0.0	101.0	20.7	4872.0
1980	1.2	84.7	91.4	0.0	92.3	17.2	5373.0
1981	1.0	85.7	200.0	0.0	110.7	18.7	5912.0
1982	1.2	95.7	180.5	0.0	171.4	18.0	6124.0
1983	1.3	72.0	125.0	0.0	176.0	28.2	6248.0
1984	1.3	155.0	155.0	0.0	156.0	24.4	6393.0

Source: Compiled from Statistical Tables prepared for Agricultural Sector Review, 1985.

Table A6: Grains: Production, Trade and Consumption (1000 Metric Tonnes)

Year	<u>Production</u>	<u>Imports</u>			<u>Consumption</u>		
	Output 1000 Mt	Aid	Total	Export	Total	Per Cap.	Population (in 000s)
1970	282.9	10.3	56.2	2.0	298.8	82.1	3640.0
1971	230	8.0	123.4	5.0	315.2	84.6	3725.0
1972	266.9	15.0	68.3	0.0	240.6	63.2	3810.0
1973	230.6	21.0	50.1	10.0	290.1	74.4	3900.0
1974	226.6	12.0	42.2	2.0	280.3	70.2	3995.0
1975	243.0	51.5	164.8	0.0	338.5	82.8	4089.0
1976	252.3	51.5	148.1	1.0	358.0	85.3	4196.0
1977	263.2	43.9	173.8	0.0	377.6	87.7	4305.0
1978	258.0	50.0	87.3	0.0	331.6	75.1	4417.0
1979	258.1	80.8	209.1	0.0	446.6	91.7	4872.0
1980	262.5	174.2	301.4	0.0	449.3	83.6	5373.0
1981	377.7	180.7	386.8	0.0	530.5	89.7	5912.0
1982	399.5	132.7	301.5	0.0	684.9	111.8	6124.0
1983	358.3	251.3	377.0	0.0	807.7	129.3	6248.0
1984	495.3	289.0	359.1	0.0	807.1	126.3	6393.0

Source: Compiled from Statistical Tables prepared for Agricultural Sector Review, 1985.

Table A7: State Farms and the size of land they hold

<u>Farm</u>	<u>Size of land holding</u>
<u>Shabelle Valley</u>	(hectares)
Balad Irrigation Project	10,000
Afgoi-Mordinle Project	3,000
Janale-Bule-Marcerto	4,000
Romsoma	10,000
Grape fruit Plantation	2,000
Development and Production Fruit Project	4,000
Rice Production (Afgoi)	450
Other Government agencies holdings	<u>5,000</u> (Est)
Sub-Total	45,450
<u>Juba Valley</u>	
Fanele Irrigation Project	8,200
Juba Sugar Project	7,700
Mugambo Rice Irrigation	6,000
Saakow Experimental Farm	60
Other Government agencies holdings	<u>3,000</u>
Grand Total	<u>70,410</u>

Source: Reports prepared for Agricultural Sector Review, 1985.

Table A8: Settlement Farms

Farm

	<u>Planned</u>		<u>Area (ha)</u>	<u>Used</u>
	<u>Irrigated</u>	<u>Rainfed</u>		
Sablaale	3,000	3,000		
Kurtun Waarey	3,000	3,000		
Dujuma	9,000	6,000		
	<hr/>			
	27,000 ha			

Source: Reports prepared for Agricultural Sector Review, 1985.

Table A9: Crash Programme Farms 1978

<u>Farm</u>	<u>Holding Size</u>
Togwajaale	8,000
Belet Wein	700
Johar	340
Janale	650
Shalambot	1,500
Haway	600
Jilib	<u>300</u>
Total Cultivated Area	12,090
Total Farm Area	20,000

Source: Reports prepared for Agricultural Sector Review, 1985.

DISCUSSION

Abikar Somali Country

- Teferi: The Population of Somalia is 6.5 million: Does this include refugees?
- Kidane: Why does Somalia import rice and wheat when maize and sorghum are adequate (p 22)? There has been an increase in food per capita from 83.6 kg to 126 kg.
- What happens to the surplus food? is it exported? There are Heavy imports of wheat and rice, also maize. How are these imports financed? What are the implication for nutrition? A disturbing factor for nutrition pattern is that wheat is not locally produced.
- Wasonga: The Growth rate of agriculture (base 1977) is 4.5% per annum vs population growth rate of 2.8% per annum, then why food imports Liberalized prices? Could you say more?
- P.12. Need for increased production of maize and sorghum which have been declining since 1971 yet other food crops have been growing rapidly?
- Does Monopoly in purchase explain the decline of sorghum and maize production?
- Amref: Food Imports in 1984 were up 42% (Table A1) yet there are many hectares of arable land but only 15% are cultivated why? What are the plans increase cultivation?
- Naitera: Somali parastatals: How effective have the parastatals been in rendering services? In Zambia the Nutrition Unit is a parastatal. It cannot command othe Ministries of Zimbabwe nutrition unit also in the Ministry of Health. Also does not have command over other ministries.
- Maletnlema: Zambia: Nutrition unit is not attached to (power) source. The commission has worked for several years. Why has it not been possible to attach it to powerful Ministries? How have such units been working? In the Phillipines the Nutrition Unit attached to a powerful ministry yet not much have been achieved. Political power is the only key.
- Zeinab: Somalia Popp 5.8 million and together with refugees gives 6.5 millions.The refugees are being settled.
- Wheat consumption - Italian colonialism - pasta is preferred. It is cheaper to import wheat than the pastas. Price liberization in 1981. Pasta used to be cheaper than maize or sorghum. Remittances from Somalis who work in the middle East partly finances food imports.

2.3 NUTRITION CONSIDERATIONS IN AGRICULTURE AND RURAL DEVELOPMENT IN TANZANIA

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1.0 National Objectives and Rural Development

1.1 INTRODUCTION

Food and Nutrition is fundamental to the life, work and well-being of every society. What we now see wide-spread in many developing countries as hunger and malnutrition are actually signs or symptoms of complex interrelationships between population, poverty, social injustice and environment.

The structure of the Tanzanian population is similar to that of many other developing countries. The majority of the population, more than 90 per cent, live in rural areas and earn their living mainly from agricultural production. The population of Tanzania is estimated to be 22 million people, with an average annual growth rate of 3.2 per cent (1985).

There is an increasingly critical food-poverty-population situation in Tanzania which has to be addressed at all levels. The structure of the population will continue to remain pyramid-shaped, characteristic of rapid growth. The population is predominantly young. Its childbearing potential in the years ahead has a built-in momentum for further growth. In addition to rapid population growth it is expected that Tanzania will experience dramatic movements of rural population to cities and adjacent settlements. The main consequences of these population problems will continue in the form of hunger and malnutrition, which is mainly a result of insufficient intake of food energy or calories.

During the first years after Independence in 1961, it became increasingly obvious that Tanzania was developing into an unequal society. The small benefits from what little economic growth had been attained were unequally distributed. The urban areas were favoured with better health, education and other services. The agricultural sector on which the majority of the population was dependent had been given lower priority.

It was then necessary to adopt a new development strategy which was expressed in the Arusha Declaration in February 1967. Tanzania's policy of socialism and self-reliance has thus been outlined as an attempt to bring the major means of production under the control of the peasants and workers, in order to improve the lives of the people. In order to achieve the national goals it was necessary to formulate various strategies:

1.1.1 Decentralization:

In 1972 the Government was decentralized. Some of its functions and responsibilities were moved to regional and district levels. The Party and Government were designed to work together at regional, district and even village levels. As a result of decentralization a very large number of people at lower levels have been encouraged to participate in planning and decision-making.

Decentralization of Government services was done in order to make practical the planning and control of rural development matters at the local level. Regional Government Authorities have been given the responsibility of initiating and co-ordinating local planning and implementation of rural development programmes while central Government ministries are responsible for overall development policies, mobilization and allocation of development resources. The regional and district frameworks are controlled by the Prime Minister's Office. Under the decentralization arrangements, Tanzania has been divided into 20 regions and over 100 administrative districts.

1.1.2 Villagization Programme:

A second major move was between 1973-76 when all people in rural areas moved into village settlements. In 1979 there were 8,210 registered in Tanzania. This villagization was aimed at making it possible to reach a higher proportion with education, health, water and other services. By 1980 about 80 per cent of the population was living in villages. Since then, equity and participation have been the main emphasis in development strategies in Tanzania.

The villagization programme has had both positive and negative effects. In some cases the programme worked out positively; villages were established, rural projects were initiated and successfully implemented. In many cases, however, the programme had negative results. Many people decided to move back to their original settlements. This came about because the objectives of the programme were not understood by the implementers. Because of the magnitude of the villagization programme, and the speed taken, it was difficult to cope with the increased demand for services.

1.1.3 Parastatals

With the abolition of the co-operatives in 1975, the Government transferred their function to the crop parastatals. Functions included direct commercial production, crop procurement, processing and marketing (locally and abroad).

The other major function was to provide services such as extension and research to producers -the farmers. In this case many farmers were part and parcel of development programmes for various cash crops, for example, coffee, pyrethrum, tea, tobacco, and so on.

However, the performance of these parastatals has been disturbingly poor. Crop parastatals have failed to take care of the needs of the small farmers. Studies have revealed that parastatals were poorly capitalized, and with high operational costs they have not reached the target population. This has resulted in provision of inadequate services to most farmers. In 1982, therefore, the Government decided to re-establish the co-operatives.

1.1.4 Re-Establishment of Co-operatives

Under the Co-operative Act of 1982, a primary society can be composed of two or more villages and, where it is economically viable, may be formed by one village. A co-operative union may be formed within a region and, where it is economically viable, for a district or districts. Apart from crop procurement co-operatives will establish, operate and maintain large scale farms for agricultural production as well as engaging in other economic activities, such as warehousing and transportation. Farmers, being members of primary societies, are going to participate fully in the implementation of projects initiated by their respective co-operative unions.

In addition, the Government has insisted on rural community development for many years now. Strengthening of the community development sector will improve the mobilization of villagers to participate and contribute to maintaining and improving basic services.

1.2 Agriculture and National Development Policies

National policies accord high priority to agriculture and related matters, as reflected in the revival of the producer, and marketing within the co-operative structure¹. Policy decisions depend for their effective implementation on resources, skills, management and financial situations.

Within the agricultural sector the national objectives are:

- a) Self-sufficiency in food and livestock products;
- b) Establishment and maintenance of food reserves;
- c) Input distribution;
- d) Reduction of the rural/urban income gap through better pricing mechanisms;
- e) Small-scale irrigation schemes;
- f) Rural credit institutions.

Since the 1970s several efforts have been made by the Government to outline agricultural policies in the country, (Ministry of Agriculture

1972/73). Consequent to food shortages in that period, the Party and the Government started off increasing and improving food production, campaigns and food distribution². A new food strategy was initiated in November 1980 and the draft of the recommended strategy was completed in 1982³. It is still too early to comment meaningfully on the outcome of the new food strategy.

The National Food Strategy seeks to raise the nutritional level of the population, particularly that of the most disadvantaged, to meet future food needs, and to provide greater security against temporary shortages and famine. The strategy takes into account the agricultural policy decisions contained in the Agricultural Policy of Tanzania.

The National Food Strategy has been developed as an agricultural strategy which seeks a balance between food and cash crops, livestock and fisheries in the short, medium and long terms. It covers the period 1980-2000. The strategy concentrates on food production as it relates to the agricultural sector as a whole, to the overall socio-economic environment, and to policies that affect agriculture, livestock and fisheries. The strategy covers all aspects of the food chain: production, processing, storage, marketing, distribution and consumption.

The food strategy also places great emphasis on achieving caloric and protein intakes of a minimum acceptable nutritional level. The long-term objective is to ensure a nutritionally balanced diet for all. In producing food and cash crops, breeding livestock, fishing and distributing surplus for immediate needs, the food strategy provides that rural families achieve adequate incomes to maintain proper nutrition, even when production is insufficient. The special needs for families in deficit areas and towns are also covered.

The national food strategy aims at a growth rate for food crops estimated at 3.8 per cent per annum. The basic policy options are: regional specialization; pricing and subsidies; balance between food crops and cash crops.

Tanzania has a wide diversity of agroclimates which permit the production of many food and cash crops. The Tanzania/FAO Crop Monitoring and Early Warning Project has recently proposed a division of the country into eleven areas based on agroclimatic growing seasons. The national food strategy gives different crop combinations that are suitable to each of these agroclimatic areas:

- i) Dry Central and Northern: Shinyanga, Mwanza, Mara, Singida, Dodoma (Sorghum, Millet and Cotton)
- ii) Northern Highlands: Arusha, Kilimanjaro (Maize, Banana, Coffee)
- iii) Southern Coast: Lindi, Mtwara (Sorghum, Millet and Cassava)
- iv) North and West Central: Tabora, Kagera, Kigoma (Maize, Banana, Tobacco and Coffee).
- v) Southern Highlands: Iringa, Mbeya, Rukwa, Ruvuma (Maize, Paddy and Tea).
- vi) Coast: Coast/DSM, Morogoro, Tanga (Maize, Paddy, and Sisal).

1.3 Nutrition Policy and Planning

A food and nutrition policy is an essential tool for a country, for it helps to give direction to action on food and nutrition affairs. Every community requires such a policy. Even families have to have a food and nutrition policy of some sort, although it may never be documented.

Tanzania has a form of food and nutrition policy with bits and pieces scattered through government and Party documents like the Arusha Declaration, "Siasa ni Kilimo" Booklet, Five Year Development Plans, National Food Strategy and speeches by national Party and Government leaders. Tanzania, however, has no document that can be referred to as a National Food and Nutrition Policy⁴.

Since 1976 several steps have been taken to delineate such a policy through the Tanzania Food and Nutrition Centre (TFNC). By the end of the year 1980 the first draft of a National Food and Nutrition

Policy was discussed. The basic aims of the policy proposal were to ensure that the nutrition implications of the policies developed by various sectors are given appropriate consideration, to provide guidelines on how to deal with food and nutrition problem, to examine the interactions between the various sector policies which are designed to improve the health and nutrition of the people, and to come up with indicators of nutritional status which could be used as criteria for the evaluation of the social impact of development plans.

2.0 AGRICULTURE AND RURAL DEVELOPMENT PROJECTS

2.1 National Projects

The Ministry of Agriculture and Livestock Development is charged with direct responsibility for planning, monitoring and co-ordinating the development of sector policies, programmes and projects hence providing overall central direction and co-ordination to the agricultural sector. The Ministry also provides research and extension services to farmers. On the other hand, farmers are supposed to participate in the implementation of the envisaged programmes and to adopt the new technologies at their disposal.

Agriculture is the dominant sector in the Tanzanian economy. It supports over 90 per cent of the population, supplies about 50 per cent of total GDP and generates about 80 per cent of total export earnings. The national policy in agriculture, therefore, puts greatest emphasis on rural development.

The third Five-year Development Plan called for self-sufficiency in food, projected to be the case by 1981. The fourth Five-year Development Plan covering the period 1981-1985 has been faced with severe strains on the economy from a multitude of causes. The food and agricultural sector has faced additional constraints, including vulnerability to climatic excesses, large pre-and post-harvest losses, the lack of physical infrastructure, and a low level of technology in agriculture, livestock and fisheries. Imports of food have on the average increased from about 160 thousand tons in 1977/78 to 300 thousand tons in 1981/82 so as to meet the rising demand.

Several national projects have been introduced in the agricultural sector so as to alleviate the food problem. One of the early projects initiated to improve food availability in the country was to promote the cultivation of drought-resistant staples such as sorghum, millets and cassava, in areas faced with severe drought.

Nevertheless only a little effort has been put into emphasizing the utility of these traditional crops as food for the majority of the population. The new variety of sorghum (serena), for example was consumed with some difficulty as households could not mill it into a tasteful flour. Surplus cassava produced in the coast and southern regions was not properly stored, marketed or distributed to the food-deficit regions in the country.

The dietary pattern of the majority of Tanzanians has been changing to favour maize, rice and wheat as the main staples, but since 1973 the production of maize, the preferred grain, and other cereals in general, fell drastically as a result of severe drought in the country⁵.

In years following the severe drought a national maize campaign was started. The National Maize Project (NMP) was launched in 1975 with financial support from the International Development Agency (IDA) and the Tanzania Government.

The main aim of the project was to make Tanzania self-sufficient in maize. Specifically, the project aimed at increasing the level of income of small farmers by an average of US \$ 47 per year at full development.

The maize project consisted of supplying production packages, and includes the provision of a subsidy on production inputs, a strengthening of extension and research services and an improvement of storage and transportation. Improvement of extension services required one worker per village to improve maize production. The package also contained the supply of fertilizers and improved "hybrid" seeds. At full swing it was assumed the project would improve yield from 750 Kg /ha to 1,100kg/ha.

2.2 Implementation Phase

The NMP was targeted to include about 700 villages by 1982.

The project covered 15 regions with 42 districts. The regions covered were: Arusha, Kilimanjaro, Tanga, Morogoro, Dodoma, Tabora, Mara, Iringa, Mbeya, Rukwa, Mtwara, Lindi, Ruvuma, Shinyanga and Kagera.

In 1975/76, the NMP distributed inputs to the villages with a 75% subsidy. Farmers were expected to pay the remaining 25% in cash. In the following season, 1976/77 NMP distributed fertilizers on credit with a 50% subsidy.

In the very early stages of implementation the NMP faced distribution problems, weak extension services and management deficiencies in the provision of inputs. The credit aspect of the NMP was channelled through a Ministry of Agriculture-based management unit.

In 1978, the National Food Credit Programme (NAFCREP) was established. The seasonal input credit project provided loans for crop production and farm equipments in selected districts from 10 regions only. The NAFCREP could give loans also for wheat, sorghum, paddy, maize mills and storage facilities for all the regions.

The credit program was initiated through the Tanzania Rural Development Bank in parallel with the National Maize Project. The 10 regions with the highest maize production potential selected for the NAFCREP were: Arusha, Iringa, Mbeya, Morogoro, Tanga, Kilimanjaro, Dodoma, Tabora, Rukwa and Ruvuma. It was estimated that the 10 regions provide 90% of the maize entering the official marketing channels.

By 1980, there were already 650 villages benefiting from input-loans and 200 villages provided with mill loans. But the problem of food shortages continued to prevail in the country.

3.0 IMPROVING THE NUTRITION STATUS OF THE POPULATION THROUGH IMPROVED FOOD CONSUMPTION, PUBLIC HEALTH AND CHILD CARE

3.1 The Conceptual Framework

It is generally accepted that hunger and malnutrition are the most dramatic manifestation of the nutritional problems affecting women

and children. However, it is important to analyze the situation and the extent of the problem before suggesting appropriate action to be taken.

The starting point has been to look at the deaths of children, which is the final result of a long sequence of interlinked aspects of malnutrition and disease⁶. In a given context it is possible to identify specifically which immediate causes have led to the death of an individual child or to a high child death rate in a community. An example of these immediate causes could be, for example, diarrhoeal diseases in combination with low energy intake. At this stage immediate action could be taken to promote oral rehydration and food supplementation, but such actions are only effective in the short term.

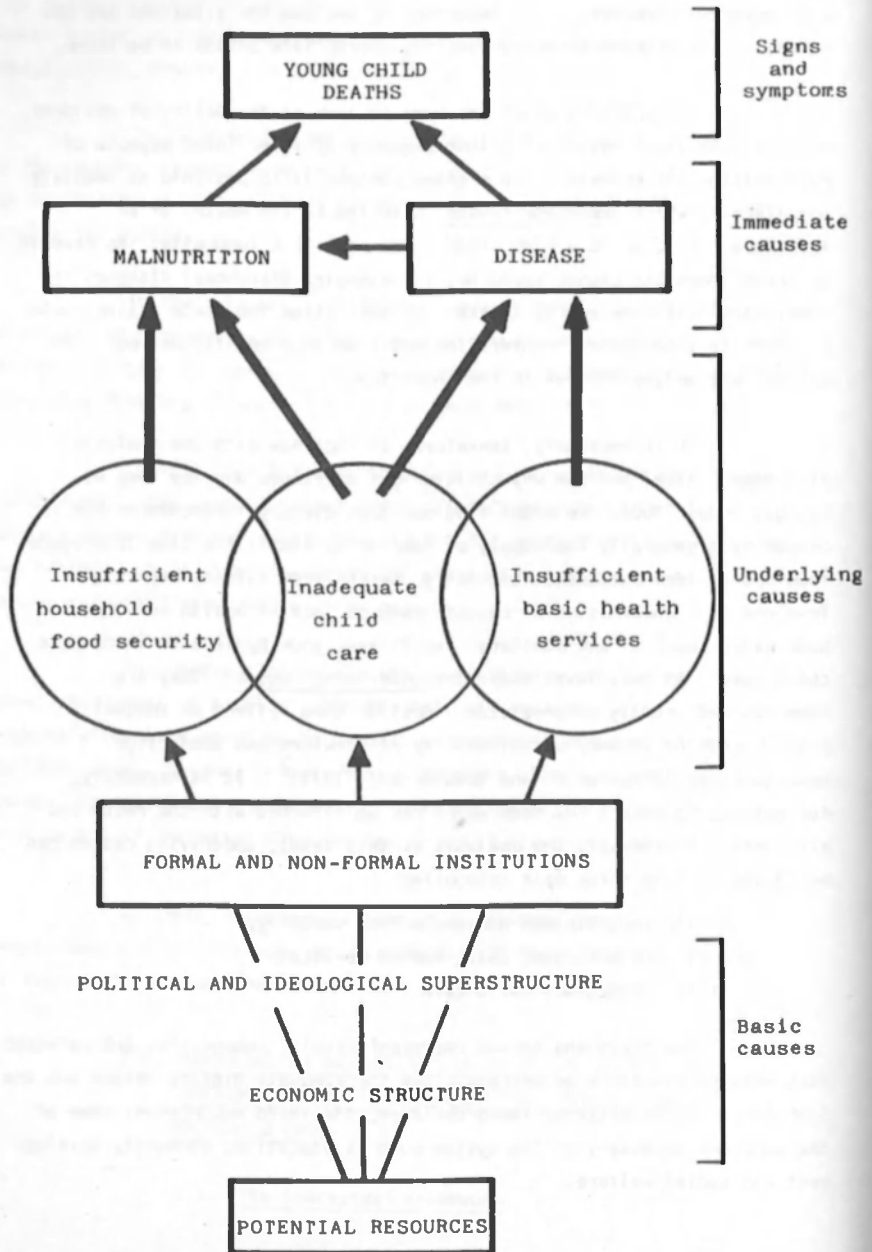
It is necessary, therefore, to continue with the analysis at a deeper level and ask why children get diarrhoea and why they do not get enough food. We might find out that dietary inadequacies are caused by a generally low supply of food or by too little time to prepare food and to feed children. Similarly, deaths from disease may result from one or a combination of causes, such as lack of health services, poor water supplies and sanitary facilities, poor hygiene or inadequate child care. At this level these are underlying causes. They are numerous and usually interrelated. Most of them reflect an unequal distribution of income, unavailability of services and production opportunities (Kreysler J. and Schulze W.I. 1973)⁷. It is necessary, for action, to select the ones which can be attacked with the resources available. To simplify the analysis at this level, underlying causes can be clustered into three main categories:

- i) Insufficient household food security;
- ii) Insufficient basic health services;
- iii) Inadequate child care.

The first and second represent crucial commodities and services that must be available as prerequisites for adequate dietary intake and the control of common diseases among children; the third encompasses some of the services necessary in the system such as education, community development and social welfare.

FIGURE 1

CAUSES OF YOUNG CHILD DEATHS



The reasons for poor distribution of commodities and services within geographical areas, or even within households, must be analysed and understood. At this level we are actually discussing the basic causes, the production, distribution and consumption of commodities and services which depend on the socio-economic structure of society. What is actually produced and consumed within a community is influenced by technical, social, political and ideological factors, as summarized in Figure 1.

3.2 The Food Situation

Within this conceptual framework one can go back and briefly analyze the reality and see the outcome of the national development strategies in improving the nutritional status of the population through improved food consumption, public health services and child care.

True, several efforts have been made by the government to outline agricultural policies, including strategies for self-sufficiency in food. The strategies have involved providing conditions and facilities for increased food production and better distribution. On the average food production has been increasing annually as shown in Table 1. Statistics also indicate that food production has been increasing at an average rate of 5 per cent per annum. At the same time, however, cash crop production has been declining at the rate of 3.5 per cent per annum (see Table 2)⁸. What is not clearly known is to what extent and which population groups have been affected by the food problems.

Table 1: HARVEST OF MAIN GRAINS AND CASSAVA IN TANZANIA 1972/75-1979/80

Crops	(000 TONS)							
	1972/73	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80
Maize	840	761	1,367	1,499	1,673	1,465	1,882	2,117
Paddy	189	228	289	346	314	387	449	282
Sorghum	195	200	304	430	521	613	823	922
Millet	99	114	146	132	220	309	459	219
Wheat	91	85	82	69	64	55	52	54
Cassava	1,004	1,046	1,195	1,764	1,278	1,936	1,936	1,213
Total	2,418	2,434	3,383	4,240	4,070	4,765	5,601	4,807

Source: TFNC Data Report on the Food and Nutrition Situation in Tanzania, 1982

Table 2: SOURCES OF OUTPUT GROWTH 1972-80

CROP	ANNUAL GROWTH RATE (%)		
	OUTPUT	AREA	YIELD
Maize	8.79	6.92	1.87
Paddy	3.69	4.11	-0.42
Millet and Sorghum	13.71	11.33	2.38
Wheat	-1.40	-3.32	4.72
Cassava	5.61	5.29	0.32
Beans	10.68	10.73	-0.05
Coffee	00.21	15.11	14.90
Tea	3.70	2.00	1.70
Tobacco	-8.96	1.04	-10.00
Cotton	-3.09	-2.33	-0.76
Sisal	-3.09	-2.33	-0.76
Food Crops	5.04	6.39	-1.35
Cash Crops	-3.45	-2.26	-1.19
All Crops	3.66	4.80	-1.14

Source: Ministry of Agriculture, National Food Strategy Report, 1984

An analysis of available data shows that in general the increase of food production is accounted for by area expansion; the yield per unit area has actually declined. The situation worsened during the middle of the 1970s when the area under maize cultivation spread rapidly due to the National Maize Project (TFNC Data Report 1973/74-1977/78). The livestock sector was confronted with the problem of overstocking causing low productivity and land degradation in the semiarid regions. The main problems facing the livestock sector are poor distribution of water, tsetse fly infection, weaknesses in economic and social infrastructure and lack of comprehensive land use planning.

Fish catches have also been poor since the late 1970s because of the nonavailability of fishing gear, nets and other fishing equipment.

Attempts to promote commercial fish production through parastatals and Ujamaa villages have not been very successful. Small fishermen have actually been neglected.

In general the total outlook of the food situation in the country has not been favourable. Domestic food production has not kept pace with the population growth and rising demand, particularly for livestock products for industrial and human consumption in urban areas. In addition, evidence from Sigma One Corporation (1982) shows that the urban population has changed its consumption patterns, leaning towards maize, rice and wheat, necessitating substantial imports of cereals.

3.3 Food Consumption Levels in Rural Tanzania

In most rural households in Tanzania the diet consists mainly of one staple food: maize, rice, cassava, sorghum or millet. The staple is supplemented with a relish made from vegetables and/or beans and eaten with meat, fish or chicken. Under normal circumstances the diet is both varied and palatable.

Household food consumption patterns have been reported in a Household Budget Survey conducted by the Bureau of Statistics. Data from the survey indicate that the average per capita food consumption was enough to satisfy energy requirements. The average daily calories available per capita has been estimated at 2,417 Kcal, representing 104 per cent of the minimum requirement recommended for Tanzania by FAO/World Health Organization (WHO) Committee of experts. In practice, on the average, more than half of the people in the country have a calory deficiency⁹. In poor harvest years, the situation is substantially worse. There is also considerable variation in the actual caloric intake of individuals.

There is some evidence on the nutritional status of rural Tanzania from the few food consumption and nutrition studies conducted in the past¹⁰. The main conclusion from the studies is that families which produce their own food are better able to feed themselves than families who depend on exchanging cash or services for food in the market.

Four villages were studied by Seshamani, L. (1980) in Iringa region in 1979, before harvest (April/May) and post-harvest (October/November)¹¹. One of the villages studied primarily supplied labour to nearby tea estates in return for cash. The second village produced onions for cash and, in times of crop failure, had come to depend on food aid for survival. The third village had diversified production and the fourth specialized in maize production. It was found that all the four villages were well below FAO standards for caloric consumption. The village which was the highest in consumption of calories was the one highly dependent on food aid. Calorie consumption, as a per cent of the recommended level, decreased from 79 to 70 as food aid was phased out. Mean calorie adequacy in the village which specialized in maize production improved from 56 per cent in the pre-harvest period to 81 per cent post-harvest. The village which supplied labour to the tea estates had the lowest average calorie consumption, 49 per cent of the standard requirement in the first period and 44 per cent in the second period.

These studies and several other studies (Maletnema and Mhombolage 1974) are only representative samples. They are extremely limited in area and time of coverage. They do, however, tend to confirm the conclusion that rural families which produce their own staple foods are retaining significant quantities for quantities for their own consumption. It is also observed that over 75 per cent of energy intake, and between 40 and 70 per cent of protein intake, come from cereals and starches.

Action to improve food availability and consumption should not only be taken in areas with unfavourable agro-ecological conditions but also needs to be extended to more fertile areas where the main part of the land is used for non-food crop production. It is necessary to assess the food security of the community, or food availability in each household. Certain households have larger problems than others with food supply because of a number of factors. These include low soil fertility and inaccessibility to production inputs, poor post-harvest handling and improper household food planning, and marginal food supplies. These are compounded by storage losses and pressures to sell crops. These will be found to be some of the problems that cause many households to experience temporary low food availability and low consumption levels.

In addition to basic staple food availability, food items

providing important protein, vitamin and mineral supplements are usually even more prone to seasonal fluctuation. Fat-rich foods like oils and animal fats are usually rarely available or consumed because of low production and inadequate local processing facilities.

To promote household food security, especially of households with low food availability, the following need to be emphasized:

- i) promotion of drought-resistant crops;
- ii) promotion of small-animal husbandry;
- iii) promotion of home gardening;
- iv) control of food storage losses;
- v) household food and nutrition planning.

3.4 Child Care and Feeding Practices

Knowledge of food consumption levels among the vulnerable groups children, pregnant and lactating women is vital. Food that is adequate in both quantity and quality is necessary for child survival and growth. Pregnant and lactating women require extra energy to meet the requirements brought about by physiological changes in their body.

Inadequate intake and utilization of nutrients among children results in malnutrition. Infant children start with breast milk which is an ideal food for the growth and development of infants. Breast milk will provide adequate nutrition for infants for the first 4-6 months of life.

In Tanzania most mothers continue to breastfeed their children up to 18-21 months. Survey data also indicate that in rural areas there has been no significant decline in breast feeding over the years, but that the frequency of breast feeding is lower in urban than in rural areas¹².

It is known that nutrients are present in human milk in a well-balanced, highly available form for the growing infant. But during this early period, if infants do not get enough milk from the mother for one reason or another, there is a high chance of the child suffering from nutrient deficiencies. Even if breastfed, a child requires weaning or additional foods after the first three months.

In most areas in rural Tanzania the introduction of other foods commences around the age of 6 months and usually consists of a

gruel made from the local staple food. The natural properties of gruels made from all cereal grains and tubers are starch, and they contain more than 90 per cent water. The average gruel is estimated to have an energy density of 1cal/g. Therefore, at the time of weaning there is a sudden and significant drop in the energy intake, since breast milk has an energy density of 6 cal/g.

That is why during the weaning period, most children may fail to grow. The drop in growth-rate is also due to the monotony of the foods, reduced appetite and bulkiness in the food. Quite often children are weaned abruptly, when they get diarrhoea, or when a mother discovers that she is pregnant again. There is no time allowed for the baby to get used to the new foods and tastes.

In rural Tanzania there are increasing demands on women to participate in community development activities and household farms. In such circumstances mothers may leave the children at home and breastfeed less frequently. In such a case the total amount of breast-milk consumed per day may be inadequate to meet the child's needs. An alternative is to introduce food supplements earlier.

From around one year of age, children are given more and more adult food, which normally is based on the staples, such as 'ugali' or boiled bananas.

3.5 Nutrition Status and Primary Health Care

3.5.1 Nutrition Status

In Tanzania, no nation-wide nutrition survey has been undertaken. However, community studies show that a relatively high proportion of young children, in some areas as high as 5 per cent of those examined, suffer from severe malnutrition. If children with significant weight deficiencies (shown in Table 3) are included the figure rises to above 10 per cent.

Table 3: NUTRITION STATUS ACCORDING TO SOME SURVEYS OF CHILDREN UNDER FIVE

Location	All forms of PEM Percent	Severe Percent
Hombolo - Makulu	21.0	1.7
Misin	22.0	4.8
Kisarawe	28.0	7.6
Karagwe	12.0	1.5
Tabora	8.2	1.0
Kilimanjaro	24.0	5.3
Morogoro	7.6	5.0
Mlolo (Lushoto)	11.0	8.9
Pangani Basin	28.0	-

Source: (TFNC) Data Report on the Food and Nutrition Situation in Tanzania, 1982

During the period 1978 - 80 the Tanzania Food and Nutrition Centre (TFNC) also surveyed several villages in the Iringa region¹³. The prevalence of children severely underweight, according to the Waterlow classification, ranges from 0.4 per cent to 10.1 per cent. These indications of serious protein-energy malnutrition (PEM) have been confirmed by the observations of medical staff from MCH Clinics and other health institutions.

The most important conclusion to be drawn from survey data in the country is that the degree of severe and moderate malnutrition is constant over time and geographic location. The differences between nearby villages, as well as seasonal variations, are often larger than the differences among regions and over years. Looking at individual cases of malnutrition and how their condition has developed over time it has been seen that a series of disease episodes and dietary inadequancies reinforce one another and lead to more or less overt signs of malnutrition.

In general, the morbidity pattern among children in Tanzania does not differ much from that found in other sub-tropical African countries. Several sources of data by Kimati V.P. (1979) about morbidity and mortality are available in the form of nutrition surveys, MCH

Table 4: SOME SURVEY RESULTS IN IRINGA REGION

Village	Total No. of Children Examined	Siblings Mortality Rate/1000	Severe PEM % W/A Below 60%	All Forms of PEM % W/A Below %
Igominyi	189	137	5.7	63
Ujuni	171	248	3.4	62
Ukwena	219	269	7.3	66
Makoga	252	131	5.4	72
Lihagule	141	141	2.1	46
Isoliwaya	321	184	5.6	66
Lupande	198	200	10.1	75
Lunguya	268	137	6.7	64
Ifupira	242	109	4.1	48
Mbuyuni	176	286	2.7	40
Nangalali	224	190	4.0	47
Nangawe	186	234	4.8	37
Tulanzi	239	166	6.7	48
Itengule	234	186	8.2	39
Nakungu	218	128	0.4	41

Source: TFNC Iringa Region Nutrition Survey Main Report, 1981.

statistics and hospital statistics. Estimates for infant mortality in Tanzania were put at 135/1000 in 1980.

The five most common causes of morbidity and mortality in the paediatric ward of the largest hospital in Tanzania are: acute respiratory infection, diarrhoea, measles, malaria and low birth weight¹⁴. MCH statistics give a more valid picture because more children who attend the clinics are investigated. According to MCH clinics, important childhood diseases are: anaemia, diarrhoea and measles. Data from community surveys indicate that diarrhoeal diseases, fevers and respiratory diseases are the most common.

3.5.2 Primary Health Care

Since 1980, a strategy for Primary Health Care (PHC) in Tanzania has been discussed. The strategy produced in 1983 outlines an

organization for the promotion and supervision of PHC from national to village level. It also describes in detail a new Village Health Worker Programme (VHWP), which also includes a strategy for the training of Traditional Birth Attendants. The PHC programme includes the following strategies: health education, promotion of food supply and nutrition, safe water supply, MCH services (including family planning), immunization for prevention and control of locally endemic diseases, appropriate treatment for common diseases, provision of essential drugs.

The new health policy clearly emphasizes equitable access to health services. In spite of this commendable development, the health situation of the people of Tanzania has not improved as much as might have been expected. The most important problem facing the health services, sector is probably the fact that the infrastructure is not efficient and effective enough at present.

4.0 TRAINING INSTITUTIONS

Most discussions here have elaborated the multisectoral nature of the problem of food and nutrition. We have also agreed that when designing actions for solving the problem it is necessary to identify all the relevant sectors which are going to be involved in one way or other. To achieve this objective it is necessary to know the potential and existing training institutions which are the sources of the manpower required to deal with the problem.

In Tanzania the sources of the manpower for food and nutrition related activities can be found at different levels of society. The most effective cadre at present are extension workers and are found at the regional, district and village levels. Extension workers are trained and supervised by specific ministries and institutions. That is why the training institutions which are mentioned below are grouped according to the parent ministries.

4.1 Ministry of Agriculture and Livestock Development

The Ministry of Agriculture and Livestock Development has under its portfolio 16 training institutions (MATIs). Each MATI has a specialization in one or more aspects of agriculture and livestock,

as follows:

- General Certificate in Agriculture/Livestock
- Diploma in Crop Production
- Diploma in Animal Production
- Diploma in Agro-Home economics - Uyole
- Diploma in Food Science and Applied Nutrition - Ilonga.

4.2 Ministry of Health

The Ministry of Health trains a variety of cadres in the medical and health fields. The formal training institutions under the Ministry of Health can be grouped as follows:

- Maternal and Child Health Aids Training Centres
- Public Nurses/Midwife Training Schools
- Public Health Schools
- Rural Medical Aids
- Medical Assistants Training Schools
- Assistant Medical Officers.

With the new emphasis on primary health care delivery, the Ministry of Health has introduced informal training programmes for Village Health Workers (VHW) and Traditional Birth Attendants (TBA). Candidates for such courses are selected from the villages and undergo short courses and supervision within the district hospitals.

4.3 Ministry of Education

The Ministry of Education is the key training ministry at the national level to provide manpower for all sectors. Training institutions which are directly under the Ministry of Education are:

- Teacher Training Centres
- Secondary/Technical Schools
- Folk Development Colleges
- Universities.

4.4. Prime Minister's Officer (PMO)

It is the Prime Minister's Office which has the responsibility for cutting across all aspects of rural development. The main task of

the PMO is to guide national policies and supervise and evaluate rural development projects. Some of the institutions which are directly under the PMO are as follows:

- Community Development Centres
- Co-operative Colleges
- Rural Development Institutes
- Social Welfare Training Institutes
- Rehabilitation and Vocational Centres
- Audio-Visual Institute
- College of Art
- National Institute of Culture.

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2.4 KENYAN NUTRITION AND ECONOMIC DEVELOPMENT: POLICIES AND STRATEGIES

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BACKGROUND

1. In the past years much has been said about the magnitude and implications of malnutrition and the need to attack the problem with greater urgency. In the present and past National Development Plans of Kenya, mentions have been made of the need to consider incorporating nutritional factors into projects. This was stated more clearly in the 1979 to 1984 Development Plan when it was specifically noted that in future there will be a need to incorporate nutritional factors into agricultural and rural development projects. This was further amplified in the 1984-88 Development Plan. However, even when nutrition objectives are clearly specified in the development plans, their relative priority as measured by resource allocation has been low.

2. It is therefore pertinent to raise the whole issue of whether a convincing case has been made for the need to direct more resources to nutritional problems. Until a convincing case is made it will be difficult to change the attitude of the decision makers to alter their peripheral view of the magnitude of nutritional problems.

3. Since 1979 attempts have been made to define more sharply the issues related to malnutrition. New conceptual frameworks have been evolved. In effect an attempt has been made to put a case for the role of nutrition in the mainstream of development. This discussion is an attempt to look at the multi-faceted nature of nutrition and its impact on the socio-economic development of the country.

4. It should be emphasized that nutrition problems cannot be overcome in isolation from other factors within the economic framework.

The problems of malnutrition are interrelated and the approach to tackle them must be multi-policy and inter-disciplinary.

NATURE OF THE NUTRITIONAL PROBLEM

5. Nutrition problems in Kenya have been documented in various reports in the past years.¹ Recent child nutrition surveys in Kenya have shown that about 28 per cent of pre-school children are stunted.

6. It is also estimated that about 1 million households are under-nourished and may be susceptible to hunger. Time-series data indicate that the national prevalence of malnutrition has increased slightly over the period 1972 to 1982. The prevalence of malnutrition is highest in the West of the country and in Coast Province. Table 1 indicates prevalence by province for children between one to four years, as measured by stunting and mean height for age.

7. Table 2 shows that malnutrition is unevenly distributed between the districts. It is important to note that about 55 per cent of all stunted children are in 9 of the 26 districts surveyed.

8. The most common form of malnutrition in Kenya is Protein Energy Malnutrition (PEM) which is caused by lack of food and manifests itself clinically as Kwashiorkor or Marasmus, or both. The symptom of Kwashiorkor is severe oedema, or swelling of the body. Marasmus makes a child extremely thin with little muscle mass, and bones showing through the skin. In its severe form, PEM can be fatal. Moderate PEM is more prevalent. This can also have serious long term consequences as will be discussed from paragraph 37 of this paper. Other nutrition-related problems include vitamin deficiency, goitre and nutritional anaemia.

9. Nutritional surveys in Kenya have focussed on young children and the level of PEM. Anthropometric measures based on weight, height

1. The reports include among others CBS (1977, 1979, 1982), Oniango (1982) IDS Occasional Paper No. 14, Nairobi, (1975).

Table 1: Percent Children 1-4 Years Old Stunted and Mean Height-for-Age in 1977, 1979 and 1982, By Province

Province	1977 (NS1)		1979 (NS2)		1982 (NS3)	
	Percent	Mean	Percent	Mean	Percent	Mean
Central	26	93.6	27	94.5	24	94.0
Coast	(14)*	96.3	40	92.9	39	92.2
Eastern	34	92.8	24	94.6	27	93.3
Nyanza	21	94.7	34	93.6	33	93.4
Rift Valley	25	94.0	24	94.2	22	94.9
Western	16	95.0	24	94.0	30	92.9
National	24	94.1	27	94.5	28	93.7

* Data unreliable due to small sample size.

Source: Republic of Kenya, Third Rural Child Nutrition Survey, 1982, Nairobi, 1983.

and age have been used to derive indicators such as Weight for Height (WH)¹, Height for Age (HA)² and Weight for Age (WA)³.

10. Other indicators that have been developed and linked to the

1. A child's Weight for Height (WH) is an indicator of nutritional wasting, reflecting severe short-term deprivation in the child's immediate history. A child is wasted if he has less than 80 per cent of median.

2. Height for Age is an indicator which shows long term nutritional status. A child with low HA is referred to as stunted, and has less than 90 per cent of the median height for age.

3. Weight for Age (WA) is not independent of Weight for Height or Height for Age, but is the combination of these two indices. Low WA may be due to a child's reduced growth rate over a long period of time or because he has recently suffered from an episode of acute malnutrition in spite of previously being well-nourished.

Table 2:

INDICATORS OF NUTRITIONAL STATUS AND OTHER SELECTED INDICATORS BY DISTRICT

District	Percent Stunted	Percent Wasted	Mortality		Percent Sick	Malaria Percent of cases	Percent Children with mothers having no education	Percent without piped water	Percent without sewage facilities	Population Density		Child Pop. 0-4 (x 1000)	No. Children stunted (x 1000)
			Census	Survey*						Persons/ Sq. Km	Personal/ Arable Sq. Km		
Kilifi/Tana River/													
Lamu	42.1	5.1	206	15.7	64.1	25.8	85.8	74.7	64.9	10	70	105 ^a	44
Kwale	38.5	4.9	190	19.4	43.4	23.8	83.0	86.0	81.5	35	190	53	20
Siaya	36.6	6.3	211	20.4	61.1	32.6	51.5	98.1	36.1	187	187	81	30
Nakuru	34.5	2.3	97	8.2	43.6	9.2	54.9	85.8	14.3	74	158	101	35
Kisii	33.1	5.0	101	9.5	57.7	20.9	51.6	99.0	17.4	395	395	180	56
Kitui	30.0	1.8	148	10.2	37.4	25.0	70.9	100.0	72.1	16	39	83	25
Kakamega	26.7	2.0	143	14.0	56.2	31.0	46.2	96.5	16.4	293	293	201	54
South Nyanza	25.3	1.5	216	16.1	58.4	31.6	56.9	99.5	68.8	143	143	145	37
Murang'a	24.8	4.2	68	7.3	42.1	11.3	28.1	76.2	2.8	262	310	127	31
Bunoma	24.7	2.0	140	9.8	49.6	30.4	35.1	89.3	25.2	164	199	105	25
Kirinyaga	24.5	1.9	82	7.9	35.3	14.4	43.3	77.7	4.1	203	270	53	13
Machakos	23.1	2.9	98	7.9	46.9	19.6	38.3	95.3	36.8	72	114	189	44
Embu	22.3	2.0	83	8.8	45.0	16.7	34.9	89.1	19.3	97	104	51	11
Busia	21.1	2.1	198	17.5	72.6	27.6	88.4	99.3	26.6	183	133	56 ^h	12
Narok/Kajiado	19.8	2.5	87	4.9	32.1	15.8	72.6	93.2	79.2	9	39	90 ^h	18
Kisumu	19.8	3.4	199	20.0	60.7	34.7	36.5	87.5	7.8	232	232	86	17
Baringo/Laikipia	19.4	6.4	128	12.7	47.7	12.2	55.4	93.0	41.7	17	89	80 ^h	16
Trans Nzoia	19.1	2.8	114	12.1	41.8	17.5	44.5	86.8	25.3	105	125	53	10
Elgeyo Marakwet/													
West Pokot	18.6	2.1	160	11.6	49.3	18.6	53.8	98.1	54.5	39	149	70 ^d	13
Nyeri	18.5	3.0	49	3.2	44.9	1.4	13.4	78.6	0	148	130	87	16
Kericho	18.1	3.0	91	7.2	28.4	14.9	64.8	85.7	66.4	130	167	128	23
Uasin Gishu	17.8	2.7	92	9.9	24.7	19.8	41.6	95.2	48.5	79	92	57	10
Kiambu	17.5	1.2	70	7.7	30.6	4.5	40.1	75.0	0	280	375	125	22
Meru	16.8	3.3	75	7.3	41.0	15.7	43.9	68.4	14.1	84	247	160	27
Taita Taveta	14.7	4.7	116	10.1	46.4	23.9	40.9	80.5	14.7	9	284	26	4
Nyandarua	12.4	2.0	64	5.5	25.4	1.7	35.2	82.4	2.0	66	88	47	6
Mandi	12.1	3.3	110	9.8	48.1	13.8	46.1	79.6	53.1	109	128	58	7

* Number of children dying in first 2 years of life per 1,000 based on 1979 census estimates by Mr. Kibet. Population Studies

Research Institute, University of Nairobi. As presented by the child mortality in Kenya Map. UNICEF Social Statistics Programme.

** Calculated for each child, as number of siblings died/number of children ever born to the mother (percent).

Source: Percent malaria cases - Ministry of Health, Health Information Bulletin, Kenya, 1980

Land areas - Kenya Population Census, 1969, Volume IV, CBS

(a) Kilifi 81, Tana River 17, Lamu 7 (b) Narok 43, Kajiado/

Population figures - Kenya Pop. Census, 1979, Vol.1 CBS (c) Baringo 31, Laikipia 26 (d) Elgeyo Marakwet 36, W. Pokot 30

Source: Republic of Kenya, Third Rural Child Nutrition Survey, 1982, Nairobi, 1983.

nutritional status of children include mortality, morbidity, prevalence of certain diseases like malaria and diarrhoea, distance to basic social amenities, and level of environmental sanitation.

11. Children's nutritional status in Kenya is given in Appendix 1. It is, however, important to note that nutritional wasting or acute malnutrition is less prevalent than stunting or chronic malnutrition. A child who is both stunted and wasted is normally more nutritionally disadvantaged than one who is only stunted or wasted.

CONDITIONING FACTORS IN MALNUTRITION

12. Causation of malnutrition is more than a medical problem. The root causes of malnutrition and ill-health are diverse. Malnutrition, hunger and ill-health are symptoms of the interaction of several factors (Kwofie and Wasonga, 1984). The causes are dysfunctions in economic, demographic, cultural and economic process (Taylor). In the following paragraphs we discuss major contributory factors for malnutrition.

13. Agricultural factors: Low agricultural productivity in the past years has limited attempts to improve nutrition. The production of agricultural commodities has fluctuated greatly since 1980. The worst period was in 1984 when, due to widespread dry weather conditions, there was adverse effect on food crop production. Table 3 shows that maize production in 1984/85 dropped by 35 per cent compared to 1983/84 (Economic Survey, 1985). The production of other crops such as beans and potatoes was much lower.

14. The crop yield per unit of land has shown an increase from 1038 kg/ha in 1960-65 to 1677 kg/ha in 1980-82. The annual growth rate of these increases, 2.6 per cent, is however lower than the annual population growth-rate, estimated at 4 per cent.

15. The proportion of arable land utilized for cereal crops declined from 90 per cent in 1960-65 to 70 per cent in 1982. This could partly be explained by the extension of farming to marginal lands

Crop	Million Bags				
	1980/81	1981/82	1982/83	1983/84	1984/85
Maize	17.60	21.86	26.10	24.20	15.80
Beans	1.34	2.22	3.20	3.00	0.76
Potatoes	2.40	4.24	6.10	5.10	2.59

Source: Economic Survey, 1985

reducing the proportion of land to grow more than one crop a year (H. Rempel, 1985).

16. Inequalities in land distribution is another important factor in agricultural production and hence food availability. The per capita arable land in 1981 was 0.1 ha. This is not likely to change dramatically given the high rate of population growth and the country's technical incapacity to reclaim the less arable land.

17. Low agricultural yield is further aggravated through post-harvest food losses due to poor storage, inadequate transportation, food processing and left-overs. It is estimated that food losses vary from 2 to 20 per cent, depending on the type of crop. For instance the Ministry of Agriculture estimates that about 15 per cent of maize produce is lost, 15 per cent of rice, 15 per cent of sorghum, 2.2 per cent of wheat.

18. Other factors that affect food production include availability of agricultural labour, agricultural skill and the motivation of the labour force to undertake farming activities.

19. Socio-economic factors: The primary cause of malnutrition is poverty. Special attention should thus be paid to it, since it directly influences food consumption. A recent analysis of the Household Budget

Survey data indicates that the lower income groups spend a larger proportion of their disposable income on food than the higher income groups, (Central Bureau of Statistics 1982 Survey).

20. Food production can also be increased by correct agricultural pricing policies. Such policies must be carefully evaluated however, because they make food unavailable to the poor, since they lead to reduced purchasing power for the low income groups. Economic policy will have to consider the income distribution effects of such policies and they must be linked to adequate support facilities such as transportation and storage.

21. Population Issues: High population growth limits the amount of food and arable land available per capita. It also exacerbates other social problems that worsen malnutrition.

22. Improvement in people's nutritional status can only be realized if the food production increases at a rate higher than that of population. In Kenya, the agricultural production growth rates have shown a decreasing trend over time.

23. The implication of this trend is that the population is not adequately provided with food, and the country cannot be self-sufficient in food requirements. Indeed by June/December, 1984/85 crop year, it was projected that at least 900,000 tons of cereals had to be imported or received as food aid in order to meet the cereal requirements of the country.

24. The rapid population growth in Kenya is causing a land scarcity that also has important effects on nutrition. First, an increase in cultivated acreage becomes difficult in many areas. Secondly, the surplus labour force in the rural areas leads to an influx of population into towns. Third, the high population density reduces farming efficiency since the level of mechanization is diminished when the land-holding sizes become smaller.

25. The quality of attention given to individual children will be lower in larger families. The fertility survey carried out in Kenya (Henin and Mott, 1979) indicated that each mother is expected to have an average of 8.1 children. The average household size is estimated to be 6.7 people (adult equivalent). These are high figures to be faced for sustained, improved nutritional status in such households. A reduced family size is therefore called for.

26. The high population growth can be attributed mainly to low child mortality resulting from an improvement in health facilities. It would appear that better health and nutrition would have the initial effect of increasing population growth by reducing mortality. In the short run this will affect the population in the direction of increase.

27. On the one hand, improved nutrition should increase productivity, which leads to increased income per capita. On the other hand, reduced mortality would accelerate the population growth, tending to lower the income per capita.

28. In the long run, it has been observed that a decline in fertility will lead to the per capita income rising and population growth rates falling, even nearing total stability (Alan Berg and R. Muscat, 1972).

29. The implication of this observation is that one of the significant factors in encouraging small family sizes is to ensure declining mortality. As parents' confidence in the survival chances of their earlier children rises, their need for additional children to ensure achievement of desired family size declines. Thus better nutrition, which lowers child mortality, can favourably affect one of the most important variables determining the fertility rate.

30. Relevant nutrition programmes may lead to incentives for families to accept family planning programmes. A survey on attendance at family planning programmes shows a high drop-out rate. This could be connected with ill-conceived efforts to implement the programme without relating it to the environment from which the participants come.

31. Paradoxically, it would appear that an important approach in lowering population growth may be to keep those children already born alive. Thus, the nutritional programmes should be designed to keep the children alive in order to assist in attaining family planning aims and objectives.

32. Cultural variables: The food habits adopted by a given community will limit the food available to those who are nutritionally vulnerable. The nutritional status of females in many communities in Kenya tends to be inferior to males, especially in times of food shortage and during child rearing and bearing. Poor nutritional status of women is related to dietary discrimination. In a study in East Pokot District (Ann Muir, 1983), it was observed that food and dietary taboos mainly pertain to pregnant and lactating mothers.

33. For example a pregnant mother cannot drink cow's milk or camel's milk during the wet season when there are insects known as 'Kiptaluk' living in the grass. Further examples: a breastfeeding mother cannot drink meat soup because it is believed it will make the child ill, as soup will pass through the mother's milk to the child. This applies until the child is one year. Also, during her monthly period a woman may not cook, milk animals, fetch water, or even give a male child who has lost his milk teeth any food. She cannot go near men or give them food. Neither can she drink cow's or camel's milk, nor can she go near the animals or let their shadow fall on her.

34. Another cultural factor that has been raised is the difference in the amount of breast-feeding. In Kenya, breast-feeding is widespread, particularly in the rural areas. The Second Child Nutrition Survey (1978/79) found that rural mothers breastfeed their children for an average of 14 months, and urban mothers, an average of 10 months. The 1982 Child Nutrition Survey found the average length of rural breast-feeding to be 18 months, which is higher than 1978/79 results. It should, however, be indicated that breast-feeding per se would not be sufficient to maintain the nutritional status of the child, especially from 4 months after birth.

It is thus desirable that supplements should be given to the child. Appendix 3 shows feeding practices by districts.

35. Basic needs services: Among the major causes of malnutrition is inadequate provision of basic needs services like water, health facilities, housing and roads. These services have been inadequate and at times counter-productive. In the recent Baringo Pilot Semi Arid Area Project (Kwofie 1983) it was found that accessibility or proximity to these basic needs services is closely associated with the nutritional situation of people living in the area where the project is located.

36. Physiological differences in nutrient requirements also influence the utilization of food consumed. Thus at-risk populations like pregnant and lactating women and young children can at times suffer from nutritional stress. This affects their ability to metabolize and ingest food.

IMPACT OF MALNUTRITION ON NATIONAL ECONOMY

37. It is now clear that malnutrition is a problem in Kenya. The level varies by region and among functional groups. In the subsequent paragraphs, we attempt to discuss what impact malnutrition can have on an individual and thus on the society and the development of the national economy.

38. There is a strong association between malnutrition and child morbidity and sickness. Malnutrition during foetal and infancy periods is related to intellectual impairment. It has been observed elsewhere that severe malnutrition reduces the size of the brain, decreases the number of brain cells and is responsible for abnormalities of behaviour (Alan Berg and Robert Muscat, 1977).

Studies in South America have shown that intersensory integration and language abilities are affected by malnutrition (Hoorweg, 1976). A study by the same author on PEM and intellectual abilities further showed that an acute malnutrition episode, as such, does not contribute to the impairment. Instead it is the degree of chronic under-nutrition that is related to later intellectual abilities.

39. Malnutrition interferes with the ability of the child to learn. This is because learning time is lost, the child is less curious and less responsive to stimuli, he is physically fatigued and often falls behind his age mates because of frequent bouts of malnutrition-related illness.

40. The most unfortunate aspect of child malnutrition is that its consequences are irreversible. It may lead to permanent mental retardation and physical abnormality.

41. Severe malnutrition during infancy may lead to physical underdevelopment. Heredity, of course, is the key to the ultimate size a child can attain, but it is nutrition that determines how close the child gets to his genetic potential (David Alwick 1979). Most of the population in a district prone to food shortages due to drought tend to have significantly shorter size compared to their genetic potential, mainly due to undernourishment.

The shortfall in body size may be related to reduced performance (this observation has to be investigated further). It may be related to reduced productivity. The birth weight of the child can also be related to the mother's nutritional status. Inadequate development of the mother's pelvic girdle can lead to complications at birth which would normally have adverse effects on the infant.

42. Undernourished workers tend to be less productive. Studies in industry have shown there is relationship between nutrition and productivity. Introduction of a feeding programme in the factory will lead to a direct improvement in output. The school feeding programme in Kenya has as its main objective an improvement in the nutritional status of school children. This would improve their output in terms of class performance. This is a strong justification for the programme. Undernourished school children, or workers in a factory, exert less energy and thus have reduced output.

43. Improvement in nutrition results in a higher quality labour force. It should be recognized that the quality of the labour force is

an important factor in economic productivity and general national development. Prevention of under-nutrition or malnutrition therefore is an important aspect in the effort to enhance economic development.

44. Prevention of nutritional problems is economically equivalent to the prevention of any other disease. As Alan Berg and Rober Muscat (1976) put it, an improvement of nutrition the returns an absent worker to the active labour force, or that overcomes a debility that is reducing a worker's productive capacity, or helps lengthen his working life, or that enables a child to return to school or to improve his understanding, or that enables an adult to absorb more effective inservice training or advice from agricultural extension officers, would clearly increase the flow of earnings over what it would have been in the absence of these improvements.

45. It should be appreciated nonetheless that an improvement in nutrition and health status of the labour force is only a necessary condition for an increase in productivity. It is not sufficient if other factors such as support facilities, appropriate technology and conducive working environments are lacking.

46. The economic implication of improved nutrition in the country is that the increased income of well-nourished workers will improve the standard of living of their dependants, thereby raising their current and future food consumption and productivity. The reduced incidence of disease among the well-nourished will improve their performance in national development.

47. Improved nutrition, through such efforts as the school feeding programme, is expected to realize returns from human-related investments such as education and in-service training.

CONCLUSION

48. This paper has attempted to point out some factors which the planners need to consider when designing projects aimed at improving the nutrition condition of the population. It is important to understand that the conditioning factors which lead to problems of malnutrition and ill-health are diverse. In fact malnutrition and ill-health are symptoms of the interaction of several factors. These factors include economics, demography, and culture. An understanding of the complex relationship between these factors is important in attempting to identify causes of malnutrition.

49. The paper further discusses the impact of malnutrition on the economy. It is observed that malnutrition problems can be devastating, especially among young children. Malnutrition interferes with the ability of the child to learn. It also leads to the physical underdevelopment of the child. An undernourished society has less productive workers than a well-nourished society.

50. Another important conclusion is that improved nutrition in the society promotes high productivity, which increases the income of the population. The increased income of the well-nourished worker will improve the standard of living of his dependants, thereby raising the current and future level of their contribution to the national economy.

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Discussion:

Kenya Country Paper By Wasonga and
Tanzania Country Paper by Wagara

- Dr. Kakitahi:** The two papers highlighted problem of population. Kenya is reputed to have the highest growth rate in the world while Tanzania's is 3.2 per annum. High Death rates from starvation, famine, high migration due to civil strife (e.g. Uganda) etc. Are the figures on growth genuine? Population needs synchronization with the capacity to produce food - large expanses of empty land still exist. Yet proportion of cultivated land is very small,? Are we masking our failure in agriculture by population issue. Food considerations - extended food production rather than deal with population growth?
- Dr. Ochetim:** We need to deal with the causes of poverty. Poverty is the primary cause of hunger and malnutrition. We should identify causes of poverty.
- Increase in food output by expanding area rather than by increased yield is alright for areas where a land frontier exists after exploiting virgin lands, we can talk of increased yields per unit area.
- Mzaale:** Both papers seem to imply that the problem is lack of information about the nature of the problem and hence imply the need to educate policy makers. What influences preferences of policy makers e.g. in budgetary allocation? Information will not necessarily lead to the provision of necessary funds. Do we need incentives for policy makers?
- Chikamba:** Casualty of malnutrition in Africa is well known but the institutional approach of elaboration has not been effective. The tendency to tackle problem is through the Ministry of Health supplementary feeding while agricultural rural development set up are not addressed. Institutions such as parastatals or institutions locked to MoH lack the political muscle to generate the necessary resources or attention.
- Kwofie:** Wasonga's paper p. 17 illustration; Almost every country will have some malnourished people but each has to determine what level constitutes a problem. Is it 5%, 10% or what? Once this is clear then design programmes to reduce it. All levels have to be dealt with: at national, sectoral and project level. In the past institutions have addressed immediate causes (nutrition specific causes). In the Tanzania paper there is no discussion of how the nutrition centre influences planning decisions designed to reduce hunger and malnutrition.

In Tanzania paper (p 21) who monitors? Is it Tanzania Food Nutrition Centre or who? Nutrition is multi-sectoral in planning. Hence not easy to deal with.

Wasonga: The institutional framework in Kenya is the FNPU, a small unit which is part of a Ministry. Location of the Unit is important in influencing decisions. In Kenya the FNPU/CBS are located in Ministry of Planning which can give instructions to operating Ministry's and which can influence budgetary allocation.

Mzaale: What is the nature of the nutrition problem and how does it relate to programme? Nutrition is a social investment which is not easily quantified. Returns are long term, and there may be no immediate pay-off. Hence the need for good information base on nutrition in order to argue the case for investment.

Kwofie: The causes of poverty are well taken. Causes differ in different countries. Economic Social and Government programmes/policies can cause poverty - Pricing policies, crop product policies etc.

Relating population to land alone is not adequate,
The capacity to use the land to produce the food is critical.

Wagara: Increased production by expansion of land works but deterioration of land occurs over time. Population should be controlled. The dictum of go and multiply is out of date.

Besrat: What is the structure of Tanzania Nutrition Centre?

Maletnlema: Wheat consumption and rice in areas where there are not grown is one the rise in most African countries. Maize is also replacing sorghum and millet. Although the latter are more suited to local environment.

Mriho: Prestige foods - the more wheat is consumed the more developed people feel. Demonstration effects of the policy makers' consumption patterns. Could bread be made from maize? Why is this not being developed?

Food preparation causes loss of nutrients.

Food Base - The wider the food base the better the food security.

Wagara: The Tanzania Food & Nutrition Centre -(TFNC), is parastatal - answerable to MoH for policies. The Governing body has representatives of MoA, Prime Ministers Office, Health etc. drawn from the technical Departments - Medical, Food Technology, Training, Projects in Research. TFNC also responsible for co-ordination. TFNC deals with Ministries directly but the proper procedure should be to go through the Ministry of Health. The handling of facts and strategies and style are the important factors.

Chikamba: Nutrition Commission should shift from MoH to the Ministry of Planning. Macro-projects and programmes are coordinated by the Ministry of Planning and it is better to incorporate nutrition in planning. Ministry of Planning is not all powers (nutrition Unit in Ghana used to be attached to office of the President). The Ministry dealing with planning is better able to integrate nutrition units programmes. The Unit should have analytical capability if it have to give advice. Information per se is not adequate to address nutrition problems, planning being a political process.

APPENDIX I

NUTRITIONAL STATUS OF YOUNG CHILDREN

Nutrition and development

Improving the nutritional status of Kenya's people is seen as an integral part of national development and social progress. Inadequate nutrition leads to childhood mortality, the frequency and severity of a wide range of illnesses, poor physical growth, mental development and productivity. Adequate nutrition helps to ensure good health, economic attainment and general well-being.

Enhancing nutritional status does not mean providing food in times of famine, epidemic and catastrophe. Malnutrition is a multi-sectoral problem. It is an integral part of a nation's food and agricultural policy and is interlinked with the distribution of income and household resources. "The causes of undernutrition are very much linked to those of economic inequality, poverty and socio-economic dependence Indeed, at any given time and place, undernutrition is but a response to, or a symptom of, existing socio-economic inequalities." (Kwofie, 1983).

Kenya provides evidence of the fact that even when aggregate per capita food supply for the population is satisfactory, undernutrition is not necessarily eradicated. This underlines the fact that nutrition is an indicator of the distribution of a society's resources. According to the findings of the Food and Nutrition Planning Committee on Food Availability, there is enough food in Kenya to satisfy the per capita nutritional needs of the population. (Masai, 1983, 11). The average per capita availability of calories has been higher than the FAO/WHO minimum daily allowance of 2362 calories since 1965, and was placed at 2810 calories during the period 1976 - 1980. Maize, cassava and pulses are the main dietary sources of calories (and protein).

Per capita protein availability (from maize, millet, beef, fish, pulses, and so on) was estimated at 79.3 grams per day in 1981, substantially above the FAO/WHO allowance of 46.0 grams. However, these per capita figures mask large inequalities in consumption, as well as in the spatial and temporary distribution of the food supply. As reviewed in reference 16, the incomes of approximately a quarter of Kenya's population are too low to provide adequate nutrition, and the proportion rises to 40 per cent if estimations are based on the food typically used in each region.

Malnutrition, morbidity and mortality

There are strong relationships between malnutrition and infant child morbidity and mortality.

Malnutrition increases the risk of illness

Malnourished children are more vulnerable to infection and have more episodes of disease than well-nourished children.

Malnutrition increases the severity of illness

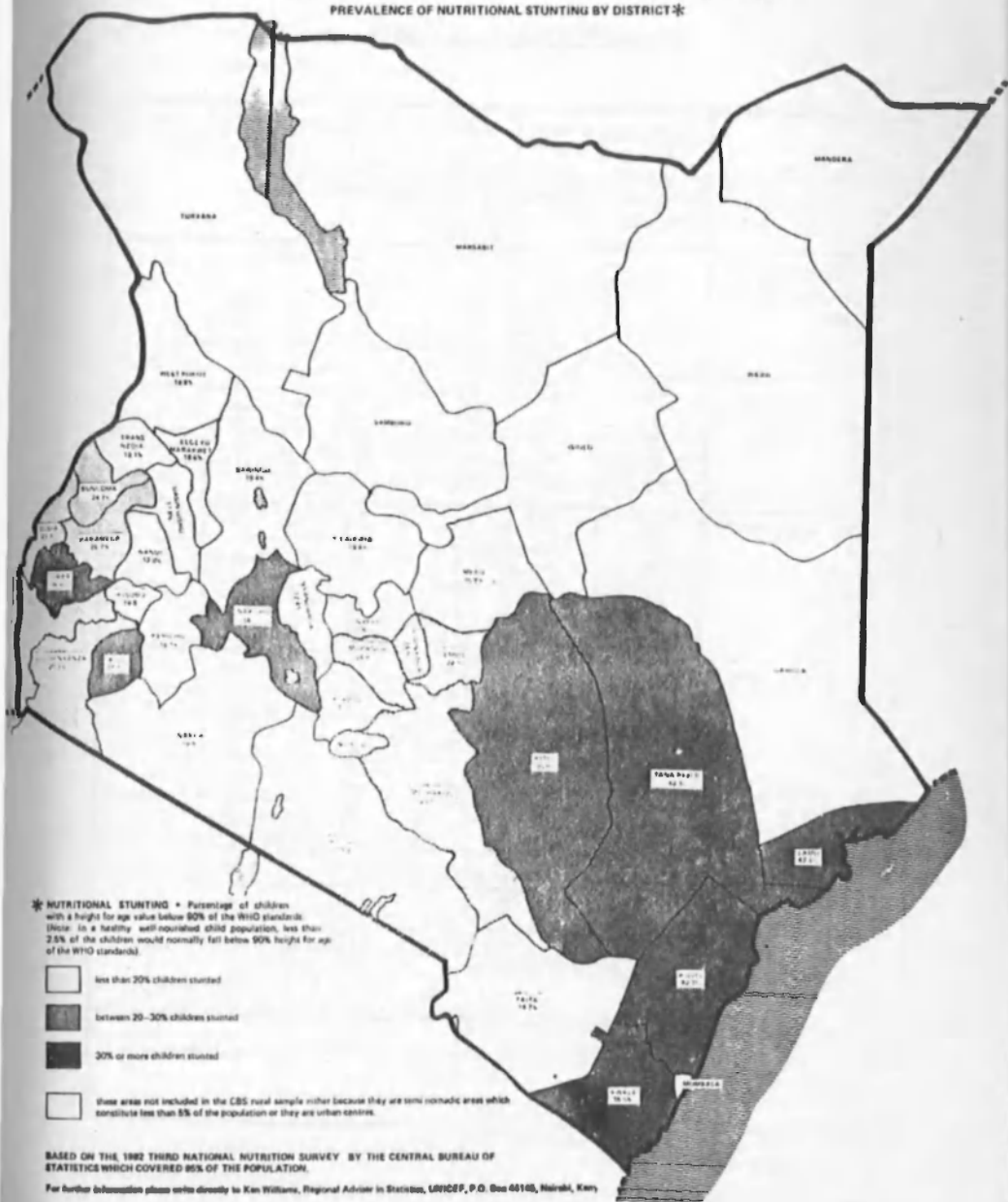
Malnourished children more often experience severe and acute forms of an illness, secondary infections or complications. They recover more slowly and die more often.

Illness increases the risk and severity of malnutrition

Illness threatens nutritional status by decreasing the appetite, inhibiting the absorption of food, or diverting the utilization of food from proper bodily use.

Malnutrition and illness tend to occur together. A malnourished child is likely to become ill and a sick child to become malnourished. A child who is both malnourished and sick is at risk of death.

APPENDIX II
 CHILD NUTRITION (3-60 MONTHS) IN RURAL KENYA 1982
 PREVALENCE OF NUTRITIONAL STUNTING BY DISTRICT*



APPENDIX III

FEEDING PRACTICES BY DISTRICTS

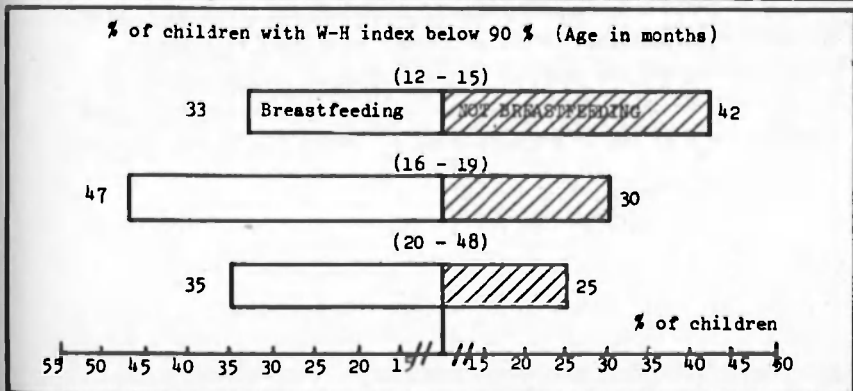
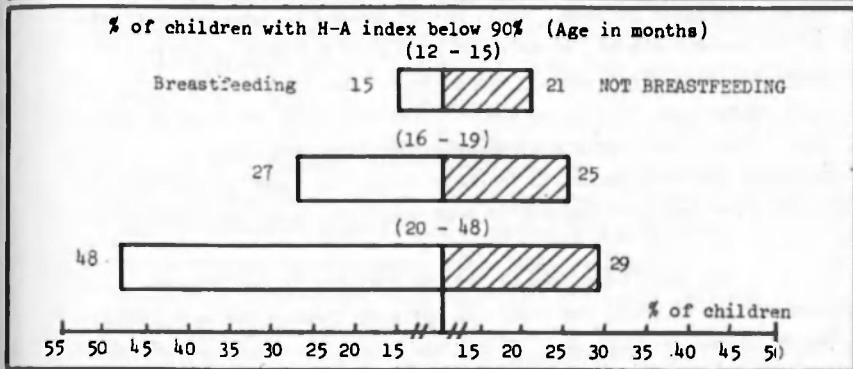
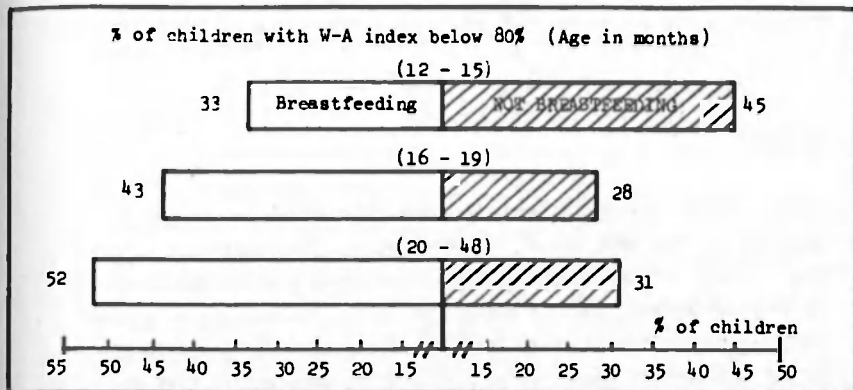
Province/District	Average Length of breast feeding (months)	% Ever used formula	% Not supplemented by age of 6 months	% Porridge as first supplement	% Maize Porridge only	% No milk
COAST PROVINCE	19	20	25	80	96	65
Kilifi/Tana River/ Lamu	20	16	13	77	98	73
Kwale	18	20	45	76	95	65
Taita Taveta	15	29	19	68	92	45
EASTERN PROVINCE	21	30	19	53	33	23
Machakos	21	26	18	42	36	13
Kitui	20	3	37	53	37	40
Meru	23	34	14	68	7	27
Embu	19	30	11	55	22	16
CENTRAL PROVINCE	16	20	14	33	36	8
Nyeri	15	18	19	46	11	14
Murang'a	15	28	14	20	34	11
Kirinyaga	19	24	18	47	16	7
Kiambu	17	15	1	16	55	3
Nyandarua	14	8	22	66	63	6
RIFT VALLEY PROVINCE	17	17	12	47	63	13
Nakuru	15	19	20	34	64	24
Nandi	17	13	9	61	90	23
Narok/Kajiado	15	19	17	39	61	2
Kericho	16	9	6	72	32	5
Uasin Gishu	18	19	12	26	92	7
Trans Nzoia	18	23	17	61	97	31
Baringo/Laikipia	15	20	14	39	33	14
Elgeyo Marakwet/ West Pokot	15	22	4	22	74	3
NYANZA PROVINCE	18	20	27	76	68	39
South Nyanza	16	24	39	85	47	39
Kisii	17	17	13	68	98	37
Kisumu	17	20	29	72	55	46
Siaya	18	20	33	82	56	41
WESTERN PROVINCE	19	16	22	76	91	47
Kakamega	17	17	19	79	94	45
Bungoma	22	16	31	70	96	45
Busia	19	15	26	76	66	59

Source: Central Bureau of Statistics, Nutrition Survey 3, 1982.

Appendix IV

Percent of children with indices below given values.

by age and breast-feeding status



2.5 FOOD AND NUTRITION IN SUDAN

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ABSTRACT

Sudan, being the largest country in Africa, would not be expected to face problems of food shortages. The country has, however, recently faced an abnormally severe drought which has covered, in varying degrees, most of Sudan's regions. The outcome is a fall in grain production so sharp that it has exceeded the capacity of normal measures to cope. Up to 8,400,000 persons are at risk of severe shortages of food. While relief operations have concentrated in the western region, other areas have also suffered severely. Nutrition data varies widely among the various regions, but surveys in Kordofan show that up to 530 children are dying daily of malnutrition. Many other pockets of malnutrition have been reported. Health problems can be expected to increase in Darfur, Kordofan, Central, Eastern and Northern Regions if food supplies cannot be assured.

The Nutrition Division of the Ministry of Health was established in 1969, and primarily operates through the main Child Health Centre in Khartoum. A Food and Nutrition Planning Unit was set up in 1984, but urgently requires resources and training in order to meet its objectives. Other government programmes relevant to nutrition include the proposed rehabilitation of irrigation schemes at Gezira, New Halfa, White and Blue Niles; the distribution of seed grains; and a series of projects aimed at controlling desertification.

2.6 FOOD AND NUTRITION IN UGANDA

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ABSTRACT

Nutritional problems in Uganda seem to stem not from inadequate food production, but from regional and intra-family food maldistribution. This lack of food equity is compounded by cultural practices which do not favour good nutrition; by poor purchasing power, especially among the urban and immigrant poor; by lack of a workable marketing and distribution system; by excessive food loss during storage, and by a very high rate of ill-health among children and mothers. Above all, there is a prevailing political instability which has led to a general breakdown in the national infrastructure and a lack of policy on nutrition.

The commonest nutritional disorders in Uganda are Protein Energy Malnutrition, anaemia, goitre, maternal malnutrition and, in the north, vitamin A deficiency. Fortunately bottle-feeding has not been a problem for many years now owing to the non-availability of breast milk substitutes. The land itself is still very fertile, and current estimates indicate that enough food is being produced. The Food and Nutrition Council was revived in 1980, indicating an awareness on the part of the government that this is a priority area, but the problems of malnutrition can only be effectively tackled through a co-ordinated approach backed by the necessary political will. In the absence of such a commitment things seem to be getting worse in terms of nutrition.

DISCUSSION

Food and Nutrition in Uganda

Alila: There is little discussion about factors which cause continued malnutrition and food problems. There is complete omission of discussion of access to land. Landlessness is a growing problem.

Alila: There are general issues relating to units which address themselves to nutrition. Are there some nutrition programmes in existence? To what extent have nutrition units been able to tap development resources for nutritional programmes.

Kakitahi: Food wastage: The Uganda Ministry of agriculture estimates food losses to be about 30% from harvesting, through storage to preparation.

Land: There are two areas in the highlands where land is scarce while other areas of the country have extensive virgin land but there are cultural problems limiting access food surpluses: There are some foods which are produced all the year round, for instance bananas. Land tracts of land are also devoted to cassava.

Food aid: Most of the food is from external sources. There is food mal-distribution. Individuals undertake massive food movements across the country.

There is also maldistribution of food within the family stemming from cultural problems. The most valuable group are women and children.

Kwofie: Uganda has food surplus. There is surplus food because people's production and consumption has not been disrupted. The major food crops are drought resistant i.e. bananas, cassava, millet and sorghum. With these kind of crops upheavals can occur without a disruption in food supply. Ethiopia is also similar to Uganda.

Ochetim: Uganda has a strong subsistence economy, not necessarily fertile land. Most of the food is produced by subsistence farmers.

2.7 INTEGRATING NUTRITION IN AGRICULTURE AND RURAL DEVELOPMENT: THE ZAMBIAN EXPERIENCE

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ABSTRACT.

The prospects for food deficit countries, such as Zambia, for achieving nutritional adequacy are not very bright. The necessary condition of having adequate food supplies is in itself difficult enough to meet, owing to shortfalls in agriculture and declining capacity to import. However, Zambia has embarked on a food strategy supported by growth-oriented policies and incentives to the agricultural sector. The paper observes that despite the fact that some programmes have included nutrition components - for example, IRDPs and women's programmes (implemented by the Home Economics branch in the Department of Agriculture) - there have not been systematic and deliberate efforts to incorporate nutrition at the programme planning stage, and little co-ordination between the Ministry of Agriculture and institutions charged with direct intervention in nutrition, such as the National Food and Nutrition Commission.

While there are no explicit policies for ensuring that any developments in agricultural and livestock production will benefit the poorest sector of society, there are other activities and programmes relevant to this goal: for example, food subsidies, NGO projects, and government interventions in special cases. The implementation of government programmes faces such constraints as inadequate food supplies, income disparities between rural and urban areas, and over-centralized planning structures. Manpower for developing policy and for project analysis is also in short supply.

3. FOOD AID, NUTRITION AND HEALTH

3.1 NUTRITION IN PRIMARY HEALTH CARE: THE ZIMBABWE EXPERIENCE

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Ministry of Health.

I. BACKGROUND

Zimbabwe has a population of 7.5 million (1982 census) and an area of 39,075,000 hectares. Approximately 80 per cent of the population lives in the rural areas and 70 per cent of the population is composed of the so-called vulnerable groups, that is women of childbearing age and children under the age of five.

Agriculture is the mainstay of Zimbabwe's economy, and Zimbabwe is a net exporter of food in good rainfall years. Food availability per capita has been estimated at 2500 calories per day which is well within acceptable levels of daily energy requirements. In spite of this Zimbabwe has a problem of malnutrition, particularly amongst young children under 5 years of age.

Although Zimbabwe produces enough food for its people and for export, the bulk of the food is produced by a few commercial farmers. The estimated 800,000 families in rural areas produce only one third of the total. This is not surprising since on average each communal farmer has 20 hectares of land for his use. Crude estimates indicate that the rural farmer would need between 27-250 hectares of land (depending on soil type) if he is to produce sufficient food for his needs. Often he is unable to purchase sufficient quantities of fertilizer to improve his yield. Consequently it is estimated that approximately a quarter of the rural peasants do not have sufficient food stocks from August till the next harvest in April.

The high prices now being offered for cash crops such as cotton and tobacco has shifted the agricultural interest of the rural subsistence farmer, often with negative effects on nutritional status.

Furthermore some negative food consumption patterns are beginning to creep in. The so-called modern family is consuming highly refined maize meal which has less nutritional value, and is not using some of the traditional foods, such as sorghums, millets, groundnuts, and so on. The urban family is trying to bottle-feed infants instead of breastfeeding and is introducing costly commercially prepared weaning foods instead of locally available cheaper foods. Recent studies indicate that malnutrition is high, but also varies by community. With the data available we are able to state, in summary, the following about the nutritional status of Zimbabwe:

The urban community tends to be the least malnourished (although children of domestic workers are seriously malnourished), followed by communal areas, then mining communities, and lastly the commercial farming areas. Ironically the people who are responsible for all the "bumper harvests", that is the commercial farm worker, is the most malnourished and his current remuneration cannot support him and his family.

Surveys carried out by the Ministry and NGOs at independence indicated levels of malnutrition ranging from 30-65 per cent. The government then took the decision to establish a department of National Nutrition in the Ministry of Health to try and address this question.

II. ZIMBABWE'S MAJOR HEALTH PROBLEMS

At independence Zimbabwe inherited a health service which was heavily skewed towards expensive curative services for urban areas, with only rudimentary services in the rural areas.

Together with the rest of the developing world, the masses of Zimbabwe suffer in the main from the diseases of poverty. Nutritional deficiency diseases, particularly Protein Energy Malnutrition (PEM), communicable diseases and conditions related to pregnancy, childbirth and the newborn period are the predominant health problems. These health problems tend to affect young children, and women of child bearing age, the two most vulnerable groups. The problems are interrelated. For example, malnutrition increases the frequency and severity of infection and is itself aggravated by infections. Malnutrition in young girls may lead to deficiencies in the development of the pelvis and of the reproductive

system, causing later problems in child birth for both the mother and the baby. The interrelated nature of these health problems, and their origin in socio-economic underdevelopment and poverty, is the basis for the government's decision to adopt the concept of Primary Health Care for Zimbabwe. The priority of the new Government in 1980 was to try to redress this situation and to ensure equitable distribution of services to all. The resources needed for this enormous task are considerable. However, the Primary Health Care strategy which has been adopted by Zimbabwe, along with the rest of the world, has enlisted the resources of the people within their own communities, and also the allied resources of all Ministries and agencies striving for the well-being of the nation.

The Alma Ata Declaration of 1978 defined Primary Health Care as "essential health care based on practical, scientifically sound and socially acceptable methods and technologies, made universally accessible to individuals and families in the community and at a cost that the country can afford".

Primary Health Care should, therefore, address the health problems of a community, providing promotive, preventive, curative and rehabilitative services. The following eight elements are essential to the success of PHC:

- a) Education,
- b) Local Disease Control,
- c) An Expanded Programme of Immunization,
- d) MCH and Family Planning,
- e) Essential Drugs,
- f) Nutrition and Food Supplies,
- g) Treatment and Prevention,
- h) Safe Water Supply and Sanitation.

Primary Health Care should, therefore, involve all related sectors, and demand the co-ordinated efforts of all sectors, since the promotion of health depends on improving socio-economic conditions and the elimination of poverty and underdevelopment. Within the framework of PHC, as defined by the Alma Ata Declaration of 1978, a number of activities have been initiated in Zimbabwe. The most important step has been the formulation of a new Health Policy with the following key features:

- a) An integrated and comprehensive health service structure that comprises graded levels of care: village health activities; rural health centres; rural and district hospitals; provincial and central hospitals. Each level is engaged in a mixture of mutually supportive preventive and curative activities. This functional hierarchy provides citizens with access to health care that is as specialized as the complexity of their problems demands.
- b) Emphasis on appropriate resource allocation at all levels to facilitate equity in health care.
- c) Restructuring of the Ministry of Health to facilitate the implementation of Primary Health Care, particularly the creation of the Division of Rural Services in order to co-ordinate PHC activities.
- d) Expansion and strengthening of the Health Education Department.
- e) Expansion of MCH services and the creation of a specific department to deal with MCH issues; the creation of a parastatal to deal with child spacing and fertility problems; implementation of the Expanded Programme of Immunization.
- f) The development of an essential drugs list for Zimbabwe.
- g) Development of a rural water and sanitation master plan.
- h) The creation of a Department of National Nutrition, to address the question of malnutrition as highlighted by a number of post-independence surveys.
- i) The creation of the Village Health Worker, the agent for Primary Health Care, and also the development of the Farm Health Worker programme to try and improve the health of the commercial farm worker.

III. PRESENT COVERAGE OF PRIMARY HEALTH CARE

The Ministry of Health recognised that the fullest participation of, and action by, the people was key to the success of PHC. To this end the Ministry established the Village Health Worker as the primary agent for PHC at the village level. The VHWs are selected by their communities and work part time. The VHWs undergo a 3-month initial training followed by regular refresher and inservice courses and regular supervision from

health staff. Each VHW is supposed to serve between 50 and 200 families, and the main role of the VHW is primarily promotive, educative and preventive, mobilizing the community and individuals to act on issues such as environment, sanitation, nutrition, immunization and MCH. The VHW is trained to treat simple conditions and to teach families about self-care measures such as oral rehydration of children with diarrhoea. The VHW is trained to recognize serious illnesses and to make appropriate referrals to the nearest health care facility. They also collect basic data on the health status of their village and are the essential link between the village community and the local health service. At present Zimbabwe has over 4,000 VHWs. This cadre has become the mainstay of health care at the village level.

It is not easy to quantify coverage of PHC in Zimbabwe. However, recent studies and evaluations, (for example a joint Ministry of Health/WHO/SIDA/UNICEF EVALUATION 1984, and results from the Household Survey Programme 1984) have indicated some progress in the health status of our people. The following indicators can provide us with some idea of Zimbabwe's PHC activities and progress to date.

	<u>1982</u>	<u>1984</u>
a) Per cent of children full immunized	27	42**
b) Per cent of children under 5 years with Child Health Card		78.3*
c) Nutritional status of children 3-59 months (less than 80 per cent of the median NCHS/WHO standard)	25-42***	23.8*
d) Infant mortality rate	100-120	83*

Source of data * Central Statistical Office Census and Household Survey Programme.

** Joint Ministry of Health/Unicef/WHO/SIDA Evaluation.

*** Infant feeding practices survey 1982 run by the Ministry of Health.

IV IMPLEMENTATION OF ACTIVITIES UNDER PRIMARY HEALTH CARE

a) Intra-Ministerial Co-ordination

Within the Ministry of Health various mechanisms have been established to bring together heads of departments on a regular basis in order to facilitate the co-ordination and effective implementation of PHC activities within the Ministry. These mechanisms are mainly:

- i) The establishment of the Division of Rural Health Services to plan and co-ordinate Primary Health Care activities;
- ii) Weekly Heads of Department staff meetings;
- iii) Divisional meetings whereby heads of departments meet twice a month to review divisional plans and progress and to plan new activities;
- iv) MCH Co-ordinating committee, which brings together all the key MCH activities at the head office level.

b) Inter-Ministerial Workshop

In 1981 the Ministry of Health convened an inter-ministerial workshop which brought together high ranking officials from the Ministries of Education, Natural Resources, Community Development and Womens Affairs, and Local Government.

The objectives of this meeting were to review the PHC plan of the Ministry of Health with a view to identifying the specific roles of each Ministry in overall PHC, and to develop mechanisms for intersectoral collaboration to ensure that the goal of health for all by the year 2,000 is achieved.

The meeting made the following main recommendations:

- i) That the Ministry of Health is to co-ordinate and intensify PHC information and mass media activities in order to disseminate the concept of PHC as widely as possible to all sectors. It was the feeling of the meeting that there was a need for more information on PHC to be disseminated as widely as possible if PHC considerations were to be taken into account by the various key ministries.
- ii) It was agreed that each ministry would nominate someone to be PHC Liaison Officer under the co-ordination of the Ministry of Health.

In 1983 another interministerial meeting was convened to review progress of PHC and to suggest mechanisms for improving intersectoral collaboration on PHC. This meeting brought together the following Ministries:

Ministry of Agriculture,
Ministry of Health,
Ministry of Community Development and Womens Affairs,
Ministry of Local Government
Ministry of Labour, Planning and Social Welfare,
Ministry of Finance Economic Planning and Development,
Ministry of Water Resources,
Ministry of Public Service Commission,
and a few key Non-Governmental Organizations.

The meeting recognised the fact that there was already in operation extensive intersectoral collaboration and action at all levels, from village to district up to the province. However, it was now necessary to ensure that all inputs and resources be co-ordinated in order to maximize all effort on PHC. This meeting recommended the establishment of formal co-ordination mechanisms at all levels from the district to national level.

This meeting also recommended a mechanism to co-ordinate the activities of Non-Governmental Organizations in Primary Health Care activities.

c) Non-Governmental Organizations

In 1985 the Non-Governmental Organizations held a meeting and identified and articulated their role in Primary Health Care and recommended the establishment of a Liaison Officer in order to facilitate liaison with the Ministry of Health on Primary Health Care issues.

d) Level of Participation in PHC by Other Sectors

Participation in PHC by other sectors has not yet reached the desired levels. However, a beginning has been made. There are now established mechanisms for intersectoral collaboration and planning at all levels. These mechanisms will in time facilitate the overall goal of PHC, that is health for all by the year 2,000. Already we are beginning

to witness the active participation of other sectors in such programmes as EPI and nutrition.

Many of the very noble recommendations articulated during the two major inter-sectoral workshops on PHC have not been implemented. One wonders whether perhaps the timing was too early. The current national development structures, under which regular meetings to plan development activities by all sectors are taking place at all levels, will facilitate the promotion of Primary Health Care.

e) Community Participation

Zimbabwe has a rich heritage of community participation in health activities, stemming from the period of the liberation struggle. Popular mobilization for health was a key aspect of the general political mobilization, which was a decisive factor in the victorious conclusion of the war. This spirit has not been lost. Communities contribute their labour and local material for the construction of rural health centres, protected wells, and pit latrines. Communities are also actively participating in the control of vectors by building rubbish pits and clearing undergrowth. There is also active participation to promote good nutrition.

The creation at Independence of a Ministry of Community Development whose primary role is to mobilize communities for development projects has facilitated community participation in PHC. This Ministry has extension workers and has been complementing the efforts of the VHWS in promoting health. In 1984 the Prime Minister appointed a committee of Ministers to establish a sound infrastructure for the development of rural areas in Zimbabwe. It was recognised that the basic unit of organisation was the Village Development Committee (VIDCO) serviced by the Village Development Worker, a multi-purpose extension worker. Each VIDCO, representing a population of about 1,000, will be provided with some financial support to assist the community to build a Village Development Centre (VIDEC). Such a centre will be owned by the village community and will be a centre for meetings and exchange of ideas amongst village members, and will be focal point for activities such as adult literacy classes, Primary Health Care education, technical education in agriculture, income

generating activities, and so on. The next level is the Ward Development Committee. This development is going to ensure intersectoral co-ordination of development activities, including Primary Health Care. Already a good number of these committees have been established and are functioning.

1) Nutrition in Primary Health Care

In Zimbabwe the major cause of childhood illness and death is malnutrition. Not only is malnutrition a problem in itself but it is a precursor of other diseases such as diarrhoea and measles. The root causes of malnutrition are not primarily health-related. They relate to socio-economic factors such as poor agricultural practices, problems of food shortages and inadequate water supply.

V. NATURE AND MAGNITUDE OF THE NUTRITION PROBLEM IN ZIMBABWE

a) Protein Energy Malnutrition P.E.M.

Recent data from the Household Survey Programme conducted in collaboration with the Central Statistical Office in 1984 indicates malnutrition levels at 23.8 per cent in children between 3-59 months, that is children with weight for age which is less than 80 per cent of the median, using NCHS standards. Although this is much lower than the figures at independence, it is still a cause for concern. There is a clear seasonal variation in malnutrition which is associated with the harvest and planting seasons. The limited data we have indicates the following are the key target groups in designing intervention programmes to combat PEM in young children, in order of priority:

1. Children of farm labourers,
2. Children in Communal (rural) areas,
3. Children of domestic workers (urban),
4. Children of mine workers.

Although PEM is our primary target we are also cognisant of the fact that micro-nutrition problems do exist, although we have not been able to quantify their magnitude and extent. However, hospital data does indicate high levels of anaemia in women of child bearing age, goitre, pellagra, and some vitamin A deficiency.

Clearly the problems of malnutrition are multifaceted and are not due to a national lack of food but rather lack of access to food, since Zimbabwe has a healthy agricultural production record, often producing enough for its own needs plus a surplus for export. The many factors which prevent individuals from having adequate access to food need intersectoral action.

Malnutrition is intrinsically a local problem, affecting the individual, the family and the community. It is therefore vital to mobilize local effort and resources and to increase the community's capacity to fight malnutrition. Thus Primary Health Care becomes an important vehicle for introducing nutrition services.

The Department of Nutrition was charged with the task of defining the nature and magnitude of nutrition problems as well as strategies for dealing with them. However, the department had to simultaneously grapple with the immediate problem of thousands of children under five who were severely malnourished and in need of emergency supplementary feeding. A Child Supplementary Feeding Programme had been initiated by NGOs in 1980. This programme initially provided a daily supplementary meal of beans, groundnuts, maize meal and oil to 30,000 malnourished children in 23 districts throughout the country. With three successive years of drought the programme rapidly expanded to a point where nearly a quarter of a million children were being fed at the height of the drought in 1984. Although the Child Supplementary Feeding Programme can only provide short-term benefits to the malnourished child the programme provided an entree to other long-term PHC activities. The programme brought together at community-based feeding points mothers of malnourished children to prepare the meal for their children. This provided the opportunity for basic health education, including nutrition education and information on the use of local foods. It provided the opportunity for introducing long-term development projects such as food production projects.

b) Supplementary Food Production Scheme

The need to promote and encourage self reliance in the communities in receipt of supplementary feeding led the Department to initiate this

this activity. Initially we wanted to promote the planting of groundnuts, primarily for consumption by young children, because they are excellent sources of protein and energy. We have since diversified the project to include beans and vegetables. It is our hope that by facilitating increased food availability to the communities, the nutritional status will also be improved. This project offers some long-term solutions to malnutrition and is an excellent example of intersectoral collaboration in action. This project brings together the following ministries: Agriculture, Community Development, Local Government, and Health. The project is currently under review to see in what way it could be strengthened.

c) Institutional Food Services and Dietetics

Prior to independence a number of so-called African hospitals did not feed their patients. At independence the Ministry of Health took the decision that all hospitals should feed patients, and instituted plans to facilitate this. The Department of nutrition is charged with the task of establishing guidelines and standards for therapeutic nutrition care in our health facilities.

d) Growth Monitoring and Nutrition Surveillance

The Ministry is placing a lot of emphasis on growth monitoring for young children, through the MCH clinics. Weight gain of young children is an excellent indicator of growth and consequently a sign of good health. At present the young child below five years has its weight monitored and recorded on a home-based child health card. Growth monitoring offers the health worker an excellent opportunity for individual consultation and counselling with the guardian of the child.

We have instituted a crude and quick system of nutrition surveillance which can assist the health workers to assess the nutritional status of the community quickly. All the weights of children attending the clinic are plotted onto a master growth chart. It is then possible to see and calculate the percentage of children which fall below the growth curve.

This information has been used to initiate interventions such as the Child Supplementary Feeding.

e) National Household Survey Programme

We have started work with the Central Statistical Office(CSO) on incorporating nutrition parameters into the Household Survey Programme. This activity offers a regular source of information on a large national sample. It will eventually allow us to link nutrition status data to other socio-economic data being collected by CSO. Perhaps we will soon be able to answer the question, "Why malnutrition in Zimbabwe?"

f) Nutrition education

The Ministry has tried to standardize the nutrition concepts and information being promoted through participation in health training programmes, as well as training courses for women groups, community development workers, teachers and so on. We shall be reviewing training curricula and that of primary school with a view to strengthening and updating the nutrition components. We also utilize the other conventional media such as radio, TV and newspapers for public education.

g) Food safety

The Ministry of Health has been concerned about food standards and to this end has managed to join the Codex Alimentarius Commission. This should bring our food regulations in line with the rest of the world and hopefully improve food safety.

h) Zimbabwe Code of Marketing for Breast Milk Substitutes

Together with the rest of the world Zimbabwe supported the WHO International Code of Marketing for Breast Milk Substitutes and has developed its own Code which should soon become law. In Zimbabwe we have chosen to expand the scope of the Code to include manufactured weaning foods since it is our view that our main problems with respect to malnutrition begin during this period and there is now a tendency for consumers, particularly in urban areas, to purchase costly manufactured weaning foods when a home-made weaning mixture based on locally available foods would be adequate.

j) Lessons learnt - successes and constraints

The change in the health sector towards more Primary Health Care and preventive medicine has provided fertile ground for incorporating nutrition concern. It has to some extent broadened the scope of many health workers as far as nutrition issues are concerned. Although still regarded by many as a health problem, the multifaceted nature of malnutrition and the need for intersectoral collaboration for the solution are beginning to be better understood by fellow workers and policy makers. However, confining the nutrition interventions to the health sector has many disadvantages. The main one is that interventions have to be "acceptable" to the health policy makers. However nutrition intervention of a long-term nature can often be instituted or sited within the health sector, for example, food subsidy agricultural policy, consumer protection and so on. Often the Ministry of Health lacks the necessary clout to call together other key sectors to plan for nutrition. Another constraint we face is the shortage of skilled manpower. We are also limited in the type of staff we can recruit for the Department. These have to be acceptable to the health sector. This would naturally exclude such disciplines as agriculture, economics and sociology.

However, in spite of these constraints we have achieved the following:

- i) Nutrition has a definite and important place in the overall agenda of MCH services and Primary Health Care. We have earned a position within the health sector.
- ii) We have managed to deploy nutritionists in each province, which means that nutrition considerations are being taken into account in Provincial planning.
- iii) We have established definite, and hopefully lasting, links with the Ministry of Agriculture through collaboration on small-scale food production projects.
- iv) Institutional feeding through our health care facilities has been rationalized. We have a two-year training programme which produces manpower skilled in food service management and therapeutic diets.
- v) The Child Supplementary Feeding Programme has managed to minimize the impact of the three-year drought and has been a vehicle for nutrition education.

Zimbabwe has made a modest beginning towards solving the serious nutrition problems it faces. However, much still remains to be done. There is need for a comprehensive Food and Nutrition Policy which will ensure integrated and co-ordinated action on malnutrition.

"Malnutrition is, like unemployment, a condition not a sector. If countries are able to organize their various sectors to produce policies and programmes that address the sickness of unemployment this should also be possible for malnutrition". Perhaps the answer lies in increasing communities' capacities to fight malnutrition from within their own range of resources. In this respect Primary Health Care does offer this possibility.

3.2 THE IMPACT OF FOOD AID ON NUTRITION STATUS OF RECIPIENTS IN UGANDA (Abstract)

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The background of food aid are that first, Uganda had infrastructure for adequate food production and good roads and transport for food distribution until the country plunged into political instability in the last decade. This instability has reduced food production, the farmers have ran away, abandoned their shambas while the roads have deteriorated. The situation of food production however, may not be too bad. Uganda is only unable to provide food to certain special groups, particularly the drought stricken Karamojongs. The paper would have liked to evaluate the various aspects of food aid from organisational structure right down to the impacts of food aid but data were a handicap.

The paper described the mechanism of food aid and how the food reaches the recipient. It cautions that donors have preferred to provide food aid in form of surplus food from donor countries rather than cash which could be misappropriated.

The agencies that provide food aid in Uganda are classified into four groups namely, providing agencies, implementing agencies, clinical interveners and developmental interveners. Some of these work through government but others do not and hence coordination is difficult. Sometimes the duplication of efforts is obvious. None of the food aid agencies ever evaluate their activities and are also reluctant to provide information on their activities.

The negative effects of food aid involve creation of dependency on part of recipients and reduction of food productivity at the household and national levels. The paper concludes that Uganda could provide all its own food requirement and distribute it if the transport system was rehabilitated.

Discussion: Food Aid.

Kinyanjui: The impact of food aid on dietary patterns including changes in tastes in this region. Should be a matter of concern. People are abandoning traditional foods i.e sorghum millet, cassava etc while cultural problems also militate against utilization what is available (e.g. fish).

Change of food packages in favour of wheat, rice, sausages etc. There are impacts on the rural population too. Since changing of production patterns is not easily feasible there are negative impacts.

Maletnema: We need to distinguish between:

- a) emergency food (inability to move food from one area to another)
- b) perpetual food aid (all kinds of excuses). The Frightening characteristics of aid agencies is that neither systematic data is collected nor evaluation of impact of food aid undertaken.

There is an urgent need of stopping perpetual food aid.

Dr. Musyoki: There are strategies for nutritional rehabilitation even when food is not short - e.g. family life centres. There are clinic based intervention strategies but are they cost effective? What are the alternative intervention strategies?

Dr. Kakitahi: There are no quantifiable data on food aid impacts at present. There are rural oriented training programmes which extend to community centres, health and at the home. About 200,000 people are now covered. Clinical malnutrition has disappeared but the problem of the underweight has to be tackled.

Kidane: Cultural problems: avoidance of certain foods even in emergency. Other times food habits may change rapidly.

Abebe: Disagreed: food available to be consumed in from outside; change can be slow or rapid. Changes in local food production patterns can occur faster.

Kwofie: Minor crops : Some of the minor crops have not entered into the market. People have moved away from sorghum/millet to maize. As a consequence of changes in income increased wheat consumption has taken place in African countries. Government policies can change food habits and also influences consumption patterns. Storage issues are important area of concern.

Besrat: Prestige foods: demonstration effects.

3.3 FOOD CRISIS MONITORING SYSTEM IN ETHIOPIA.

Yemane Kidane
Ethiopia Nutrition Institute.

Introduction:

The problem of hunger due to food shortages is very common in many developing countries. As a result many people suffer and/or even die. When there are no systematically established systems of identifying food crisis on time, the outcome could be disastrous.

This paper discusses the system of food monitoring which is used in Ethiopia. It shows that since the Relief and Rehabilitation Commission (RRC) was established in 1974 it has been possible to predict food shortages and this has enabled the government to mobilize resources for relief and rehabilitation operations.

Ethiopia is predominantly a subsistence society. About 89% of the population lives in the rural areas and engage in livestock production. The Ethiopian agriculture largely depends upon rainfall and the use of irrigation is very limited. In such agriculture the vicissitudes of weather determines the performance of agriculture and the margin of error is very small. Widespread scarcity of food often occurs and may lead to famine. Since medieval times famines have occurred in Ethiopia due to crop failure stemming from drought, crop pests (mainly locusts) and livestock diseases.

The causes of Ethiopias vulnerability to famine and hunger have persisted over the centuries and still exist today. The fact that famine have wreaked havoc in Ethiopia since time immemorial is well documented (6,7,9,16,17,22).

Historically, the main factors that are said to have led to

famines were rain failures, animal diseases, and locust invasion, sometimes all occurring simultaneously. Since the 1950's, locust invasion has been controlled following the establishment of the East African Desert Locust Control Organization (DLCO). Animal diseases, especially rinderpest which was the main livestock killer, has been minimized, to a large extent because of the introduction of modern vaccines. Drought is the main uncontrolled factor of food crisis which afflict millions of peasant farmers. The main reason for past and present episodes of starvation is generally due to the failure of subsistence production to generate surpluses which could be accumulated for emergency situations.

The farming equipments in Ethiopia are primitive, agricultural production is totally dependent on rainfall, irrigation is not practised, the use of fertilizer is minimal, and the use of high yielding seed varieties is not common. Moreover, animal husbandry is also primitive and improved grain storage largely absent.

Furthermore, the ecological environment also contributes to the vulnerability of some areas to food shortages. As explained earlier, the areas that have been affected by subsequent droughts were the highlands of Wollo, Tigray, Eritrea and northern Shoa. These areas, in general, are comprised of rugged highland plateaus bisected by the great Rift Valley and isolated from the surrounding desert-like lowlands by steep slopes, and escarpments rising up to 3,200 metres in altitude (16,25,26). These areas have been inhabited and agriculturally used for thousands of years. As a result, land is over-exploited, i.e., ploughed and over-grazed, the forest is depleted for housing and wood fuel, leading to high soil depletion and erosion every year. At the same time population has increased very greatly causing increased population density and smaller holdings on the limited and nutrient depleted cultivable lands. Livestock population has similarly increased proportionally with human populations. In 1946 population of Ethiopia was estimated at about 7 million, in 1953 it was about 17 million, in 1970 it was about 22 million and in 1984 it was about 42 million (16, 27).

The bench mark in the history of relief and rehabilitation operations in Ethiopia occurred in 1974 following the establishment of the Relief and Rehabilitation Commission (RRC). Since the 1977, the RRC, through its early warning system was able to predict areas of food shortage and the number of people who could be affected before a severe crisis occurs. This has enabled the government to mobilize resources both internally and externally to cope with food crisis. According to RRC's Meher and Belg synoptic reports, the EWS identified that about 1,499,000 people were affected by food in shortages, mainly due to crop failures in 1977, 2,037,500 people in 1978, 3,473,000 in 1980, 4,414,600 in 1981, 3,819,610 in 1982, 5,331,150 in 1983 and 7,923,150 in 1984.

Food and Nutrition Monitoring System

Prior to 1974, a number of government agencies had been independently collecting data which touches on food and nutrition. Each data system reflected the planning needs of each agency and the focus of its activities. Furthermore, there was no agency that was charged with the responsibility of detecting food shortage problems in the country.

The 1973-1974 drought that occurred in the northern and central highlands of Wollo, Tigray, and Shoa and in the lowland areas of Hararghe, Bale, Sidamo, Gamu-Gofa, however, underlined the need to concentrate and strengthen the government's capacity to generate information quickly in-order to design timely responses to acute food shortages. Thus, at the end of 1974 an Inter-Ministerial Technical Working Group (TWG) was convened under the auspices of the then established Relief and Rehabilitation Commission to advise on the technical aspects of a system which could help in monitoring food and nutrition. The TWG recommended the establishment of a permanent system to continuously collect information related to food and nutrition which would be based on the activities of

government agencies with mandated responsibility for various aspects of agriculture and food. The permanent reporting system was then named "early warning system" which is discussed below.

Rather than set up a new agency to execute this system, the TWG recommended that a coordinating point be provided for collaboration between existing government agencies and that these agencies be provided with the resources to accelerate the implementation of their long term plans as well as to strengthen their current activities. In addition, the TWG recommended that the programme be implemented by the following agencies with a given responsibility for each.

- The Relief and Rehabilitation Commission would be responsible for the overall coordination and in providing contact with international donors that support the programme.
- The civil Aviation Authority was given the responsibility for meteorological reporting and interpretations.
- The Ministry of Agriculture was given the responsibility for monitoring crop performance and grain market flows and prices.

The planning and programming department of the Ministry of Agriculture, which was responsible for this task, however, was later transferred to the central statistical office. Thus, qualitative assessments of crop conditions, grain market flows and prices are collected monthly by personnel of the central statistical office from woredas (districts) and reports are produced by the early warning system office of the RRC.

- Livestock and Meat Board, which is now known as the third livestock development project, was given the responsibility of rangeland and animal production surveillance including livestock market monitoring.
- The Central Statistical Office was given the responsibility of providing overall statistical support and data processing

- services. These services are at present entirely done by the Early Warning System Office.
- The Ethiopian Nutrition Institute (ENI) was given the responsibility of household food availability and consumption studies and reporting of human nutritional status. Due to some problems within the ENI, the nutritional surveillance component however, is not undertaken at present.
- The Ministry of Education was given the responsibility of providing teachers and students to act as reporting agents.
- Later the Ministry of State Farms and the Agricultural Marketing Corporation were included in the system with the following responsibilities.
- The Ministry of State Farms was given the responsibility for the provision of state farms production data as well as rainfall information observed in stations operating in state farms.
- The agricultural marketing corporation was given the responsibility for the provision of price and related information in the areas where it operates.

The actual implementation of the programme was to be the responsibility of a group known as "Project Implementation Group" (PIG) which was later renamed the "Project Coordinating Committee" (PCC). The PCC was formed by professionals drawn from the different participating agencies, each being responsible for the implementation of a specific sector of the programme as stated earlier.

The Ethiopian Early Warning System

Conceptually, the Early Warning System (EWS), which Mason and Associates call "Timely Warning" (29), is designed to mitigate periodic household food shortages and to prevent famines by timely intervention.

It is a means of predicting and assessing food supply system as part of an early warning against food shortages (30). It is a method of monitoring the performance of food supply systems and thereby providing a flow of information for planners on the adequacy of production and distribution of food and its availability at the household level (31).

The system is designed to be useful for the following purposes (31):

1. The early warning of impending regional food shortages.
2. The identification of both deficit and surplus producing areas.
3. The management of national food security.
4. The management of regional food shortages.
5. The planning of sectoral and insectoral regional development with regard to food supply.

These objectives were planned to be achieved by:

1. Establishing a regular system of crop monitoring.
2. Establishing a system for monitoring pastoral conditions and animal production in rangeland areas.
3. Establishing a system of monitoring prices and supplies.
4. Establishing a system for monitoring the status of community and family food stocks, dietary intakes and nutritional status of population groups.
5. Strengthening and extending meteorological reporting with particular application to agricultural conditions.
6. Establishing a system for efficient data processing and intersectoral analysis.
7. Establishing a system of relaying to all agencies responsible for action of the results of the data collected in a clear and understandable form.
8. Developing models which define the relationships which exist between the various aspects which determine food availability.

In the system, three main food supply systems have been identified; These are:

- a. The crop dependent subsistence food supply system in most of the highland areas.
- b. The livestock dependent food supply system in the lowland areas.
- c. The market dependent food supply systems supplying most urban and non-farm rural people.

From each food supply system a chain indicators have been selected. Regular measurements of these indicators are made aimed at providing a continuous assessment of the performance of the food supply system. In other words, by regularly monitoring these indicators pockets of food-deficit or food-surplus areas are identified easily. Overtime, analysis of trends can be made and changes in food availability at household level could be predicted on an area by area basis.

Indicators Monitored

1. The Crop Dependent Food Supply System. The following indicators are monitored monthly.

- a. Crop Activity
 - The usual and actual farming activities, such as land preparation, sowing, etc.
 - If an activity is late, reasons are given.
- b) Crop Damage
 - Cause of damage (climatic factors, pests, disease)
 - Degree of damage (serious, moderate, slight)
 - Type of crops affected
 - Number of peasant associations affected
- c) Area Under Crop
 - Area cultivated compared with usual (more, same, less)
 - If area cultivated is less than usual, reason is given.

d) Crop Forecast

- Crop condition (good, satisfactory, poor, very poor)
- Good surplus is anticipated
- Satisfactory = production mainly for food and seed
Poor = production is only enough for food
Very poor = production is not even enough for food
- Forecasted crop production is compared with last year's (more, same, less)
- Expected production (surplus, food and seed, food only, seed only, completely destroyed)

e) Special Report (if serious food shortage is expected in a woreda (district):

- For how many months the expected production could be enough
 - How many people are expected to face food shortages
 - How is the shortage to be alleviated
- These indicators are collected at a woreda level every month by enumerators, who are about 110, by interviewing agricultural extension agents, leaders of farmers associations, and administrators..

2. Livestock Dependent Food Supply System

a) Environmental Indicators

- Rainfall
- Water availability for human and livestock consumption for a given time
- Pasture condition (normal, average, below normal)

b) Animal Production

- Herd size and structure (sex and age)
- Animal disease prevalence
- Mortality rate
- Calving rate
- Weight

c) Migration Patterns

- Patterns
- Reason for migrating

3. Market Dependent Food Supply System

a) Grain Markets

- Amount of grain brought to market by type of crop
- Retail prices by type of grain. Prices of crops are compared with last year's price of the same month

b) Livestock

- Retail prices by type of animal, i.e. mean producers' and merchants' prices - price are compared with last year's.
- Number of animal presented for sale in each market

Nutritional Surveillance

Initially the nutritional component of the EWS was planned to deal with the following indicators quarterly:

1. Availability of stocks for household consumption

a) Subsistence crop food supply system

- Amount of stock in a given measurement e.g. Quintal (100 kg)
- Type of stock
- Quality of stock
- Duration of stock

b) Livestock Food Supply System

a. Crop

- amount of stock
- type of stock
- duration of stock

b. Livestock

- type
- age
- number

c. Market dependent

Rural (cash crop producers)

- amount of stock
- type of stock

Urban

- monthly income
- proportion spent on food
- amount and type of food purchased
- monthly savings

2. Dietary Intake

- amount and type of food consumed
- household size
- age and sex
- number of guests
- food consumed outside home

3. Nutritional status (anthropometric measurement of children under 5 years of age).

- weight for height
- height for age
- weight for age
- arm circumference

With the exception of the nutritional component, the Early Warning System Office of the RRC was able to monitor the food supply situations in the country as planned at the time of its inception. It has also produced reports regularly which have enabled the RRC to mobilize resources internally and externally for intervening food crisis on time.

The Early Warning System Office regularly produces the following reports (32):

1. The "Food Supply System Report" is produced five to six times a year. This report gives an assessment of the country's food situation according to food supply. The agricultural activities, crop performance, condition of rain, the supply of grains to market prices of grains are reported and while a forecast is made of the number of people expected to be affected.
2. The "Agro-Meteorological Report" is produced every 10 days. It identifies areas that have received below normal, normal, or above normal rainfall during a 10-day period and interprets how the level of precipitation may affect the cropping and pastoral areas.
3. "Meher (Main Season) Synoptic Report" is produced once a year around February and March after the main harvest is over.
 - a. This report summarizes the performance of the major crops throughout the main cropping season, i.e. between June and January and identifies areas vulnerable to significant production short falls at a Woreda level.
 - b. It also indicates surplus areas, but not with the view of producing a national food balance sheet but rather to indicate if and when food problems may be alleviated by local actions.
4. Moreover, this report also tries to quantify the number of people that are likely to be affected in the identified vulnerable areas.
5. Although the estimated figures are crude, they are important in giving some guidance in estimating the magnitude of the problem and in designing solutions of the problems noted in some areas which are thought to be severely affected, or potentially so. The Disaster Area Assessment Unit mounts surveys with the specific goal of measuring the extent of the problem. Thus identifying, with more reliability, the population in need.
6. "Belg (small season) Synoptic Report" is produced once a year at the end of the Belg season around June. It is similar to the Meher

synoptic report except that it covers a different season.

7. The "Market Performance synoptic report"

The marketing unit of the EWS compiles average market prices of major food grains from 118 regional, Awraja and Woreda markets, and the results are published every two to three months (33). The current market prices in each region are expressed as normal, above normal and much above normal. The normal price is taken as an average of the previous years for which data is available;

A price index of less than 120 Birr is Normal

A price index from 120 to 150 is above normal

A price index greater than 150 is much above normal.

All in all, the EWS as a system, which is probably unique in Africa (33) is able to identify areas of food shortage and the number of people vulnerable to hunger on time. As a result of its monitoring device, the Ethiopian government through the RRC has been able to publicize the magnitude of the food crisis in the country and to make appeals internally and externally so as to generate resources to alleviate human suffering and arrest human deaths. The information has also assisted in designing future development strategy including the settlement of displaced population into areas of higher agricultural potential so as to enable them to be self sufficient in food production.

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Discussion

Kidane's paper: Food Crisis Monitoring System in Ethiopia

Teferi: Culture: children are after adults, women after men. Greater awareness is being created of the importance to give children better food.

Many indicators are used and data gathering covers over 50 variables. Reports are made 5 to 6 times a year. What sample size is taken? Are Reports for current years or for what period? What are the responses/behaviour of people to famine - e.g. eating roots? cancellation of feasts etc. Could these reactions be used as indicators of famine?

Mzaale: There are too many variables: we need to develop a few indicators or an overall one. The indicators need to be sensitive to changing circumstances.

Data collection: in Uganda at grassroots - chiefs report but since they are also charged with the duty to increase production they provide inflated figures. How does the transmission of information occur given difficult transportation in Ethiopia?

Amref: Who can do all the work and report quickly enough? which indicator is the very early one. Most indicators covered are too late and indicate famine.

Mrisho: Early warning - involves crop monitoring - Are the data reliable? - acreage, yield etc. Outcome of crop recommendations - how do they assess demand? what are alternative ways of declaring deficit? Deficit can be declared without possibility of providing any additional food. Do you come with corrective measures after early warning?

Ochetim: Our ancestors could predict famine. To what extent has this been used,?

Wagara: How early is an early warning system? What is the use of an early warning system?

Maletnlema: Ethiopian drought occurs every 10 years. To what extent has this knowledge been utilized? What is the extent of overgrazing in Ethiopia? Destruction of forests? What are the costs of early warning system and who pays? How early did the early warning system predict current problem?

Kidane: Surveillance was originally set up by FAO who were interested in a global system. Experience in 1979 indicated that compilation of nutrition data was very time consuming and was incapable to serve as an early warning indicator. Nutrition indicators are late indicators and are for the purpose of intervention. Various indicators in Ethiopia have undergone several reviews. Because of the many indicators the early warning system did not work. Crop/surpluses indicators have been used. Livestock system indicators are new. Crops indicators: (March - April) Land Preparation, land sown, Area damaged etc. The Central Statistic

Office collects market information (grain, livestock) and sends it to the Central Relief Office every month. Also reports Conditions of crops that are already planted.

Teferi: There is Cyclical drought in Ethiopia. Some attempts to have a food security system have been made. About 180,000 metric tonnes are needed. There is little readiness to cope. Nutrition is not usually considered in planning or in agriculture. It is being considered by the Ethiopian Nutrition Institute. Land is overgrazed and bush fires are a problem.

Dr. Maletnema: Data on cash crops vs food crops: How Reliable are the data? What was happening to cash crops while food production was on decline. What is the population of Ethiopia?

Kidane: The population of Ethiopia is 42 million.

4. LONGTERM NUTRITION PROJECTIONS, POLICY AND PLANNING
FOR RURAL AND AGRICULTURAL SECTOR

4.1 FOOD AND NUTRITION: IMPLICATIONS FOR KENYAN AGRICULTURE TOWARDS THE
YEAR 2000

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I. INTRODUCTION

The issues of food and nutrition in Kenya are well documented. Recent studies have come up with the following conclusions:

- 1) At the national level, Kenya does not have a problem of under-nutrition since the per capita availability of nutrients is greater than the amount recommended by WHO/FAO (Mwangi, 1983; Mwangi and Mwabu, 1984; Mwangi and Migot-Adholla, 1984).
- 2) The observed shortages in the supply of food and nutrients among some sections of the Kenyan population are largely a result of maldistribution of the available food. The maldistribution of food is itself a consequence of several factors. The most important of these include: a highly-skewed income distribution, and transportation and institutional constraints that make it difficult to move food from one part of the country to another.
- 3) The problem of malnutrition and inadequate supplies of food is prevalent among the following groups of the population: the urban poor, pregnant and lactating mothers, the unemployed or marginally employed, pre-school children, the aged, and single parents (Green and Thorbecke, 1984; Wasonga, 1983; Republic of Kenya, 1979).
- 4) Due to rapid population growth, the per capita food availability in Kenya is declining, and unless this problem is reversed, Kenya will soon experience chronic shortages in food supplies (Mwangi, 1985; Rempel, 1985). Even at this point in time the magnitude of the effort required to increase the standard of living of the

Kenyan population by only a small percentage (less than one per cent) should be noted. To increase the growth rate in agricultural production to 5 per cent (that is, one percentage point above the rate of population growth), and to maintain it at this level for the next 15 years, requires an increase over current agricultural output of 75 per cent.

The remainder of this paper falls into four parts. Part II presents the likely state of food and nutrition in Kenya over the next fifteen years. It is shown that unless certain measures are taken, Kenya will experience a significant deterioration in supplies of food and nutrients by the year 2000. Part III discusses a pattern of agricultural development that could be pursued to avert the situation depicted in Part II. This discussion pays special attention to strategies which must be adopted to foster the desired pattern of agricultural development. Part IV focuses on social schemes that could be set up to ensure adequate food and nutrition for poor or disadvantaged sections of the Kenyan population. Part V is devoted to the conclusions of the paper.

II. THE FUTURE STATE OF FOOD AND NUTRITION IN KENYA

Between 1971 and 1982, per capita food production in Kenya fell by about 12 per cent. Over approximately the same period, daily per capita supplies of calories and protein dropped by 7 per cent and 13.8 per cent respectively. This information is displayed as Table 1.

Table 1: Food Production and Per Capita Availability of Nutrients 1970-1981

1. Average index of food production (1969 - 1971 = 100):	1977-79	92
	1980-82	88
2. Daily Calorie Supply per Capita As a percentage of requirement:	1960	99
	1970	95
	1977	88
	1981	88
3. Protein Availability (grams/day per capita)	1960	68
	1970	65
	1980	56

Source: Rempel, 1985.

The situation of food and nutrition in Kenya for the period 1984/85 is less favourable than that portrayed in Table 1. This is because since 1981 the growth rate in agricultural output has been declining (Economic Survey, 1985). The largest decline in this rate occurred in 1984 when value added in agriculture actually fell by 3.7 per cent as a result of a severe drought. Thus, for the period 1971-85, the actual rates of fall in per capita food production, and in the availability of nutrients, were actually greater than those presented above.

However, for the sake of simplicity, this differential is disregarded in the ensuing predictions of the food and nutrition conditions in Kenya for the year 2000. Specifically, it is assumed that over the period 1985-2000, unless certain measures are taken, the rate of fall in food production and in the availability of nutrients will be the same as for the period 1971-1985. That is, per capita food production will decline by 0.7 per cent per annum, and the per capita levels of nutrients will drop at a constant rate of 1.38 per cent per annum.

If these assumptions hold, per capita food production will be about 10.5 per cent below its 1985 level by the year 2000. But the consumption of nutrients will fall by about twice that percentage - by about 20.7 per cent. The purpose of these statistics is to emphasize two points. First, in the case of Kenya, there appears to be, at an aggregate level, a direct correlation between levels of food production and levels of consumption of nutrients. This correlation implies that nutritional needs for Kenyans would be satisfied primarily by sufficiently expanding domestic food production. The second point that is stressed by the above figures is that in order to avoid serious food and nutrition problems in Kenya by the year 2000, measures to increase domestic food production must be designed and implemented before the end of the current plan period.

The next section explores possible ways of restructuring the existing pattern of agricultural development, so as to maximize the chances of adequate supplies of food and nutrients in the year 2000 and beyond.

III. PATTERNS OF AGRICULTURAL DEVELOPMENT AND FOOD SELF-SUFFICIENCY

Kenya's fifth Development Plan (1984-1988), proposes a "two-pronged strategy" to avert a national food crisis. The strategy is two-pronged in the sense that it attempts to achieve self-sufficiency in basic foodstuffs by increasing domestic output of food crops, while at the same time expanding export crop production. According to this strategy, the foreign exchange earnings from crop exports will be used to import food in the event of a domestic food deficit.

The above strategy implies a simultaneous development of the export crop sector and the food crop sector. Notice that this pattern of agricultural development appears to frustrate a national policy of self-sufficiency in food production. For if agricultural resources are limited, a decision to expand agricultural exports is also a decision to cut back on food production. To clarify the issues involved here, we wish to draw a distinction between "permanent" or long-term food self-sufficiency, and "current" or short term food self-sufficiency. Permanent food self-sufficiency takes into account the fact that as a result of drought and/or institutional inertia, such as inappropriate land tenure and inefficient agricultural pricing systems, domestic food supply will be insufficient to satisfy domestic food requirements and will have to be augmented with food imports. Short-term self-sufficiency in food production does not take cognizance of such contingencies. The strategy of agricultural development proposed in the current development plan aims to achieve a long-term self-sufficiency in food production. Before we elaborate on this strategy, we wish to provide background information regarding the key factors which must be considered in the choice of an optimal agricultural development strategy for the next fifteen years. These factors are : land resource, the age structure of Kenya's population, and resource allocation in agriculture. These matters are considered in turn in the discussion that follows.

There about 56,914,000 hectares of agricultural land in Kenya. However, only about 12 per cent of this land is classified as "high potential", that is as fertile land that receives adequate rainfall for

agricultural purposes. Table 2 depicts a taxonomy of agricultural land in Kenya.

Table 2: Categories of Agricultural Land in Kenya*

Province	Land Classification ('000 hectares)				
	High Potential	Medium Potential	Low Potential	Other Land	Total Land
Central	909	15	41	353	1,318
Coast	373	796	5,663	1,472	8,304
Eastern	503	2,189	11,453	1,431	15,576
North Eastern	-	-	12,690	-	12,690
Nyanza	1,218	34	1,252	-	1,252
Rift Valley	3,025	123	12,220	1,515	16,883
Western	741	-	-	82	823
Nairobi	16	-	38	14	68
Total	6,785	3,157	42,105	4,867	56,914
% of Total Land	11.9	5.5	74.0	8.6	100.0

*High Potential: Annual rainfall of 857.5 mm or more.

Medium Potential: Annual rainfall of 735-857.5 mm

Low Potential: Annual rainfall of 612.5 mm or less.

Other Land: Land not falling under the above categories.

Source: Statistical Abstract, 1984, p. 96.

As can be seen from Table 2, about 74 per cent of the agricultural land in Kenya is low potential. High crop yields cannot be obtained from this land without first undertaking substantial investment, particularly in the form of irrigation. The bulk of low potential land in Kenya is in Rift Valley, Eastern and North Eastern Provinces.

The next two tables provide information about Kenya's population. Table 3 shows the geographical distribution of Kenya's population and its density by region in 1979, and Table 4 depicts the population age structure for the year 1978, 1983 and 2000.

Table 3: Geographical Distribution of Kenya's Population, 1979

Province	Population	Per cent	Persons per square km.
Central	2,345,833	15.3	178
Coast	1,342,794	8.8	16
Eastern	2,719,851	17.7	17
North Eastern	373,787	2.4	2
Nyanza	2,643,956	17.3	211
Rift Valley	3,240,402	21.1	19
Western	1,832,663	12.0	223
Nairobi	827,775	5.4	1,210
All Provinces	15,327,061	100.0	27

Source: Statistical Abstract, 1984, p. 13.

Table 3 indicates that most of Kenya's population resides in four provinces, that is, Central, Eastern, Nyanza and Rift Valley. As can be seen from column four of Table 3, Central, Nyanza and Western Provinces are already very densely settled. Thus, in the future, the farm households in these and other provinces will likely move to the less densely settled marginal lands. The main point here is that in framing Kenya's agricultural development strategy for the next two decades, the spatial distribution of the population for that period should be considered.

Another important factor to consider in designing an agricultural development strategy is the age-structure of the population. This factor is important for several reasons. First, in a predominantly agricultural country such as Kenya, information about the age-structure of the population would permit an estimation of the number of people who can be employed in the agricultural sector, and the number that must be absorbed in other sectors of the economy.

Secondly, the information would make it possible to compute the

dependency ratio in the economy, and hence to infer the economy's ability to generate a surplus which can be used for investment in agriculture and in other sectors.

Table 4 shows the age structure of Kenya's population for selected years.

Table 4: Age-structure of Kenya's Population, 1978, 1983 and 2000.

Age	Numbers ('000)			Per cent		
	1978	1983	2000	1978	1983	2000
under 15	7600	9800	20,000	49.7	51.2	53.7
15-19	7100	8600	16,800	46.4	45.1	43.5
60 & over	600	700	1,100	3.9	3.7	2.8
Total	15,300	19,000	38,600	100.0	100.0	100.0

Source: F.L. Mott and S.H. Mott, Kenya's Record Population Growth: A dilemma of Development, Popul. Bull. (35), No.3, 1980.

From Table 4 it is clear that the current age-structure of Kenya's population will persist up to year 2000. The high dependency ratio implied by this age-structure will severely constrain Kenya's ability to generate domestic savings for investment in marginal lands, where the bulk of the population will likely be living by the year 2000. This problem is already evident. At the moment, Kenya allocates only about 10 per cent of its annual budget to agriculture, in spite of its overwhelming importance in the economy. This point is illustrated by Table 5 which shows sectoral budget allocations for 1984/5.

Table 5: Central Government Expenditure, 1984/5

Sector	Total expenditure (K£ million)	Percent
General Administration	303.60	19.5
Defence	114.92	7.4
Education	268.01	17.1
Health	86.74	5.6
Housing and social welfare	57.00	3.7
Agriculture, Forestry, Fishing	153.44	9.8
Mining, manufacturing, and Construction	43.86	2.8
Electricity, Gas, Steam and Water	45.83	2.9
Road, transport & communications	83.59	5.4
Other, including public debt	404.02	25.9
Total	1,561.00	100.0

Source: Economic survey, 1985, p. 70.

The implications for Kenyan agriculture of the foregoing tables can be summarized as follows:-

In the future, the bulk of Kenya's population will live in marginal or low potential lands.* To provide adequate food for these people in their areas of residence, the use of dry-land farming methods will have to be intensified in the semi-arid lands of Eastern, Rift Valley, Coast and North Eastern provinces. Production of drought resistant crops such as millet, sorghum and pigeon peas should also be encouraged. In the high potential areas, as in Central, Nyanza and Western provinces, food production can be expanded only by increasing land productivity.

The foregoing facts are well documented for Kenya (Mwangi, 1985; Rempel, 1985). However, it is often not realized that strategies which increase food production, either through irrigation or by raising land productivity, require foreign exchange expenditure. This means

*The ability of the cities to absorb the additional 18 million people by the year 2000 is very limited, perhaps non-existent.

that food production is constrained by the amount of foreign exchange that is available for imports of agricultural inputs. This point has special significance for the Kenyan food crop sector. It implies that progress cannot be made in the food crop sector (that is, food self-sufficiency cannot be attained) unless the export crop sector (which is the source of foreign exchange) is also developing. Thus, a strategy for self-sufficiency in food supplies will involve making trade-offs between export crops and food crops, rather than the decision as to whether to promote exclusively food or export crops. The foreign exchange generated by the export crop sector will be used for two purposes: (a) to import the essential foreign inputs required in agriculture, such as fertilizers, insecticides and farm machinery; (b) to import food in the event of a short-fall in the domestic food supply. If the prevailing consumption patterns do not change, food imports will consist predominantly of rice, wheat, beef and cooking oils.

At the moment, the bulk of Kenya's foreign exchange comes from tea and coffee. These crops grow in high potential lands. The high potential areas are already experiencing great population pressures (see population densities in Table 4). As a result of the persistent rapid growth in population, most of the coffee areas are currently facing serious land shortages. This problem will be more acute by the year 2000.

Given the above situation, new ways of meeting foreign exchange requirements in agriculture and in other sectors of the economy must be found. Examples of these methods are: learning how to grow tea and coffee competitively in very small plots;* promoting those export crops (for example, cotton) which do well in dry areas; expanding foreign markets for processed foods; and promoting industrial exports.

With regard to a long term self-sufficiency in food supply, the appropriate development strategy for Kenyan agriculture over the

*The Coffee Research Foundation is currently recommending a reduction in the spacing of coffee trees (Verbal Communication from CRF).

period 1985-2000, appears to be a strategy that encourages a simultaneous growth in the food and the export crop sectors. The existing programmes for bringing down the rate of population increase should also be continued and strengthened, but it must be realized that their impact will not be felt in the short interval of 15 years. In fact, between 1985 and 2000, the rate of Kenya's population growth is estimated to increase from 4.0 per cent to 4.4 per cent (Rempel, 1985).

In addition to the agricultural measures specified above, some social programmes must be implemented to provide food to households which will be unable to produce or purchase enough food for themselves. The next section presents a brief discussion of these programmes.

IV. SOCIAL PROGRAMMES FOR FOOD SECURITY

Social programmes aimed at providing food security for the disadvantaged sections of the population will vary according to the population groups that are affected by food poverty. Table 6 shows sections of the Kenyan population which will likely be in need of food help by the year 2000. As the table indicates, the total number of nutritionally deficient individuals in Kenya was about 5,000,000 in 1978. Since, given its rate of growth, Kenya's population should double itself every 15-17 years, the nutritionally deficient individuals should be expected to number about 10 million over the period 1995-2000.

The nutritionally deficient groups listed in Table 6 suffer mainly from protein-energy-malnutrition. This condition is largely a result of insufficient food intake. The table illustrates a number of policies that can be undertaken to improve the nutritional status of the groups shown. Notice that solutions to food and nutrition problems are not limited to the agricultural sector only. For instance, in order to increase wage employment opportunities for the urban poor, growth in industrial output must be stimulated. It should also be noticed that interventions on the demand side of the food market, for

Table 6: Food-Poor and Nutritionally Deficient Groups in Kenya, 1978

Food-Poor or Nutritionally Deficient Group	Estimated number in Group	Cause of Problem	Policies to Alleviate Problem
1. Smallholders: (a) Food producers with average household income of K£50 (1975), virtually all from sales	2,200,000	Insufficient food production	Availability of improved hybrid maize legumes and pulses
(b) Landless poor	410,000	Low income, unaffordable consumer prices	Increased non-agricultural employment, public works, control of prices for essential foodstuffs
(c) Cash crop producers, Household income K£125 (1975)	1,090,000	Low incomes; unaffordable consumer prices; low earnings from sales	Improved marketing and storage, stimulation of food production
2. Urban unemployed and under-employed	250,000	Low incomes; unaffordable consumer prices	Better employment opportunities, price control for essential foodstuffs
3. Pastoralists	670,000	Vulnerability to weather	Better stocking practices, increase demand for pastoralists' produce, food security
4. Special groups: (a) Pre-school children	not estimated	Inadequate purchasing power by the households; poor feeding practices	Pre-school feeding programmes, nutrition education, income generating activities for households
(b) Pregnant and lactating mothers	not estimated	poor diet; low incomes, infections	Feeding programmes, water supply, health services
Estimated number in all groups	4,620,000		

Source: Republic of Kenya, Development Plan 1979-1983, Part I.

example, those which keep prices of basic foodstuffs low, create problems on the supply side of the same market. That is, price controls are a disincentive to the producers of the controlled commodities.

A strategy more likely to achieve food security for the Kenyan population by the year 2000 is one which takes into consideration the various macroeconomic interactions in the economy. In other words, intersectoral co-ordination of various social programmes will be needed in order for them to be successful.

V. CONCLUSION

The general conclusion of this paper is that it is possible to provide adequate food and nutrients to every Kenyan by the year 2000 if - well before that period - agriculture is re-structured, and nationwide social programmes for food security are set up. Structural changes in agriculture will stimulate growth in food production, whereas the social programmes will ensure equitable distribution of the available food. Structural changes in agriculture will involve in part the introduction of land tenure systems which do not permit ownership of land purely for speculative purposes; extensive cultivation of semi-arid areas using cost-effective irrigation technologies; intensive cultivation of traditional export crops (tea and coffee); and widespread use of hybrid seeds.

Care should be exercised in the implementation of some of the social programmes in order to minimize their adverse effects on food production. For example, if price ceilings are imposed on some foodstuffs, so as to increase their consumption by certain groups of the population, the marketed output of the foodstuffs in question would likely fall due to reductions in their supply prices. This adverse effect of a price ceiling, can be offset by subsidizing the cost of producing the foodstuffs affected by the price control. The general principle here is that whenever possible, efforts should be made to offset negative effects of one social programme with positive effects of another.

It is important to emphasize the point that sustained food self-sufficiency in Kenya is not possible without an explicit reliance on foreign agricultural markets, both as occasional sources of food,

and as regular sources of the foreign exchange that is needed to purchase inputs for domestic food production. However, the food security risks involved in an agricultural development strategy with a significant export base should be fully recognized. First, even if foreign exchange is securely available through food or cash crop exports, it is hard to be sure that the food that can be imported with it in the event of need will be of good quality. Second, the foreign markets could be made inaccessible by administrative or political problems. When the markets are accessible, the needed food might not be available in required quantities.

These factors should be carefully considered in designing a food policy that relies on foreign markets, either as sources of food or as suppliers of agricultural inputs.

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4.2 POLICY AND PLANNING FOR THE RURAL AND AGRICULTURAL SECTOR: DISTRICT FOCUS AND THE ARID AND SEMI-ARID LANDS IN KENYA

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I. PLANNING FOR THE AGRICULTURAL AND RURAL SECTOR: OVERVIEW

1. Introduction

On achieving independence in 1963 Kenya, like other developing countries, adopted a system of preparing five year Development Plans. The new Government was confronted with a difficult economic situation created by an economy declining since 1959 and a substantial capital flight (Kenya, 1973). In its effort to address the situation the Sessional Paper No. 10 of 1965 on African Socialism and its application to planning in Kenya was formulated. The paper viewed the nature of the economic problems confronting the country, the objectives of policy, and the measures required to implement policy, including the structure of planning. Detailed statements of economic and agricultural policy were also included in the Development Plan, 1966-1970. These two documents attempted to present a comprehensive policy to deal with the economic development of the country.

The early Development Plans stressed rapid economic growth: "... a necessary requirement is that national income should grow steadily and rapidly. Only rapid economic growth can enable Kenya to provide all its citizens with adequate health, and educational facilities, decent housing, reasonable other amenities and a rising income level for all." (Kenya, Development Plan 1970/74, p.1). The emphasis on growth dictated that investments be made where returns were highest and, as we shall see later, this virtually ensured that the arid and semi-arid lands would lag behind. Food and nutrition concerns were not a major issue - the country was a net exporter of food, including maize and wheat.

Rural and agricultural development has always been an important concern in the formulation of development programmes and of Government policy. The Second Development Plan stated that the key strategy of the plan was to direct an increasing share of the total resources available to the nation towards the rural areas. The Government believed that it was only through an accelerated development of rural areas that balanced economic development could be achieved, that the necessary growth of employment opportunities could be generated and the people as a whole participate in the development process.

The growth rates of the economy to the early 1970's were indeed high, 6.3 per cent per annum, and with a population growth rate of 3 per cent per annum, per capita income was growing. From 1961 to the early 1970s a large share of government effort had been devoted to land transfer and settlement. Programmes had been implemented without a decline in production. There was increased emphasis on cash crops - coffee, tea, tea, pyrethrum - and greater resources for the smallholder areas.

By the beginning of the third development plan (1974-78) the picture was no longer so rosy. The energy crisis had set in, the population growth rate had accelerated to 3.5 per cent per annum, and inflation was up. Price controls were attempted on a fairly wide scale.

It was also during the third Development Plan period that first efforts were made to pay more attention to the less developed agricultural and range areas. The principal constraints on agriculture were identified as lack of knowledge, technology and credit. The development strategy therefore was to concentrate on extension services, training, research, and improved supplies of agricultural inputs and markets.

The third Plan period also saw the continuation of the Special Rural Development Programme (SRDP) experimental approaches to agricultural

development. The need to involve the people in development programmes led to district level planning with the provision of district development grants. However the District Development Committees were not fully operational in many areas.

2. Poverty Alleviation Focus

By the middle of the third Plan period severe constraints on economic development had already emerged. The year 1975 saw the first devaluation of the Kenya shilling. By the beginning of the 1979-83 Plan period it could be said that the constraints had become more severe. The Plan asserted: "... the era of soft options is now over. What lies ahead is a more protracted struggle for development against obstacles that are in many ways more difficult to overcome." (Kenya, Development Plan, 1979-83 p.6).

The Rural Survey of 1977 had established the fact that poverty in all its dimensions was both pervasive and extensive in the country. About 55 per cent of all smallholders for instance, had incomes which were insufficient to provide more than the basic necessities of life. Clearly, the expected trickle-down effects had not occurred in the early years of rapid economic growth and something had to be done to stem the tide of poverty. The fourth Development Plan took poverty alleviation as its theme. It argued that attacking poverty was a central problem of Kenya's development. The attack on poverty would focus much of its efforts on increasing the incomes of smallholders. Poverty was traceable to low incomes and/or lack of access to employment opportunities, land, water, markets, credit and technologies. Three target groups were identified small farmers, landless rural workers, and pastoralists.

Thus there was a change of emphasis from a primarily growth-oriented development pattern of earlier plans to a more pronounced multi-objective approach.

The alleviation of poverty was to be pursued on four main fronts:

- a) creation of income earning opportunities;
- b) the improvement of expenditure patterns;
- c) the provision of basic needs such as nutrition, health care, basic education, water and housing; and
- d) institution building.

Rural development was again stressed and the development of arid and semi-arid areas was to receive special attention. Greater co-ordination of Ministries was called for given the complexity of arid and semi-arid areas (see below). The Plan clearly identified the constraints to be confronted. Smallholder programmes required greater administration than hitherto.

3. Food Policy

From 1964 to 1974 the agricultural GDP grew at a rate of 4.7 per cent per annum but from 1974 to 1979 the annual rate tended to fluctuate considerably, averaging only 2.4 per cent per annum. This was inadequate to keep up with the pace of population growth, which was 3.9 per cent per annum. The coffee boom of 1976-78 improved performance temporarily but there was a resumption of the downward trend in the prices of major exports in the international markets. This has further been aggravated by a high oil bill since 1973, increasing prices of capital goods, and unfavourable weather. All these factors had a marked negative effect on the economy.

In 1979-80 the country experienced severe shortages of essential foodstuffs - maize, wheat and beans - which entailed a large expenditure of foreign exchange in importing maize and wheat to meet the shortages. Serious Government attention was required for the formulation of a long-term strategy. In 1981 the National Food Policy (Sessional Paper No. 4, 1981) was issued by the Government and is currently being implemented. The paper was complemented by a detailed National Livestock Policy which had been issued in 1980. The overall objectives of the food policy paper are:

- a) to maintain a position of broad self-sufficiency in the main foodstuffs in order to enable the nation to be fed without using scarce foreign exchange on food imports;
- b) to achieve a calculated degree of security of food supply for each area of the country;
- c) to ensure that these foodstuffs are distributed in such a manner that every member of the population has a nutritionally adequate diet (Kenya, 1981, p.2).

Emphasis is also being laid not only on producing more food, but also on better food, in qualitative terms, for meeting the needs of Kenya's burgeoning population.

The policy paper examines the entire food production system together with the inputs and services needed to meet increased production, and the flow of the products to the consumers. Simultaneously, the production of export crops is to be promoted in order to generate foreign exchange. The role of indigenous food crops - such as cassava, sweet potatoes, sorghum, millet - is reviewed with a possibility of making them priority crops. In locations more prone to drought, such as Kenya's arid and semi arid areas, these drought-tolerant crops are more reliable than maize. We shall return to the food policy paper in our discussion on the District Focus and nutritional considerations.

4. Institutions

In the process of planning and policy formulation for agriculture and the rural sector there are many agencies involved, in addition to professional planners. There are two Ministries which are concerned with agricultural planning. These include the Ministry of Finance and Planning (now the Ministry of Planning and National Development) and the Ministry of Agriculture and Livestock Development (MALD), Development Planning Division. Other bodies which are involved in agricultural planning and policy are the statutory boards and other parastatals which operate under the MALD. In some ways the decisions made by these statutory

boards have contributed much to the planning of Kenya's agricultural development by the two formal planning agencies (Gray, 1967). The Government maintains an eccentric attitude to the formulation of policy and is committed to a principle of diversity of organizational forms. The critical consideration is the effectiveness of this organizational form in advancing development objectives. A variety of major programmes are undertaken by the MALD, the Ministries of Lands and Settlement, and Co-operative Development, and the statutory boards such as the Agricultural Development Corporation, the National Cereals and Produce Board, the National Irrigation Board, the Kenya Tea Development Authority, the Coffee Board of Kenya and the Agricultural Finance Corporation, and so on.

Other participants of the planning process are foreign aid agencies. In addition to providing capital and/or technical assistance, every one of these agencies exercises influence over the substance and manner of execution of the projects in which it participates (Gray, 1967). Among the most important agencies are the World Bank, the British, the Americans (USAID), the Netherlands, West Germans, and the EEC. Sometimes there are strings attached to the aid.

In addition, there are various Non-Governmental Organizations (NGOs) which have often reinforced Government efforts in agricultural development, particularly in the arid and semi-arid areas. These include the National Council of Churches of Kenya (NCCCK), the Kenya Freedom from Hunger Council, Catholic Relief, and so on. All these organizations exert some influence on the agricultural development process. We now turn to discuss the arid and semi-arid areas of Kenya specifically.

II. ARID AND SEMI-ARID LANDS (ASAL) IN KENYA: IDENTIFICATION AND POLICY EVOLUTION

1. Introduction

The arid and semi-arid areas of Kenya constitute a special problem within the overall context of planning and policy formulation

for the agricultural and rural sector in the country. The challenge, therefore, is to design a rural development strategy which will take into account the peculiar development problems and potentials of these areas. We hope that the District Focus for Rural Development constitutes such a strategy, something to which we shall address ourselves in the next section of this paper. We use the word "hope" deliberately, knowing full well that while the logic of the District Focus is highly compatible with the often "localized" problems found in these areas, this logic alone will, of course, not automatically translate itself into policies and plans for the development of these areas. In addition, deliberate thinking must continue, at the national level, on how best to tackle the incredibly complex problems facing these areas. In the past, and particularly the colonial past, these areas received little attention, and the attention which was received was of the wrong kind. In future the right kind of attention must be directed at these areas for we can no longer pretend that they do not exist, or worse still, that they exist but are a nuisance we can do without. We emphasize, once again, that the decentralizing logic of the District Focus, while not guaranteeing "the right kind of attention", seems to be, at least on the surface, incompatible with the "benign neglect" characteristic of past "centralized" policies for these areas. However, before the planning can take place, the problems of these areas must be better understood and documented.

2. Identification: Illustrative Data

One of the "development problems" of ASAL is that there is no agreement on how to define them. Several criteria are therefore normally

used to define these areas. These include, among others, climatic, ecological and land use characteristics. In terms of rainfall, the semi-arid areas generally receive average annual amounts of between 580 mm and 800 mm. In terms of land use, the areas generally represent those areas of interaction between pastoralism and cultivation, encompassing the margins of rainfed cultivation and the dry season grazing areas of many pastoral groups. The definitional problems of course, apply to Kenya too. Ominde (1971: 148) for example, defines Kenya's semi-arid lands as "a wide area around the core region of the Central Highlands and the westward-sloping plateau bordering Lake Victoria". On the other hand, the Inter-ministerial Task Force on Semi-Arid Areas (1979) argues for a definition based upon information on ecological characteristics of districts. Such a definition would, of course, be more practical for purposes of district planning within the overall context of the District Focus, something which the Interministerial Task Force might have had in mind 4 years before the District Focus was officially inaugurated in Kenya on July 1st 1983. It seems, therefore, that a sensible definition of Kenya's arid and semi-arid lands must begin with the analysis of the ecological characteristics of the districts, as envisaged by the Interministerial Task Force, if only because such a definition inevitably follows from the country's commitment to district planning. In addition, of course, the social, economic, cultural and psychological characteristics of the inhabitants of these areas must be better understood and documented.

Strict definitions apart, it is generally agreed that the combined arid and semi-arid areas of Kenya cover approximately 82 per cent of the country's land surface. In area, this amounts to some 473,000 km². This large area is however, occupied by only 20 per cent of Kenya's total population of approximately 20 million people. Furthermore, this land accounts for a vast reserve of unexploited resources, including approximately 50 per cent of Kenya's livestock herd. The problem of designing a strategy for developing these areas is, therefore, one of harnessing human resources scattered over a vast area in addition,

of course, to exploiting other economic resources, such as livestock. To repeat, this can only be done after a thorough understanding of the peculiarities of these areas. This understanding, it can be argued, requires a micro-analysis, something which is in keeping with the District Focus for Rural Development. And yet, we must emphasize, these areas cannot be viewed in isolation from the rest of the country and particularly the overall development of the rest of the country vis-à-vis these areas. In this respect, district planning does not and should not mean confining these areas to a special "problem category" as if they have little to do with overall social and economic policies, philosophies and programmes, as these have evolved over time. This point is often forgotten, particularly by those who tend to view the arid and semi-arid lands ahistorically, and as marginal. In this connection, the word "marginal" has often been applied, quite wrongly, to more than simply the land. That is, if we assume that the land itself is marginal, regardless of the technology and the policies at hand. As has been pointed out by students of these areas, "when policy makers and planners adopted the word 'marginal' to characterize these areas, the characterization appears not to have been restricted to the lands alone, but also to the people living in the lands", (Ng'ethe and Chege: Vol.1, 1982: p4) as opposed to some other areas which were "central" to development. The underlying logic of district planning should ideally lead to a removal of the "central"/"marginal" dichotomy, thus leading to development policies and programmes which treat each district as both central and marginal or potentially so, depending on the resources available and the problems identifiable at the district level.

Still, at the risk of generalizing too much, and until such time as district and sub-district data is available for the whole country, we can say, based on our past research and common knowledge, that the problems facing Kenya's arid and semi-arid lands can be summarized as follows: (Ng'ethe and Chege: Vol. 1, 1982: p7)

- a) Lack of water;
- b) Lack of transport and communications;

- c) Low levels of literacy;
- d) Poor health;
- e) Low agricultural productivity;
- f) Inappropriate institutions;
- g) Poor soils and environmental degradation.

All these problems were constantly highlighted during our research* in some of these areas. We shall now use some of the questionnaire responses to illustrate what we mean. We begin with the problem of water. It is generally agreed that lack of surface water constitutes a major problem in these areas, a fact which has been noted many times by researchers and administrators. Table 1 shows that during the dry season, the majority of the respondents in these areas walked (usually wives) more than 3 kilometres in search of water.

Table 1: Distance to source of water during dry season

<u>Distance in km</u>	<u>Kitui</u>	<u>Embu</u> (Mbeere)	<u>Meru</u> (Tharaka)
0 - 2	32.9	34.5	45.1
3 - 5	35.8	52.7	31.8
6 - 8	10.9	10.3	13.3
9 - 14	11.4	3.4	6.3
15 - 20	7.0	-	2.8
21 - 25	0.2	-	0.7
26 - 30	0.5	-	-
31 - 35	0.9	-	-
Percent	100	100	100
N	419	58	142

Source: Ng'ethe and Chege Vol.III, 1982: Table 49: page 25.

*The research was conducted jointly by the Institute for Development Studies, and the Ministry of Agriculture, ASAL Branch, between 1980 and 1981. The questionnaire was administered by the Ministry of Agriculture (ASAL Branch) then handed over to the Institute for Development Studies for processing and analysis. The final write-up resulted in 3 volumes of analysis as indicated in the references.

The situation depicted in Table 1 improved somewhat during the wet season when, on average, 75 per cent of the respondents in the three areas walked no more than the 2 kilometres for water; but then in these areas, drought is the norm rather than the exception.

The problem of illiteracy was vividly illustrated when it turned out that in all the three areas the majority of heads of households (on average, 90 per cent males) had no formal education at all. The figures were 71 per cent, 50 per cent and 54.9 per cent for Kitui, Embu and Meru respectively. The situation was worse with respect to the wives of heads of households. 89 per cent in Kitui, 76 per cent in Embu and 77 per cent in Meru did not have any formal education. It might be argued that the real issue is not formal education but other forms of "modern" education such as adult literacy classes. Unfortunately the data depicts an equally grim picture with respect to "other forms" of education, as shown in Table II.

Table II: Other Forms of training attended by head of household

	Kitui	Embu (Mbeere)	Meru (Tharaka)
None	85.2	79.3	78.9
Technical	2.6	8.6	4.9
Teaching	1.2	1.7	2.8
Local	-	8.6	2.7
Medical	0.2	-	-
Agriculture	9.8	-	-
Adult Literacy	0.2	-	-
Military	0.5	1.7	-
Percent	100	100	100
N	419	58	142

Source: Ng'ethe and Chege Vol. III, 1982: Table 27, page 17.

Poor health is, of course, a much more complex problem than the simple incidence of disease within a family. The "poor health complex" can be reflected in such indices as distance to the nearest medical facility, absence or presence of sanitary facilities such as latrines, nature of the diet, actual occurrence of disease and so on. All the indices tended to reveal a "poor health complex" in all the three areas. For example, 90 per cent of the respondents in Kitui, 57 per cent in Embu and 71 per cent in Meru did not have latrines in the homestead (Ng'ethe and Chege: Vol.III, 1982: Table 45). In addition hunger and general lack of adequate food supply - an issue we shall discuss separately below - were constantly cited as "problems". No wonder then that in all the three areas, the majority of the respondents isolated health as a "severe" or "frequent" problem.

Table III: Health as a major problem

Status of Problem	Kitui	Embu (Mbeere)	Meru (Tharaka)
Occasional	18.6	36.2	12.7
Frequent	20.5	17.2	14.8
Severe	40.6	39.7	50.7
No response	20.6	6.9	21.8
Percent	100	100	100
N	419	58	142

Source: Ng'ethe and Chege, Vol.III: 1982: Table 174, p.76.

Other problems cited by a majority of the respondents as "frequent" or "severe" related to clothing, water supply, land shortage, soil infertility, and lack of credit facilities, all of which, no doubt, have some bearing on the health status of the residents of these areas.

Health and nutrition are of course, directly related. Both are in turn related to the questions of land tenure, land size, farm management

food supply and agricultural productivity; issues that must be central to any meaningful discussion of the problems of the arid and semi-arid areas of Kenya. The data from Kitui, Embu and Meru reveal what in most respects, are typical aspects of the whole problem of the status of agriculture and its relation to food supply in Kenya's arid and semi-arid areas. Below is a summary of the data.

- i) In all three areas, the majority of household heads own the land, as opposed to renting it. Thus, 89 per cent, 77.6 per cent and 88 per cent of household heads own the land in Kitui, Embu and Meru respectively.
- ii) The majority of the farms are typical peasant holdings in size. Thus, 71 per cent, 88 per cent and 77 per cent of household heads in Kitui, Embu and Meru respectively, possess farms which are 10 hectares and under.
- iii) Most of the farms are not registered, except in Embu where 50 per cent of the farms are registered. Otherwise 93 per cent, 47 per cent and 86 per cent of the farms in Kitui, Embu and Meru respectively are not registered.
- iv) Most of the farms are neither surveyed, nor consolidated. However, most of the owners possess only one piece of land in any case. Thus, 60 per cent, 64 per cent and 59 per cent of the respondents in Kitui, Embu and Meru possess one piece of land only.
- v) The majority of the respondents cultivated no more than two hectares annually which is perhaps not enough given the poor state of the soils and the environment. Thus 60 per cent, 70 per cent and 61 per cent in Kitui, Embu and Meru respectively cultivate no more than two hectares annually, excluding the area under cash crops.
- vi) Approximately three quarters of the respondents practice inter-planting, and slash-and-burn agriculture.

- vii) Approximately 85 per cent of all the respondents do not use chemical fertilizers, and 63 per cent of all the respondents do not use improved seed varieties, because they were reported to be either not available or too expensive.
- viii) The majority of the respondents do not grow any cash crops. However, a surprisingly large minority has some cash crops. Thus 32 per cent, 45 per cent and 49 per cent in Kitui, Embu and Meru respectively have 1 - 5 acres under cash crops. A small percentage has over 5 acres under cash crops. It appears therefore, that food production and cash crop production are allocated approximately equal amounts of land. (See point v)
- ix) Not surprisingly, agricultural production in these areas is highly dependent on human labour and rudimentary tools such as pangas and jembes. Thus, 78 per cent, 79 per cent and 73 per cent of the respondents in Kitui, Embu and Meru respectively depend on "human power" for tillage. On average, a smallish 14 per cent of the respondents use animal power, and an even smaller percentage (4 per cent) use mechanical power.
- x) Most of the respondents, again not surprisingly, claimed that there was no water in the area which could be used for irrigation. However, a surprisingly large 33 per cent claimed that there was indeed water in the area which could be used for irrigation.
- xi) In spite of the so-called "remoteness" of these areas, 56 per cent of the respondents indicated that extension agents visit them once a week. 26 per cent have never been visited by extension agents. However, it appears that the farmers did not quite know the use of extension agents. Thus, on average a full 86 per cent of the respondents "get their farming advice and information from nowhere".
- xii) About one third of the respondents had 1-10 cows, goats, sheep

and chicken throughout the year. However, as we shall see later, the animals did not earn the owners much income, with the exception of cattle.

- xiii) The majority of the respondents did not dip their animals, did not cultivate forage for animals because they did not know about them, and would not use artificial insemination even if the service were available. However, the majority did vaccinate their animals against such common diseases as foot and mouth, rinderpest, anthrax and so on.

As we expect in arid and semi-arid areas, food supply emerges as one of the problems facing the farmers, which perhaps is predictable from the above summary. When asked whether food supply was a problem nearly all the respondents indicated that it was, as summarised in Table IV.

Table IV: Problem of food supply

Status of problem	Kitui	Embu (Mbeere)	Meru (Tharaka)
Occasional	41.8	50.0	52.1
Frequent	25.3	34.5	21.1
Severe	14.3	8.6	9.2
No response/No problem	18.6	6.9	17.6
Percent	100	100	100
N	419	58	142

Source: Ng'ethe and Chege Vol.III: 1982: Table 173: page 76

And yet, in spite of the fact that food supply is a major problem, very few households spend any money on food (Table V), which means either the households have no money and therefore go hungry during food shortages, or depend on famine relief during food shortages. Either way house expenditure seems to reflect a generalized lack of income

Lack of income is also reflected by the fact that in all the three areas approximately 94 per cent of the respondents claimed that no member of the household earned any off-farm income "during last season". The same pattern holds when it comes to incomes earned from activities such as sale of sheep, goats, donkeys, chickens, maize, cotton, sunflower, beans, sorghum and millet. In all these cases (Table VI) little if any income was earned, which might mean that little or no surplus was produced. What we are looking at then are poor subsistence producers, who do not seem to produce enough even for their basic subsistence.

Table V: Household Expenditure During Previous Year

No expenditure on:	Percentage of Households		
	Kitui	Embu (Mbeere)	Meru (Tharaka)
Food	95.9	86.2	94.4
Seeds	61.6	58.6	94.8
Fertilizer	97.1	91.4	95.1
Ploughing	58.5	56.9	54.2
Petrol	64	48.3	69.9
Transport	84	72.4	86.6
School fees	41.1	24.1	43.0
Taxes	21.5	12.1	16.2
Household goods	91.6	81.0	83.8
Clothing	39.1	25.9	35.2
Charcoal/firewood	65.6	53.4	71.8
Paraffin	89.0	86.2	90.1

Source: Calculated from Ng'ethe and Chege, Vol.III 1982: Various Tables.

Table VI: Incomes earned from farm activities (including livestock) during previous year

No income from:	Percentage of Households		
	Kitui	Embu (Mbeere)	Meru (Tharaka)
Cattle	48.4	39.7	43.0
Sheep	92.8	96.6	95.8
Goats	56.8	34.5	50.7
Donkeys	99.3	100	97.2
Chickens	92.1	100	98.6
Maize	85.2	65.5	57.0
Cotton	92.6	93.1	78.9
Sunflower	96.9	82.8	88.7
Beans	83.1	77.6	72.5
Sorghum	84.5	70.7	72.5
Millet	94.3	100	97.2

Source: Calculated from Ng'ethe and Chege Vol. III: 1982: Various Tables.

Given the above information, it should not be a surprise that most of the households reported that they have suffered, at least twice, from food shortages in the past ten years. Furthermore, on average during the last ten years, over 95 per cent of the households have experienced food shortages for a period ranging from 1-30 days a year. What is even more interesting is that, on average, 82 per cent of the respondents thought the best protection against the effects of future drought lay in the acquisition of more land. Accordingly they were buying more land.

So far we have highlighted the problems of food and agriculture, illiteracy, health and water, knowing quite well that it is difficult to isolate one problem or even a set of problems as the most

important in these areas. Other problems such as inappropriate credit and marketing institutions, reflected in encroaching desertification are, of course, part and parcel of the physical and human "poverty syndrome" characteristic of these areas. Perhaps the only reason why we have emphasized education, water health and agriculture is simply that they appear to us the most obvious when it comes to defining the nutritional consequences of poverty. To these we must add the possible existence of psychological and cultural structures of the people themselves which may, among other things, prevent them from adopting modern science-based farming systems, including, for example, well-known and available technologies for harnessing water resources for human and animal consumption as well as for irrigating crops and pastures. This, however, is a tricky area in social investigation and we certainly would not wish to appear to be on the side of those who blame the victim for his woes. The point that needs to be re-emphasized is that in defining and isolating the problems of arid and semi-arid lands for the purpose of general planning, and nutritional planning in this case, we should keep in mind that the problems mentioned above exist together and interact in a synergistic manner to reduce a community's welfare level by a magnitude that is much greater than if they all existed, but each at a different time. In this sense, whether planning at the national level or at the district level, it is impossible to plan with nutritional considerations alone in mind. One has to plan for the overall development of these areas. For example, "the co-existence of ill-health with low agricultural productivity makes it difficult, if not impossible, for a family to afford adequate health care for its members. It is also true that episodes of sickness do impair a family's working efficiency and reduce its working hours so that it cannot raise its productivity by significant margins". (Ng'ethe and Chege: Vol.I: 1982: page 8).

A family that lives under the conditions mentioned above is in a vicious circle of poverty and bad health. Such a condition is difficult to break from within the family. However, it is also true

that a family can improve its welfare by exploiting favourable conditions such as the presence of extension officers, availability of improved seeds and animal breeds, availability of credit institutions and markets. There is an important policy and planning issue here. Even though the planning for these areas must be integrated, it may not be possible for the planners and the government to tackle all the problems simultaneously. In this sense, a case for putting food and nutritional considerations at the top of the planning agenda can logically be made. However, in doing so we should like to repeat what we believe the planners already know, and that is: "The major problem of arid and semi-arid lands is one of narrowly-based, and not easily sustainable, production systems. Consequently any strategy for developing these areas should aim, not only at broadening the base of the production system but also at making the system sustainable by enhancing its capacity to meet the income needs of the local people". (Ng'ethe and Chege: 1982, Vol.II: p.2). Only then can nutritional considerations be meaningful to the residents of these areas whose foremost concern is literally physical survival. Within this "survival syndrome", nutritional considerations, whether planned at the national or at the district level, might appear to be a mere luxury, unless integrated into overall income-generating development. Furthermore, within the survival syndrome, the desire to participate at the local level - a major justification for district planning - could very well turn out to be literally impossible to fulfil. This point in particular, needs to be kept in mind as government and planning policies for these areas continue to evolve.

3. Evolution of Government Policies for ASALS - Neglect To Favourable Attention

In 1902 the fledgling colonial state passed the Crown Lands Act authorising prospective settlers to acquire land in Kenya. As the immigration of the settlers continued the 1902 Act was strengthened in 1915 by another Act which gave the state even more powers to alienate African land for European settlement. The inhabitants of arid and semi-

arid areas of Kenya did not escape the alienation exercise. This was especially true in the semi-arid areas of the Rift Valley which were viewed by the settlers as being ideal for large-scale ranching. Once the settlers had alienated the land they wanted, the state proceeded to neglect the high potential unalienated African areas, or reserves as they were called. Land alienation thus affected both agricultural and pastoral peoples, though in different ways. In both cases, the effects were both social and economic. As one observer has put it: "Although the agricultural people were most severely affected by land alienation, the pastoral people lost the largest proportion of the land, and even more important was the loss of dry-season grazing in the relatively well watered and higher grounds". (Adholla: 1981: p.4).

The tensions resulting from land alienation led to the inauguration in 1923 of the doctrine of the paramountcy of native interests, which essentially meant that from then on African agriculture was not going to be totally ignored, something which naturally, did not please the settlers. In the ensuing tug of war between the Africans, the colonial state and the settlers, a few minor policy changes were introduced which included the introduction of District Betterment Funds, intended to be a source of funding for the development of African reserves. The notion of "District Development Funding" is therefore not quite new. The point, however, is that the new policy changes tended to look at "African areas" as one homogeneous category. What little "betterment", therefore, took place tended to be concentrated on the wetter high potential areas where, among other things, the investment returns were more obvious. Naturally this policy resulted in a widening of the gap between the semi-arid and the agriculturally better off areas. In order to explain the district and regional disparities emanating from this policy, the colonial authorities resorted to the ideology of blaming the victim. The pastoralists were blamed, among other things, for overstocking and thus causing soil erosion. Consequently they were often forced to destock by selling to the government at throw-away prices. Within this unicausal conception of the

problems of arid and semi-arid African areas:

"actions in the semi-arid areas concentrated upon reducing soil erosion and overgrazing and upon veterinary campaigns to reduce incidence of disease in native livestock, a measure designed primarily to protect the European livestock economy. The economies of the semi-arid areas were viewed as unproductive, damaging to the environment and as a potential hazard to the European ranching sector. In view of this negative attitude it is not surprising that little effort was made to develop the economic potential of the African livestock sector." (Ngutter: 1981: p.28).

We might also add that little effort was made to explore agricultural potential among the pastoralists, even where such potential might have existed. In all then the pastoralists were ignored in spite of, for example, their enormous contribution to the war effort during World War II, during which the emphasis was on settler agriculture as the "most responsive". As we have seen, their plight was explained in such terms as soil erosion, overgrazing, laziness and the like, rather than loss of grazing lands, or underinvestment in these areas.

The 1946-55 Ten Year Development Plan made some resources available to the African areas through such organizations as the African Land Development Board (ALDEV). It was during this plan period that, for the first time, serious efforts were made to look into the problems of semi-arid areas of Kenya. In this connection, it is often pointed out that though the plan was supposed to cover all African areas, ALDEV in fact concentrated most of its thought, actions and meagre resources in the semi-arid areas (Ngutter: 1981: p.29). However, the thrust of ALDEV's projects in these areas reflected the colonial theory that the main problem of agriculture and livestock development in these areas lay in land deterioration as a result of overstocking. This, of course was only partially true.

The period 1955-1960 was dominated by the famous Swynnerton Plan which sought to counter the Mau Mau revolt, by introducing individual

land tenure, among other things. In doing so, the Swynnerton Plan recognised that semi-arid areas required specific attention. However, though the plan was well-intentioned as far as these areas were concerned, the emphasis was still on destocking as a panacea. Furthermore, during the plan, Government efforts were concentrated in those areas where the Mau Mau nationalists were most active, particularly in Central Province. Thus, the semi-arid areas had to wait. Political priorities dictated so.

What we see then, for the colonial period, is a gradual shift in intentions but no major impact as far as the semi-arid areas were concerned. From the early period of land alienation, we move to the period of "benign neglect" between the wars to total neglect and exploitation during World War II, to the post World War II when intentions are beginning to change. However, the policy change, if one can dignify it with the name of "policy", is overtaken by events which are principally a result of past colonial land policies. The total effect of all this is that the semi-arid areas emerge from the colonial period the worse off for having lost the largest tracts of land through alienation and for having obtained very little by way of "colonial betterment". One, therefore, cannot really talk of planning for the semi-arid areas during the colonial period. One can rather talk of "good intentions" when social and political pressures forced the colonial authorities to shift ground, albeit temporarily. How about the post colonial period?

As we have already discussed, from the early 1960's to early 1970s the Kenya government was heavily pre-occupied with the issue of land transfer and settlement, aimed at merging colonial settler agriculture with the colonial African agriculture. This was an expensive exercise. In addition, it was taking place in the context of the economic philosophy outlined in the famous Sessional Paper No. 10 on African Socialism (1965). The cost of the land transfer programme plus the basic thrust of the Sessional Paper No. 10 did not augur well for the semi-arid areas. Says the document at one point:

"To make the economy as a whole grow as fast as possible, development money should be invested where it will yield the largest increase in net output. This approach will clearly favour the development of areas having abundant natural resources, good land and rainfall, transport and power facilities, and people receptive to and active in development". (Kenya 1965: para 133).

Quite clearly, the semi-arid areas of the country did not merit much attention under the growth-oriented philosophy embodied in the above paragraph. From a social, political and even economic point of view this neglect was not seen as the disaster it was. After all there was, or seemed to be, plenty of land with abundant natural resources and rainfall. However, in the early 1970's the land frontier started disappearing rather quickly and the non-wisdom of concentrating investments in the high potential areas began to be apparent. This led to a noticeable change in government policy towards semi-arid areas.

Following the 1972 International Labour Organization (I.L.O.) mission to Kenya, the changes in government policy were evident in the next two Development Plans - the 1974-78 Development Plan and the 1979-83 Development Plan. The I.L.O. mission's report titled Employment, Incomes and Equality: A Strategy for Increasing Productive Employment in Kenya was quick to point out that an agricultural policy based on settling people either on ex-settler land or on new state land was not a viable policy in the long run. Neither was a semi-arid lands policy based solely on the development of livestock - the Range Management Programme. Consequently, argued I.L.O., a concerted effort was needed to develop these areas. In particular, the following issues deserved definite policies: (a) the problems of small-holder arable agriculture in semi-arid areas; (b) the problem of land use conflicts between agriculture, livestock, wildlife and afforestation; (c) the problem of developing dryland farming technology; (d) the problem of insufficient information on semi-arid areas. These are some of the issues to which the 1974-78 Development Plan and the 1979-83 Development Plan began to address themselves.

In the 1974-78 Development Plan, the Government proposed to "devise methods of developing the less-favoured areas and promote even development among different areas". Furthermore, during the plan period it was intended "to promote rapid development of the marginal cropping areas through the development of better crop varieties and improved methods of husbandry" (5:198). The 1978/83 Development Plan, whose theme was "alleviation of poverty", was even more emphatic on government commitment to the development of semi-arid areas. The plan not only described and identified the semi-arid areas as a new priority, but also tried to identify the basic problems of developing these areas. Development of these areas was seen as central to the basic aim of poverty alleviation. The plan stated:

"Providing the low income groups with access to improved opportunities and basic needs is central to the success of the plan strategy. The Government will increase its efforts to disperse facilities for education, health-care and other social services more widely and improve on the methods for bringing such services to the nomadic people in the arid and semi-arid areas". (2:86 p.42)
"Further, arid and semi-arid land development will assist both the sedentary and pastoral agricultural populations in both increasing agricultural output and alleviating poverty. Major attention must be focused on these areas." (6.25 p.211).

Now it is one thing for governments to make statements of intentions, and quite another thing for them to translate those intentions into tangible development projects. This is especially true in the development of semi-arid lands where massive resources are needed. The question therefore arises: how serious was the Government in its commitment to the development of Kenya's semi-arid lands? In our opinion the Government was quite serious, if only because it had no choice. Since there is no more fertile land left, enlightened self-interest dictates the development of these areas. Motivations aside, it is obvious that beginning in the mid 1970s the Government has set in motion an impressive array of institutions charged with responsibility,

directly or otherwise, of tackling the problems of semi-arid areas in the country. Below is a summary of some of them. (Also see Ngutter: 1981: pp 35-36 from which most of the information below has been drawn).

a. In 1976, the Government established a marginal/Semi-Arid Lands Pre-investment Study housed in the Ministry of Agriculture under the Arid and Semi-Arid Lands (ASAL) Branch of the Ministry. The Branch Head works with a core of Kenyan researchers, though from time to time the Branch houses expatriate consultancy teams such as USAID. The Institute for Development Studies, University of Nairobi, has also done consultancy work for the ASAL Branch. The main function of this interdisciplinary branch is to study and, where possible, quantify the development resources in the arid and semi-arid areas and suggest suitable projects for these areas. Under the auspices of the branch, research has been completed in such districts as Machakos, Kitui, Embu, Meru and Baringo. Some of the projects recommended by the study teams are either being implemented or are at advanced stages of preparation and appraisal.

b. The Government has for some time now had Dryland Farming Research Stations in the country. Perhaps the best known of these is Katumani Dryland Research Station near Machakos Township, 40 miles from Nairobi. Among other things, the Katumani station tries to develop new technologies for crop production in marginal areas where, previously, rainfall was considered too low and limited for profitable crop production. The station has actually popularized the term "dryland farming" in Kenya.

c. A number of River Valley Basin Development Authorities have been established in the country. Quite a number of these, such as Kerio Valley and the Tana/Athi River Development Authorities cover mainly semi-arid areas. In this respect, we note that the potential for irrigation in the semi-arid areas of Kenya seems to be high. In future it is expected that expansion of irrigation will result mainly from large irrigated holdings in the dry areas. In addition, there is also an estimated increase in the proportion of independent small-scale schemes located in the semi-arid areas (Palutikof 1981: p.76).

d. A Rangeland Ecological Monitoring Unit has been established. The purpose of the unit is to advise the Government on trends in livestock and wildlife numbers and cultivation in the semi-arid lands. Under the auspices of this unit, a number of studies have been carried out, particularly on conflicts in land use.

e. Various Government ministries have established special programmes intended to benefit the semi-arid areas. For example, the Ministry of Environment and Natural Resources has a Dryland Re-afforestation Research Programme to develop suitable early-maturing tree species for semi-arid areas. The Ministry of Education, Science and Technology has a programme to construct Arid Zone Educational Centres. In addition, a few years ago, a permanent Presidential Commission on Afforestation and Soil Conservation was established.

f. In 1978, the Government established an Interministerial Committee to develop a framework for co-ordinating and integrating development in the arid areas. In 1979, the Committee produced a report titled Arid and Semi-Arid Lands Development in Kenya: The Framework for Implementation, Programme Planning and Evaluation. The report, which was accepted by the Government, proposed among other things: (i) an Interministerial Co-ordinating Committee at the level of Permanent Secretaries (highest ranking civil servants in each ministry) of all ministries involved; (ii) a second committee - The Planning and Co-ordinating Committee - to handle the day-to-day interministerial co-ordination and planning; (iii) a Technical Co-ordinating Committee to facilitate the exchange of technical ideas between those ministries or departments which will be more involved than others. The idea of the three-tier structure is to ensure that the development of the semi-arid areas is diffused as widely as possible within the Government and that decisions are taken as quickly as possible. (Ngutter, 1981: p.36).

From the above summary, we can see that between 1974 and 1983 there was a noticeable change in government policy towards the semi-arid areas of this country, as reflected at least by the creation of institutions

which hitherto did not exist. The policy change was a departure from some of the arguments contained in the Sessional Paper No 10, 1965. We should, however, like to add two points by way of introducing the next section. Firstly, institutions by themselves will only facilitate, at best, planning for the arid and semi-arid areas at the level of diagnosis and project identification. However, actual project implementation cannot take place unless financial commitment exists. Depending on the nature of the recommended projects, the finances required can be quite enormous or quite modest. If the financial resources needed are enormous, then we see little hope for these areas, the existence of planning institutions notwithstanding. Modesty is, therefore, called for in project identification. The second point is that most of the institutions so far created are "national institutions" intended to provide national outlooks and frameworks. In this respect, the real policy change in the current plan period is the Government commitment in July 1983, to the District Focus, a change which has or should have obvious consequences with respect to the national institutions charged with bringing some development to the arid and semi-arid areas of the country. Whether these consequences are positive or negative will depend on what the District Focus is understood to mean and therefore how it is implemented.

III. DISTRICT FOCUS, ASALS AND NUTRITIONAL CONSIDERATIONS

1. District Focus - Limited Decentralization

As we have already mentioned, the one thing that is new within the current Development Plan is the District Focus for Rural Development. Of course there is a sense in which nothing is really new, and in this respect it could be argued that the old colonial District Betterment Fund hinted at some form of decentralization, though no one actually called it that. However, though the basic thrust of the current Plan is itself not very different from previous Plans, the incorporation of the District Focus element introduces a new and interesting dimension, within the overall themes of rural development, alleviation of poverty and

provision of basic needs. The District Focus is also new in another, and perhaps more important sense. The colonial state, though allowing some powers to the Local Authorities was basically a centralizing state. This "centralizing philosophy" assumed something of a sacred status after independence in 1963, perhaps as an over-reaction against what the government saw as an imposed decentralization at the time of independence. Whatever the reasons, the extent of centralization following the demise of the regional constitution in 1964 was such that even the Local Authorities lost the few powers they used to have during the colonial era. The centralizing philosophy, was of course, reflected in all the Development Plans until the current Plan period. In this important sense then, the District Focus is definitely new as it marks a recognizable break with the past, if not in substance, certainly in spirit. What then is the spirit and substance of the District Focus for Rural Development?

For close to ten years now, the Kenya Government has been committed to district planning and has consequently been training and posting District Development Officers to the districts. As their name implies, the officers are meant to be technically oriented, their principal job being the co-ordination and final writing of District Plans for onward transmission to the Ministry of Finance and Planning. The 1983 commitment to the District Focus, however, goes beyond district planning merely for purposes of generating raw materials for the national Plan. The spirit of the District Focus then is the desire and commitment to go beyond a simple cataloguing of "district needs", in other words to go beyond the district shopping lists which previously went under the title of "District Plan", without the district having any responsibilities - because it did not have the means - for implementing the plans. The District Focus proposes to give the District some responsibility and some means to implement, at least some aspects of the District Plan. The spirit, therefore, is one of decentralization. How about the substance? This can be summarized as follows: (Republic of Kenya: 1985: p.33).

- a. The objective of the District Focus is to broaden the base of rural development efforts by encouraging local initiative that will complement the ministries' roles, thus improving the productivity of development work and increasing effectiveness in problem identification, resource mobilization and project implementation.
- b. The strategy is based on the principle of ministries and districts having complementary responsibilities.
- c. Responsibility for the operational aspects of district-specific rural development projects is delegated to the districts. Responsibility for broad policy and the planning and implementation of multi-district and national projects remains with the ministries.
- d. The ministries will work with the districts on both local projects and multi-district and national projects.
- e. The guiding priorities for development in the districts are set down in the District Development Plans.
- f. On an annual basis, each ministry will inform each district of the amount of money the ministry will make available for district-specific projects in that district and of the policy guidelines to be used by the districts in selecting projects.
- g. The district, working within the funding ceiling and policy guidelines, identifies and plans high priority projects to be submitted to the ministry for funding.
- h. If the district proposals are within the ceiling and fit the guidelines, the ministry funds the projects. Implementation is to be co-ordinated by the district.
- i. For multi-district and national programmes, the districts submit their priorities to the ministries, and the ministries use this information in planning their activities. Districts and ministries co-operate on implementation in these projects.

j. The District Development Committees (DDCs) are responsible for the definition of priorities for locally identified projects coming through the divisional and lower level development committees. The DDCs are also responsible for identification of district-wide needs and opportunities, establishment of project priorities, preparation of the District Development Plan and the design of projects which fit within the priorities of the plan and within the guidelines and funding ceiling established by the ministries.

k. The District Development Committees' membership will consist of:
District Commissioner (Chairman)
District Development Officer (Secretary)
Departmental Heads of all ministries represented in the district.
Members of Parliament
District KANU Chairman
Chairmen of local authorities
Clerks of local authorities
Chairmen of Divisional Development Committees (D.O.s)
Representatives of development-related parastatals
Invited representatives of non-governmental development-related organizations and self-help groups.

l. The technical preparation of plans, management and implementation responsibilities of the D.D.C. are vested within the District Executive Committee, whose membership is as follows:

District Commissioner (Chairman)
District Development Officer (Secretary)
Departmental Heads of all ministries represented in the district
Clerks of local authorities
Representatives of development-related parastatals

m. District Treasuries have been strengthened. Authority to Incur Expenditure (AIE) are now issued by the ministries directly to their district representatives.

n. District Tender Boards have been strengthened and district tender ceilings raised to facilitate local procurement.

This perhaps is neither the appropriate time or place to fully evaluate the substance of the District Focus as sketched above. Suffice it to say that it is not far off the mark to characterize the substance of the District Focus as limited and cautious decentralization, which may be all that the country can economically, administratively and politically afford at the moment. The decentralization is limited for at least several reasons. One is that central Government ministries clearly retain many responsibilities, both financial and supervisory. In this respect, we should note that there is no provision for the districts to deal directly with the Treasury. Rather, they must continue dealing with the ministries on financial matters. Two, it is not clear whether the ministries are actually obliged to fund the district proposals (point h). A positive interpretation would assume that they are so obligated, but then this leaves room for other interpretations. Three, the ministries retain policy responsibilities under which District Development Plans must be prepared. Four, the scope of the projects whose implementation is to be co-ordinated by the district is unequivocally limited to "district projects". Multi-district projects - in addition to national projects - remain the primary responsibilities of ministries. Five, perhaps Local Authorities should be given a more prominent role within the District Strategy.

The District Focus is decentralization all the same, the limited degree of decentralization notwithstanding. Firstly, it creates more room for local initiatives, as evidenced by the fact that project generation has to start at the grassroots level. Secondly, the composition of the DDC, though perhaps rather large, ensures that all the local interests are taken into account when generating projects and deciding on priorities for onward transmission to ministries for funding. Thirdly, though not explicitly stated, the District Focus embodies the notion of small, non-complex, easy to implement and quickly beneficial types of project, which should be one of the primary concerns of decentralization. Fourthly the effort to make sure that AIEs reach the districts as quickly as possible, is clearly indicative of the spirit of decentralization. The substance, however, lies in how much the AIEs are for. Fifthly, the issue of procurement at the district level, as reflected in the strengthening of the District Tender Boards and the raising of the district tender ceilings, also represents the spirit of decentralization. But here again, the substance lies in the actual ceiling and whether districts will consider the ceiling adequate.

Finally, we should add that the District Focus for Rural Development encompasses more than is included in the above summary. For example, as part of the District Focus, a comprehensive training programme will be instituted in order to train such personnel as extension workers, development committee members at all levels, local leaders, and so on, for their new responsibilities. This clearly indicates decentralization of skills.

2. District Focus and ASALS - No Grand Solutions, No Panacea

The District Focus For Rural Development is, of course, not meant to exclusively benefit the ASAL. It is a national strategy meant to apply to all the districts regardless of their ecological characteristics. In pointing this out we want to underscore a point we have already made and that is, though the spirit and the logic of the District Focus are likely to accelerate development in those underprivileged areas such as ASAL perhaps more than in the privileged areas, the District Focus itself is no panacea for ASAL, and is perhaps not meant to be. Any special advantages therefore, which can or will depend on how the strategy evolves over time. As we have seen, there is room for interpretation in the strategy. In trying, therefore, to interpret the strategy as favourably as possible with respect to ASAL, we want to develop a number of points which arise from our discussion so far.

The first point we want to make, and this is based on our research experiences, is that the problems confronting the ASALs are so inter-related and so complex that they have no quick and automatic solutions. We realise that this may sound like a platitude and one which in any case is true of rural development in general. However, we are compelled to say so by the fact that the degree of poverty hunger and general underdevelopment in these areas sometimes tempts planners and researchers to look for quick and efficient solution. What it can do however is to provide a framework within which solutions to the problems of these areas can eventually be found, if found they can be. The solutions are likely to be prolonged, painful, incremental and local, all of which, it can be argued, are compatible with the District Focus.

The second point follows from the point above. It is unlikely that there are grand, wholesale solutions to the problems of ASAL. In this respect, one "grand solution" which often occurs to a first-time researcher/visitor to these areas, is wholesale resettlement of the residents in some other "better" place. Alternatively, and this is often the subject of public statements, solutions such as large-scale irrigation projects are often recommended. Now, the main problem with grand solutions is obvious. They are far too expensive, and furthermore they demand too many resources too quickly. Also, grand solutions often fail to identify, let alone appreciate, the local resources of these areas. Instead, the logic of the grand solution is often that these areas are uninhabitable, and solutions imply either transforming them or abandoning them altogether. Clearly the stated argument of the District Focus, seems to run counter to the logic of the "wholesale solution". True, these areas have been neglected in the past, are underprivileged and poor, but they have local resources, and the residents have the initiative and the will to identify these resources which can and should be complemented with external resources. These resources include agricultural resources which, naturally, have food and nutritional consequences.

The third point follows from the second point. If we agree that grand solutions are probably not the best for ASAL, then the corollary is that small community-type projects might hold more hope. What we have in mind here is a series of complementary local projects at the district level which can be packaged in such a way as to constitute an integrated programme which can then be identified as a priority for purposes of funding. Often these kinds of integrated project are likely to be overlooked when planning takes place exclusively at the centre. Nonetheless, they might be the most important when it comes to what we called earlier "quick to implement and of immediate benefit type of projects." While it is true that this type of project need not be the exclusive monopoly of ASAL, it is also true that such a project programme is likely to have more crucial consequences in ASAL.

where, often, quick action can literally be a matter of life and death. For example, the introduction of beekeeping, coupled with the introduction of a purchasing institution, access roads and collecting mechanisms can make all the difference between ability to purchase food during drought and starvation or famine relief. This kind of programme is rarely identified at the national level.

Following from the above point, we should also note that ASAL are disaster prone, as evidenced by recent events in some African countries. The real disaster, however, is the inability of central authorities to respond quickly enough. While response to sudden disaster might not strictly speaking constitute "development", nonetheless it must be taken into account when looking at administrative arrangements such as the District Focus. Certainly arid and semi-arid areas in this country quite often suffer from famine and therefore need famine relief, something whose nutritional consequences are all too obvious. We should hope that the District Focus will create more room and means for disaster monitoring in these areas, particularly for food-related disasters. We should add here that monitoring food-related disasters does not necessarily mean famine relief administration. Quick ability to incur expenditure at the district level has obvious consequences in this regard.

In the specific context of drought and famine, one of the things that is usually pointed out is that the residents of ASAL have developed highly efficient skills for coping with drought and famine. However, these skills are often ill understood by outsiders who in any case are so overwhelmed by the suffering they see in these areas, that they fail to see the indigenous coping mechanisms. In this respect, it has been argued (Kwofie: 1981:p.12) that a kind of "anthropometric" methodology is needed before one is able to appreciate the indigenous skills, not only for coping with hunger and famine specifically but also for coping with the overall environment. The "anthropometric methods" can perhaps only be acquired and practised at the local level. Logically, district planning and project selection is more likely to accommodate this type of skill acquisition than any other administrative set up. We should re-emphasize here that, contrary to popular opinion. ASAL environments are extremely heterogeneous, ecologically, economically and, of course, culturally. This inevitably increases the need to acquire localized but highly specific

s skills on how to develop these areas. These micro-regional skills are usually not available outside the district. Only at this level can they, therefore, be transmitted and made use of, for the benefit of the local residents.

The District Focus represents not only a continuation of the substance embodied in the 1974-78, 1978-83 and 1984-88 Development Plans but also a departure in a fundamental sense, from the earlier growth only philosophy of the Sessional Paper No 10 (1965). We have already pointed this out. Here we simply need to re-emphasize that the "all districts must receive equal attention" philosophy, as embodied in the District Focus seems to elevate regional equity to a height not previously attempted. Thus the 1984-78 Development Plan signalled a more favourable Government attitude towards ASAL. The attitude, however, seems to have fully matured with the introduction of the District Focus. At the heart of the attitude is the spirit of regional equity, which no doubt is a key aspect of the District Focus agenda. ASAL are likely to be among the main beneficiaries as social and regional equity consideration take their place, hopefully alongside growth.

In extrapolating the positive implications of the District Focus on ASAL we should point out that in most of these areas the Government is not the only agent of development. While this might also be true of the better-endowed areas, it is also true that Non-Governmental Organisations (NGOs) in particular play something of a key role in the development of these areas, especially the most inaccessible. This is where one finds NGOs running small health centres, small projects, small irrigation and soil conservation projects and so on. These types of project are absolutely vital in complementing larger Government efforts. Unfortunately, most of the NGOs, while performing what are literally vital functions in these areas, seem to be completely unco-ordinated, let alone functionally integrated. On talking to district officials in these areas, one gets the impression that they feel unable to "interfere" as they usually call it, with the activities of NGOs. Consequently, NGOs are usually left alone to define "development" strictly as what they are currently doing on the local scene. We trust that the District Focus will result in better co-ordination and more functional integration of NGOs. No doubt a major intention of the strategy is to strengthen, psychologically and otherwise, the local development committees in order to make them feel competent to "positively interfere" in any and all development activities taking place within the district. The committees should take advantage of the spirit of decentralization and

consultation. particularly in trying to co-ordinate the work of NGOs. This argument also applies to self-help groups in these areas.

Lest we give the impression that the new District Strategy spells roses all the way for ASAL, we should like to discuss one or two issues which have the effect, if not the intention, of qualifying what we have said so far. First, the "survival syndrome". We have argued, and data available supports the argument, that the residents of ASAL are mainly pre-occupied with just survival, given the fragile environment in which they live and the extent of their poverty. On the other hand, we have also seen that one central objective of the District Focus is to involve "grassroots people" in development-related decision making. This is not new. It is the traditional justification of decentralization. What is worth reflecting on is the argument that for people preoccupied with survival in the most literal sense of the word, participation in decision-making, unless on a matter which is of immediate and tangible benefit, is a luxury they cannot afford. In other words, the poorer one is, the less one is able or willing to participate in decisions, even though the decisions are meant to ameliorate that condition of poverty. The argument is not simply meant to describe an objective absence of resources with which to participate. Such resources are, for example, self-help groups. The planning implication of the argument is that quite a substantial number of the residents of ASAL might be unwilling/unable to take part, especially in long-term projects. The "substantial number" means essentially those living near the margin of survival.

The second issue we would like to raise is methodological in nature. The District Focus is, of course, predicated on the district as an administrative unit. As such it is both an administrative and, spatially speaking, regional concept. On the other hand, ASALs are primarily ecological, something which the Interministerial Task Force on Semi Arid Lands was sensitive to as we have seen. The two, are of course, co-extensive. In this context, when we talk about the development of ASALs, we literally do not know what we are talking about. Of course there is a sense in which "everybody knows" ASALs when one sees them. This "knowing" we believe is the "ecological sense" of knowing. In this sense, the main

issues in the development of ASALs might be primarily inter-district, especially when it comes to long term functionally integrated projects. While this does not detract from the role of administrative districts, it nonetheless qualifies this role. However, in all fairness, we should add here that it might be precisely because of this problem that a number of Regional Authorities have been created in Kenya, Authorities which, one hopes, are meant to be particularly sensitive to issues of ecological differences. One hopes further that there would be maximum integration of district projects and Regional Authority projects, particularly in ASALs.

In concluding this section, we want to reiterate what we have already said. That is, there are no obvious advantages to be derived by ASAL from administrative decentralization. The advantages to ASAL are to be derived from "extra-administrative" philosophical changes. The commitment to regional equity is one such change which should spell a brighter future for ASAL. It is this commitment which will determine how the District Focus evolves and consequently its impact in ASAL. What then are the implications of what we have said so far on nutritional considerations in Arid and Semi-Arid Lands?

3. District Focus and Nutrition Considerations - Conclusion

The paper has outlined the problems of arid and semi-arid areas and it has been clear that food supply is one of the major problems of ASAL. There is a need for a long-term solution to the food and nutrition problem of these areas. As we pointed out earlier drought is normal in those areas but this not need imply that famines should be the norm. The District Focus approach to rural development should facilitate the consideration fo nutrition and food security issues at the local level.

The central objective of national food security is to ensure that an adequate supply of nutritionally balanced food is available in all parts of the country at all times (Kenya, 1981). This can be achieved by increasing food production in all areas of the country, by emphasizing drought tolerant crops (such as sorghum, millet, pigeon peas and cassava) in the dryland areas, by the establishment of a food products monitoring and reporting system and by the expansion of the famine relief programme. Increased production is possible in the arid and semi-arid areas, and this is why we devoted our discussion to the consideration of arable agriculture in the ASAL. Farming in the ASAL is however very risky and crop failure always a possibility. It is therefore regrettable to note that the fifth Development Plan (Kenya, 1984-88) notes that there had been a fall in the availability of cassava, sorghum and millet in recent years, although the decline of pulses has been halted through upward adjustment of prices.

It is however important to remember that the principal activity of ASAL is livestock keeping and for many areas extensive livestock keeping is the only feasible or even rational pursuit. Improved livestock programmes, rather than arable farming, need emphasis. Even some of the best intentioned efforts to increase arable agriculture could have deleterious effects and even threaten the very survival of the pastoralists when the better-watered land which constitutes dry season retreats for the pastoralists is taken over for agriculture. Rather than encouraging more arable agriculture in order to improve food production in such areas, it would be preferable to attain the same goal by ensuring readily available grain supplies and improved livestock marketing.

Obviously no single measure or instrument will be sufficient to develop the arid and semi-arid areas of Kenya. The technological problem remains an important concern, incentives for the production of drought-tolerant crops, better infrastructure, water and an efficient network of marketing, and so on, all need to be addressed.

In dealing with the issue of food and nutrition perhaps an important instrument would be the establishment of a Standing Food Security Committee in every district, as originally proposed in the National Food Policy paper. Since such committees would be able to monitor food production, supply, storage, marketing and distribution it would be possible to generate a good deal of necessary information. An early warning system would enable timely action by the Government, parastatals and private entrepreneurs. It would then be possible for local production to be supplemented by trade, whereby food which cannot be produced locally or where a shortfall occurs, could be satisfied from the output in other districts.

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Discussion Ruigu and Ng'ethe's paper

- Besrat:** How different is the district focus from other structures from the region? The control of finances still with Ministries. How could decentralization be improved?
- Mzaale:** Are district plans disaggregation of national plans or aggregation into national plans?
- Muthui:** The District Focus is decentralization. What do you mean by saying that it is limited and rather cautious? All powers are there for decentralization planning and may be it may have gone too far.
- Alila:** A Radical stand is required. Some stand need to be taken if nutrition is to get the priority required.
- Ng'ethe:** District Focus is evolving and has not taken the final shape. The Kenyan decentralization is not different from other African countries. The difference is in the sharing of power between districts and ministries. There are some unanswered questions: The Central Government and Ministries still retain a lot of power over finance and in setting policies. Are they for instance obligated to accept district priorities? Also inter-district project are controlled by the Ministries who retain this power. There could be a tug off between the DDC and central ministries. The guidelines for spending ceilings are to be controlled by Ministries. The issue of funding has to be sorted out. There is substantial decentralization in project identification. Local people have to build up the capacity to take advantage of decentralization.
- Muthui rejoinder:** On Financial powers of the Ministries: Ministries retain some powers over finance. Ministries however, do not have powers of changing priorities of what comes from the districts. From 1984/85 the writing up annexes of projects to be financed and implemented in the districts was completed.
- Ng'ethe:** The Ministries can shelf projects from one district to another.
- Muthui:** Districts are given advance warning on likely level of funds by sector.

4.3 SOME NUTRITIONAL ASPECTS OF IRRIGATED RICE CULTIVATION IN WESTERN KENYA

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Preface

The performance of Kenya's agricultural sector during the past two decades compares favourably with that of the majority of other African countries. Nevertheless, growth rates of annual agricultural production decreased during the late 1970s and early 1980s (World Bank, 1981; 1983). As a result of the country's high population growth, presently amounting to 4 per cent per year, food production per capita declined (FAO, 1970; 1977; 1983). Although the average food availability has generally been above the recommended standards (Republic of Kenya, 1984), this decline must ultimately have implications for the level of food energy intake per capita. Already there are indications that the energy intakes in certain parts of the country and among the poorer strata of the population fall below the required levels (Shah & Frohberg, 1980; CBS, 1983).

The unprecedented population increase has caused serious pressure on land resources in the zones of high agricultural potential (Heyer et al., 1976; World Bank, 1983; Republic of Kenya, 1984; Kliest, 1985). Future increases in agricultural production will largely depend on the possibilities of raising yields per hectare, since agro-ecological constraints limit the possibilities of opening up new land. In response to this pressing situation, and in order to secure future self-sufficiency in national food production, the Kenya Government aims to restructure the agricultural sector and to intervene in areas such as resource development in the high to medium and low potential zones; research and extension; input and pricing policies; marketing, distribution and food processing; as well as nutrition (Republic of Kenya, 1981; 1984). Moreover, the Government has given high priority to achieving a greater understanding of the factors causing nutritional problems and to realizing ways of alleviating adverse conditions.

The Food and Nutrition Planning Unit (FNPU) of the Ministry of Planning and National Development has, since 1976, been charged with the responsibility of integrating food and nutrition considerations into overall

development policy and planned or ongoing programmes, in order to alleviate hunger, malnutrition and poverty among vulnerable groups in the country. In 1983, the FNPU, together with the African Studies Centre (ASC) of Leiden, Netherlands, initiated the joint Food and Nutrition Studies Programme. In previous years, ASC staff had been responsible for the Nutrition Intervention Research Project (NIRP), an extensive evaluation of nutrition programmes in Central Province. This project was carried out in co-operation with the Ministry of Health and the Department of Social Services. The objective of the present Food and Nutrition Studies Programme (FNSP) is to assist the FNPU with the analysis of contemporary trends and future needs concerning food and nutrition in Kenya with the aim of providing data necessary for the formulation of national food and nutrition policies, as well as more localised programmes and interventions. The programme is policy-oriented and is also meant to serve as a training ground for junior members of the FNPU staff.

This form of co-operation between a government organization and an independent research centre has worked out satisfactorily for both sides. The FNPU has not been embarrassed by researchers pursuing their "private interests", and the ASC has not been restricted in the (mutual) selection of both study topics and publications. Initially, it was planned to meet the necessary personnel and operating cost of the programme from the existing manpower and budgets of the FNPU and ASC. However, the potential of this kind of reciprocal co-operation raised the interest of the Dutch Ministry of Development Co-operation which agreed to cover the operating costs of the programme.

The programme addresses food and nutrition issues at macro, as well as meso and micro levels, and currently, studies are being undertaken in the following areas of general interest:

1. Nutritional Aspects of Agricultural and Rural Development Projects;
2. Regional and Seasonal Fluctuations in Food Availability and Nutrition;
3. Agricultural Policies and Agricultural Production.

Appendix 1 gives a list of reports of the present programme, as well as the previous Nutrition Intervention Research Project.

The research under 2, above, aims to describe and analyze the incidence, origin and effects of seasonal variations in food supply leading to relative and absolute food shortages in the rural areas. A first report based on published materials and existing statistical data draws an outline of these shortages with respect to various regions of the country (Kliest, 1985). Currently, a study of seasonality in food production and nutrition in Coast Province is being undertaken (FNSP, 1985b).

The research on agricultural policies (3 above) attempts to analyze the conditions under which the agricultural sector can meet the demands that will be placed on this sector in the future. A first report focused on producer prices for agricultural products, and reviews agricultural pricing policies in the recent past (Meilink, 1985). This study will be followed by a review of developments in consumer food prices over the past years.

The major emphasis in the programme until now has been on the nutritional aspects of agricultural development projects, the topic of this workshop. Various development strategies, focusing on modernization and growth, aim to increase food production through a transition from subsistence farming to production for the market. This transition is often envisaged in terms of large-scale agricultural development projects. A common characteristic of such strategies is their primary orientation towards the national food situation, while the farmers directly involved in agricultural development projects often receive little attention. It is usually assumed that improved levels of production result in increased farm incomes and higher standards of living. However, such positive effects cannot be taken for granted. In fact, concern exists about the nutritional situation of the farm households involved in agricultural projects and there is a need for more detailed knowledge on the nutritional effects of agricultural change (McGuine, 1981; Pinstруп-Andersen, 1981; Martin, 1984). Recently, a FNSP study on the nutritional conditions in settlement schemes in Coast Province was started (FNSP, 1985a).

A previous study was concerned with the nutritional conditions prevailing among farming households engaged in irrigated rice cultivation in the Kano Plain, Kisumu District (FNPS, 1983). Detailed results of this study are presented in a forthcoming report by Niemeyer, Geuns, Kliest, Ogonda & Hoorweg: "Nutritional Aspects of Rice Cultivation in Nyanza Province, Kenya". This paper presents a brief description of the study and discusses some of the main findings. The study concentrated on food production, food consumption and nutritional status, with special attention to young children because the youngest age groups are often the first to be affected by adverse nutritional conditions. The Kano Plain was selected because it has a fairly homogeneous ecology and is inhabited by a single ethnic group, the Jalu. In this area, two large rice irrigation schemes, the Ahero and West Kano (Pilot) Schemes, are situated. In addition, individual smallholders cultivate rice in a number of small irrigation schemes.

Background

One of the means to increase agricultural production is through improved water management, notably irrigation. Kenya's potential for irrigated agriculture is quite substantial (World Bank, 1983). The Kenya Government attaches increasing importance to irrigated agriculture, which has resulted in the initiation of several large-scale schemes and support for small-sized schemes in different parts of the country (Republic of Kenya, 1984). During the past two decades, several large irrigation schemes for the cultivation of rice have been established: Mwea Irrigation Scheme in Central Province; Ahero and West Kano (Pilot) Schemes in Nyanza Province, and Bunyala Irrigation Scheme in Western Province (NIB, 1982). The large schemes are centrally managed and organized along similar lines. The tenants were initially expected to reside on the scheme, and to grow rice on the plots allocated to them. The produce is centrally purchased, and farmers are paid in cash. Each tenant can retain a certain quantity of rice for home consumption, but other foods needed for family subsistence are to be purchased from the cash returns. In addition to the large-scale schemes, a fairly large number of small irrigation schemes presently exist. Most of them were started by the farmers themselves. In contrast to the large schemes, they are managed by the participating farmers who have more freedom to select the types of crops to be cultivated, and to farm according to their own insights.

The nutritional conditions at some of the large schemes, notably Mwea and Ahero, have on several occasions given rise to concern. Studies on the nutritional state of the population at Mwea (Korte, 1969, Wanjohi et al., 1978) indicated a high prevalence of malnutrition, with at least twice as many severely malnourished children compared to the national average. Suggested explanations for these findings are low income levels, poor health conditions as a result of diseases associated with stagnant water (bilharzia and malaria), unbalanced diets resulting from the dependence on mono-cropping and insufficient food expenditures.

In recent years, efforts have been made to counter these negative effects. In some of the schemes, such as West Kano larger homestead plots were planned to allow cultivation of additional subsistence crops. In Mwea, tenants were allocated additional land for rainfed cultivation.

Other steps to improve nutritional conditions include the promotion of vegetable gardens, the planting of certain food crops on the bunds between the plots, and the appointment of nutritionists. Whether the various measures have indeed resulted in improved and more balanced diets has not yet been established.

Irrigated Rice Cultivation in the Lower Kano Plain

The Kano Plain is located in Kisumu District, one of the four districts of Nyanza Province (Map 1). In 1979 the population amounted to about 95,000 people with a population density of 175 per km². The settlement pattern in the Kano Plain is characterized by scattered compounds comprised of kin-related families. A recent survey found an average number of families per compound of 1.8, mean family size of 5.4 persons, and an average number of 9.7 people per compound (Republic of Kenya/National Irrigation Board, 1981). The climate is relatively dry with high average temperatures during the day. The long rains usually cover the period March to May, the short rains are less important for the cultivation of rainfed crops. A considerable part of the plain consists of seasonal and permanent swamps and the lower areas are suitable for irrigated agriculture (Jaetzold & Schmidt, 1982). This area, the lower Kano Plain, was selected as the study area.

Smallholder farmers in the lowlands along the shores of Lake Victoria spontaneously started irrigated rice cultivation in the 1930's and 1940's. Severe floods and the rise of Lake Victoria in the early 1960's destroyed a substantial amount of paddy land. In the mid-1960's and 1970's, however, irrigated rice cultivation picked up again. The National Irrigation Board initiated two large irrigation schemes, that is, the Ahero Pilot Scheme and West Kano Pilot Scheme. In addition, the demonstration effects of the schemes and stimulation on the part of the Government have encouraged smallholder farmers outside the schemes to engage in irrigated rice production.

The Ahero and West Kano irrigation schemes were started in 1969 and 1976, respectively. The two schemes cover a total area of 4,800 ha of which 840 ha are presently under cultivation in Ahero, and 880 ha in West Kano. Each scheme counts 500-550 tenants with farms of 1.6 ha

each. In Ahero, all farm land is used for paddy cultivation; in West Kano it is equally divided between paddy and sugar cane production. Farmers have to adhere to strict farm management regulations. The scheme management takes care of land preparation, and supplies fixed quantities of inputs (seed, fertilizer and insecticides). After the harvesting, the management handles the marketing of the crop. The costs of inputs, land preparation and marketing are subtracted from the farmer's income. Each tenant can retain 10 per cent of his total paddy production for home consumption.

Except for the first years, cropping intensity as well as yield levels stayed below expected levels. Recently, yield levels have improved and are estimated at 4,300 kg per ha ⁽¹⁾ (Houtman, 1981). Nevertheless, the incomes of the tenants have generally stayed below those initially envisaged. Besides cultivating the paddy plots, some 90 per cent of the tenants grow crops on non-scheme land, usually a very small area around the house or larger plots outside the scheme's boundary. In both schemes, many tenants have access to non-irrigated land elsewhere in the Kano plain. Substantial differences exist among tenants in this respect; some dispose of relatively large plots, others have to rely on their irrigated land within the scheme only. Initially, the tenants were obliged to live in the villages situated within the schemes. At a later stage, farmers were allowed to take up residence outside the scheme and retain their scheme plot. Consequently, there exists a group of resident tenants living and working in the schemes, and a group of non-resident tenants who live outside the schemes.

Individual farmers encouraged by the relatively high and stable producer prices for paddy, have recently re-established rice plots in the low lying areas of the Kano Plain. The area under cultivation in these small-scale schemes has substantially increased during recent years (Table 1). At present, approximately half of the potential area suitable for paddy cultivation is developed. The schemes usually have farmers' committees that control the water distribution over the various plots; other management decisions are left to the individual farmers. Although external farm inputs are sparsely used, yield levels obtained by the individual rice cultivators are estimated to average approximately 3,500 kg per ha which compares rather favourably with yields realized on the large irrigation schemes where farmers enjoy high input levels.

Several constraints hamper the full utilization of the potential rice area. The incidental flooding of the swamp areas causes delay in cropping activities, often destroys the rice crops and, occasionally, the plots as well. Also, seasonal lack of water in some of the rice areas equally lowers the potential for rice growing. In view of the importance of rice production both for the individual growers in the Kano Plain and for the national food supply, the Ministry of Agriculture and Livestock Development supports the individual rice growers through the Provincial Irrigation Unit and the Smallholder Rice Rehabilitation Programme. Assistance includes the improvement of water supply and water management, the construction of rural access roads, and the provision of inputs and marketing facilities.

Method

The study was designed to represent the three types of existing participation in irrigated rice cultivation. The first two consist of tenants at large irrigation schemes: (a) tenants living in the scheme villages (resident tenants), and (b) tenants living outside the scheme (non-resident tenants). The category (c) includes individual rice growers involved in small irrigation schemes. For purposes of comparison, a fourth group (d) of farmers not connected with rice production in any of the above ways was included (non-rice growers). Households were sampled from five geographical locations, Ahero and West Kano Schemes, and three sub-locations. (Kochieng, Kamagaga and Kobura). Kochieng and Kobura are located in the centre of the Kano Plain, near Nyakakana, and border on each other. Kamagaga is situated on the higher ridge immediately north of Ahero Scheme (Map 2)

Because of the pronounced tendency for kin-related families to share economic resources and to have mutual cooking arrangements, the compound was defined as the main sampling unit. A total of 335 compounds were included in the survey. The number of farmers with access to rice plots in the two large irrigation schemes amounted to 147. Of this number, 83 were resident tenants, and 64 belonged to the category of non-resident tenants. The number of individual rice farmers with one or more plots in small schemes was 54. Finally, 134 households had no access to rice plots and were not directly involved in rice cultivation. The compounds numbered a total of 425 mothers of young children and 954 children between the ages of 6 months and 11 years.

Agricultural production was assessed by means of interviews on the acreage planted and quantities harvested of various cash crops (rice, sugar cane, cotton) and food crops (cereals, pulses, roots and tubers) during the long and short rain seasons of 1983/1984. In practice, very few farmers planted annual crops during the short rains, and the quantities harvested were negligible.

Food consumption was assessed by two recall methods: (a) a recall of all food prepared in the compound during the day prior to the interview, and (b) a 24-hour recall of the quantities of food consumed by individual children, aged 6-47 months, also for the previous day. Estimates of energy and protein intake per compound are expressed as intakes per consumption unit ⁽²⁾.

Anthropometry included the measures commonly used in nutrition studies: weight, height and mid-upper arm circumference which were expressed in terms of the standard values of a reference population: height-for-age, weight-for-height, weight-for-age and mac-for-age. For the calculation of the respective indices the WHO reference population was used (WHO, 1983); for mac-for-age, the tables by Jelliffe (1966).

The actual survey covered the period March and April 1984, that is, the season of the long rains. This, usually, is the time when food stocks are at their lowest level, and when nutrition problems become most manifest. It should be noted that food intakes at this time of the year most likely represent an underestimate of usual intake levels. Between the survey period and the previous harvest a period of 8-9 months had elapsed. With respect to rainfed crops, the last (long rain) harvest reportedly had been a near failure. As a result, food stocks were probably abnormally depressed. Since irrigated agriculture is less dependent on rainfall, the farming households with access to irrigated plots were in a different situation. Moreover, in many cases they had harvested their rice crop only three to four months before the date of the survey.

Resource Base

The main resources of smallholders in the Kano Plain are: crop cultivation, livestock rearing and income from migrant labour. Table 2 lists indicators for these different aspects. The area planted with cash crops, rice in particular, is highest among the tenants at the N.I.B. schemes. The area planted with cotton is generally small, this crop is mainly cultivated in the higher parts of the Kano Plain. Sugar cane is much more prominent, especially among the farming households that do not grow rice, although the N.I.B. tenants in West Kano also grow this crop. The paddy area among the individual rice growers amounts to less than one acre.

The area planted with maize and sorghum varies between 1.0 and 2.5 acres per compound, and is particularly low among the resident tenants at the large schemes. This is related to the limited availability of farm land outside the schemes for these farmers. For the three remaining study groups, the average area per compound under cereals is roughly the same, although the individual rice growers tend to have slightly more land under rainfed crops. Livestock and livestock produce still play an important role in the economy of farming families in the Kano Plain. Table 2 indicates that livestock activities are most important among the individual rice growers. The resident tenants appear hardly to be involved in livestock keeping, since they are not allowed to keep cattle within the scheme.

Finally, many compounds draw an income from migrant labour. The average number of migrant workers per compound amounted to 0.6. This figure, however, conceals an important difference between the category of resident tenants on the one hand, and the other groups. The number of migrant workers among the former group is very low, and this will have important consequences for the inflow of remittances.

In sum, there are major differences with respect to the resource base of the four groups. Particularly, the resident tenants appear to have access to few economic resources other than the production of rice (and sugar cane in the case of West Kano). The three other groups, in particular the individual rice growers and the non-resident tenants, have access to more diversified resources.

Agricultural Production & Food Availability

Table 3 lists the number of bags of maize and sorghum harvested in 1983. It is evident that both the resident and the non-resident tenants harvested smaller quantities of these food crops compared to the other two groups. Because of the disappointing harvest of 1983, very little maize and sorghum was sold. The number of bags of paddy harvested by the N.I.B. tenants averaged 64 bags, whereas the individual rice growers harvested an average of 12 bags per compound⁽³⁾. Table 3 also presents estimates of the amounts of rice that were used for home consumption, that is, the quantity retained after delivery to the scheme, payment in kind to agricultural labourers and sales in the local markets⁽⁴⁾.

In table 4 the quantities of rice, maize and sorghum retained for consumption are expressed as estimates of the number of days that these cereals sufficed to feed the compound residents⁽⁵⁾. The figures point at a relatively low "food availability", 57 days on average for maize and sorghum, the main staple foods. This is especially the case among the resident tenants. Farmers who do not grow rice succeeded in securing the largest amount of maize and sorghum. However, their total maize and sorghum output in 1983 covered only 80 days of consumption. The quantity of rice available for home consumption is highest among the non-resident tenants covering about 70 days. Corresponding figures for the individual rice growers and resident tenants were 40 and 45 days, respectively. The average period of consumption covered by all home-produced cereals (maize, sorghum and rice) appeared to be less than 3 months. However, the group of non-resident tenants were able to produce their consumption needs for a period of almost 4 months. Both the resident tenants and non-rice growers, on the other hand, could only cover 80 days, a period of 2.5 months. Disregarding these important differences in food availability, it is clear that all groups have to depend on purchased foods to cover their consumption needs for the larger part of the year. In other words, cash income either from farm or off-farm activities is of paramount importance for the provision of food.

Food Consumption

The first part of this section presents an overall estimate of energy and protein intake levels per compound for the various study groups. The average amount of energy per consumption unit does not compare unfavourably with the figure of 2600 KCal per day recommended by WHO (table 5). The lowest energy and protein intake levels are realized by the category of resident tenants. The highest figures, in contrast, are reached by the individual rice growers and the non-resident tenants. The contribution of rice to the energy intake happens to be very low; only among the resident tenants it is higher than 10%.

These averages, however, conceal large differences among individual compounds. The proportion of compounds that realized less than 80 per cent of the WHO norm is 26 per cent among the non-resident tenants and 36 per cent among the individual rice growers (table 5). The farmers that do not grow rice, as well as the resident tenants, appear to be in an even less favourable position. Not only did a much lower proportion of compounds in these groups reach the recommended energy level, but also the percentage of compounds falling below 80 per cent of the norm, especially among the resident tenants, appeared to be high. It should be stressed that the estimates presented in table 5 pertain to compounds and disregard possible intra-compound variation in energy intake, that is between the different members of the compound.

Table 6 presents the results of the 24-hour recall for the children aged 6-47 months. The children of the resident tenants have a lower energy and protein intake than those of any of the other groups. This group also has the highest proportion of children who receive less than 60 per cent of the recommended energy intake per kg body weight⁽⁶⁾. This finding corresponds with the previously noted low compound consumption among the resident tenants. Among the three remaining groups, the children of the non-rice growers have the lowest energy and protein intake and the largest proportion of children falling below 60 per cent of the recommended energy intake. With respect to the individual rice growers and the non-resident tenants, the

children belonging to the latter group show the most favourable energy and protein intakes.

Nutritional Status.

With respect to height-for-age, the children residing within the large irrigation schemes show distinctly the least favourable growth pattern (Table 7). The difference is evinced by a greater incidence of stunting. The height-for-age results of the children in the three remaining study conditions are more favourable, and differ little among each other.

Weight-for-height indicates degree of wasting and momentary nutritional condition. One difference stands out: weight-for-height is more favourable among children of non-resident tenants. No wasted children (below W-H(80)) were found in this group. The children belonging to the other three groups show equally low weight-for-height levels.

Weight-for-age, as a general indicator of malnutrition, shows that the highest incidence of malnutrition occurs among the children of the resident tenants at the large schemes. This is, of course, as could be expected: these children scored low on height-for-age as well as weight-for-height. On the other hand the lowest prevalence of malnutrition occurs among the children of non-resident tenants of the N.I.B. schemes.

Conclusion

Agricultural Development in Sub-Sahara Africa covers numerous aspects. New agricultural techniques and cropping patterns are introduced, alternative forms of farm management are developed and there is a general reorientation towards production for the market. Such changes are not introduced independently of each other and most agricultural development projects imply changes in more than one respect. Irrigation schemes are among the important types of agricultural development in Kenya. The four groups that were included in the study reflect different

degrees of participation and dependence on irrigated cultivation. At the one end, the non-rice growers take no part in irrigated agriculture and still depend largely on traditional agricultural techniques and management practices. On the other hand, the resident tenants of the N.I.B. schemes have undergone the most drastic changes. These farmers almost entirely depend on irrigated cultivation, no longer run their farms according to their own insights, but have to adhere to decisions of the scheme management. Moreover, they have to rely to a very large extent on the proceeds of their cash crops for their daily living. The two remaining groups, the individual rice growers and the non-resident tenants at the schemes take an intermediate position. The first are involved to a lesser extent in rice cultivation than to the second. In general, they cultivate a smaller rice area, manage their farms relatively independently and depend less on the sale of crops to secure a living. There are important variations in the resource base of the different study groups. The resident tenants appear to have access to few economic resources other than the production of rice. The other three groups, in contrast, have access to more diversified resources, including rainfed food and cash crop cultivation, livestock keeping, income from migrant labour and, with the exception of the non-rice growers, irrigated rice cultivation.

The observed differences in nutrition between the four groups appear first and foremost to be related to these variations in resources. The group with the smallest resource base, that is, the resident tenants, have the lowest food production for home consumption and the lowest average energy intake per consumption unit. This group appeared to have the lowest food intake levels among the young children and also showed a higher incidence of stunting compared to children belonging to the other study groups.

The differences among these groups are much smaller, although the nutritional status of the children of individual rice growers and the non-resident tenants proved to be generally more favourable. In sum, it may be concluded that the nutritional status of the groups with the smallest resource base, the non-rice growers and, in particular, the resident tenants, is the least favourable. The category of farmers with access to more resources in general score better in terms of nutrition. This applies particularly to the non-resident tenants.

Evidently it is not possible to draw an unequivocal conclusion about the nutritional consequences of participation in irrigated rice cultivation. Both the group with the most favourable nutrition conditions and the category which appeared poorest in this respect are tenants at the large rice irrigation schemes. This leads to the observation that participation in large-scale rice cultivation may have a positive impact under certain conditions, but not when the sole existence of the farming family depends on this type of agriculture. The assumption made at the time of the start of the schemes, that the livelihood of rural families can be fully covered by means of cash cropping appears not to be valid. The poor nutritional conditions among the resident tenants show this convincingly. However, it cannot be said that participation in rice cultivation, in itself, has detrimental effects. Only the group which is solely dependent on their rice plots show symptoms of severe stress.

It is clear that a diversified resource base is of great importance, and in future, as well as in existing, schemes every effort should be made to bring about such a diversification. A number of measures could be taken. For instance, in both existing and future schemes plots could be prepared for the cultivation of other crops. The cultivation of rain-fed (food) crops will become a distinct possibility when a planned shift towards single cropping in the large schemes becomes reality. Another alternative is to allocate sufficient land for rainfed cropping, provided agro-ecological circumstances allow this. Finally, it is advisable to create more possibilities for livestock keeping at the schemes, for example in the form of zero grazing. Dairy farming among tenants at the schemes (but also among the other farmers in the Kano Plain) needs to be explored and encouraged, so as to increase the availability of milk for home consumption. Rice cultivation on an individual basis in the small schemes does not appear to invoke negative nutritional effects. This type of participation in rice cultivation, therefore merits serious attention and support because it is a means to enlarge the resource base of the participating farmers, albeit to a modest extent.

Notes

(1) This estimate includes paddy delivered to the scheme, as well as the private, regular and irregular, retentions of paddy.

(2) The number of consumption units in a compound equals the number of adults increased with the number of children converted into adult equivalents. The conversion factors are based on the WHO (1974) recommended energy intakes for different age groups. For instance, the number of consumption units for a group comprising one adult and two children under five years, is $2.0(1.0+0.5+0.5)$.

(3) These figures reflect average yield levels of 4,250kg/ha for the N. I. B. tenants and 3,375 kg/ha for the individual rice growers.

(4) The estimates of the bags of paddy retained for home consumption were calculated as follows. Individual rice growers reported that they had sold three quarters of their paddy harvest, and it was assumed that the remaining quarter was consumed. N. I. B. tenants (non-resident and resident) reported that they handed over 70 per cent and 85 per cent respectively of their produce to the scheme management. On the basis of Houtman's (1981) findings, it was assumed that one-third of the quantity of paddy attained was ultimately used for home consumption.

(5) It was assumed that 2600 KCal. are required per consumption unit daily, and that 80% of daily energy intake are by provided cereals, as shown by analysis of the food consumption data of the present survey.

(6) For children still on the breast the number of times that the child had been given the breast was also recorded. The actual amounts of breastmilk consumed, however, were not measured. Instead these quantities were estimated using figures for children reported by Van Steenberg et al. (1984). These estimates were, however, only included in the calculations of the energy intake per kg body weight.

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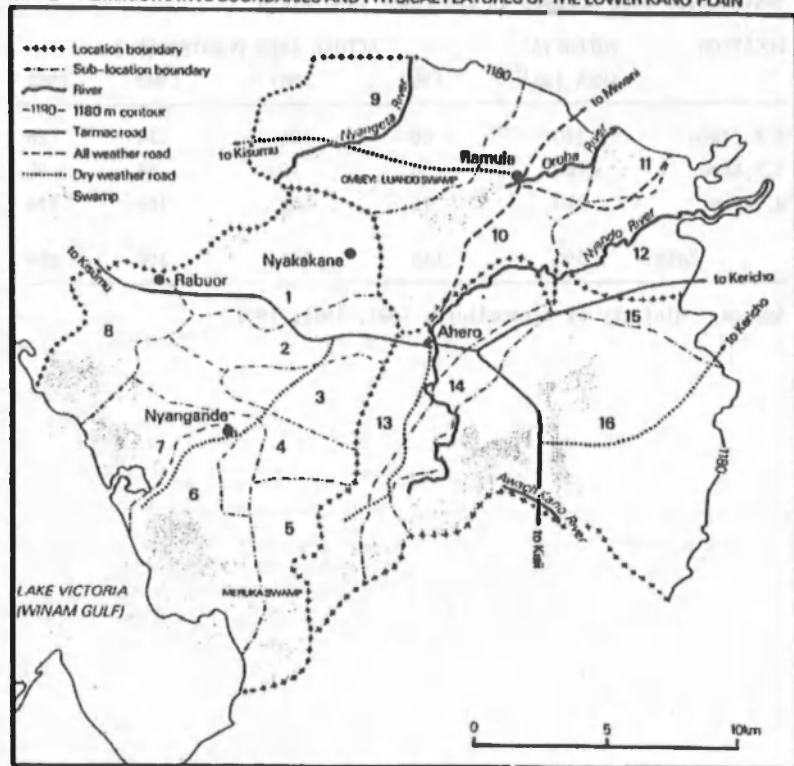
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MAP 1 THE LOCATION OF THE LOWER KANO PLAIN IN KISUMU DISTRICT



MAP 2 ADMINISTRATIVE BOUNDARIES AND PHYSICAL FEATURES OF THE LOWER KANO PLAIN



WEST KANO LOCATION

- 1 Kochieng
- 2 Kombura
- 3 Katho
- 4 Upper-Bwande
- 5 Lower-Bwande
- 6 Kadhamba
- 7 Kowano
- 8 Nyarwara

NORTH EAST KANO LOCATION

- 9 Sidho West
- 10 Karmagega
- 11 Keber
- 12 Wagaya I

SOUTH EAST KANO LOCATION

- 13 Kekole
- 14 Kochogo
- 15 Wawidhi A
- 16 Wawidhi B

Table 1

Smallholder Rice Schemes in the Lower Kano Plain

LOCATION	POTENTIAL AREA (ha)	ACTUAL AREA PLANTED (ha)			
		1980	1981	1982	1983
N. E. Kano	220	60	106	134	128
S. E. Kano	160	30	36	68	90
W. Kano	310	45	42	106	116
Total	690	135	184	308	334

Source: Ministry of Agriculture, 1981; 1982; 1983

Table 2
Resource Base

	NON- RICE GROWERS (N=134)	INDIVIDUAL RICE GROWERS (N=54)	NON- RESIDENT TENANTS (N=64)	RESIDENT TENANTS (N=83)	TOTAL (N=335)
Acreage under Cash Crops*	0.7	1.0	4.1	4.1	2.3
Cotton	0.2	< 0.1	0.1	<0.1	0.1
Sugar Cane	0.5	0.2	0.6	0.8	0.6
Rice	- -	0.8	3.4	3.3	1.6
Acreage under Maize and Sorghum**	2.2	2.5	2.0	1.1	1.9
Presence of cattle(%)***	38%	41%	31%	9%	30%
Migrant Workers	0.8	0.8	0.7	0.1	0.6

* Cotton: Area planted during long and short rains of 1983 (acreages combined)
Sugar Cane: Area under crop at the time of the survey
Rice: Area harvested during past 12 months

** Area planted during long and short rains of 1983 combined.

*** As indicated by presence of a cattle pen in the compound.

Table 3
Cereal Production*
(Number of bags)

	NON- RICE GROWERS (N=134)	INDIVIDUAL RICE GROWERS (N=54)	NON- RESIDENT TENANTS (N=64)	RESIDENT TENANTS (N=83)	TOTAL (N=335)
Maize & Sorghum	4.2	3.5	2.9	1.5	3.2
Paddy	- -	12	63	64	- -
Paddy retained for home consumption	- -	3	6.3	3	- -

* Over period of past 12 months (1983/1984)

Table 4
Quantities of Cereals Available for Home Consumption
(Expressed in number of consumption days/consumption unit)

	NON- RICE GROWERS (N=134)	INDIVIDUAL RICE GROWERS (N=54)	NON- RESIDENT TENANTS (N=64)	RESIDENT TENANTS (N=83)	TOTAL (N=335)
Maize & Sorghum	80	58	42	32	57
Rice	--	41	69	46	31
Total	80	99	111	78	88

Table 5

**Assessment of Compound Food Consumption
(Average Intake of Protein (grs.) and Energy (KCal) per Consumption Unit (CU))**

	NON- RICE GROWERS (N=134)	INDIVIDUAL RICE GROWERS (N=54)	NON- RESIDENT TENANTS (N=64)	PRESIDENT TENANTS (N=83)	TOTAL (N=335)
AVERAGE NUMBER OF CU 's PER COMPOUND	7.3	7.7	9.0	6.3	7.3
Grs. Protein/CU	84	95	94	84	88
KCal/CU	2592	2767	2681	2494	2613
Compounds(%) with less than 80% of Recommended* Energy Intake per CU	41%	36%	26%	46%	39%
Contribution(%) of Rice to Energy Intake	5%	5%	6%	13%	7%

* WHO recommendations (2600 KCal/Consumption Unit)

Table 6

**Intake of Energy and Protein by Study Condition
(Children 6-47 months)**

	NON- RICE GROWERS (N=118)	INDIVIDUAL RICE GROWERS (N=59)	NON- RESIDENT TENANTS (N=82)	RESIDENT TENANTS (N=64)	TOTAL (N=323)
Energy (KCal)	659	679	694	552	650
Protein(grs)	18.1	20.4	20.3	15.4	18.5
Children(%) with less than 60% of recommended energy intake*	41%	35%	38%	49%	41%

* per kg-body weight

Table 7

Anthropometry by Study Conditions

(Percentage of Children falling below H-A(90); W-H(90);W-H(80) and W-A (80) respectively)

	NON- RICE GROWERS	INDIVIDUAL RICE GROWERS	NON- RESIDENT TENANTS	RESIDENT TENANTS	TOTAL
AGE GROUP 6-47 months	(N=124)	(N=64)	(N=90)	(N=76)	N=(354)
AGE GROUP 4-10 years	(N=226)	(N=102)	(N=132)	(N=124)	N=(584)

HEIGHT-FOR-AGE (< 90) (Long-term nutrition condition).

AGE GROUP 6-47 months	17%	14%	19%	41%	22%
AGE GROUP 4-10 years	22%	18%	14%	30%	21%

WEIGHT-FOR-HEIGHT (<80) (Wasting)

AGE GROUP 6-47 months	6%	14%	0	6%	6%
AGE GROUP 4-10 years	4%	3%	4%	4%	4%

WEIGHT FOR-AGE (<80) (Malnutrition)

AGE GROUP 6-47 months	37%	38%	31%	55%	39%
AGE GROUP 4-10 years	48%	37%	36%	49%	44%

Appendix 1

LIST OF REPORTS

FOOD AND Nutrition Studies Programme

1. FNSP (1983a) Nutritional Aspects of Rice Irrigation in Nyanza Province (Research Outline)
2. FNSP (1983b) Seasonal and Regional Food Shortages in Kenya (Research Outline)
3. FNSP(1983c) Agricultural Pricing Policy in Kenya: Implications for Agricultural Production and Rural Incomes (Research Outline)
4. Kliest, T.(1984) The Agricultural Structure of the Lower Kano Plain
5. Veenstra V(1984) List of Names of Foods, Drinks and Meals in Luo (draft)
6. FNSP(1984a) Progress Report: January 1984
7. FNSP(1984b) Seasonal and Regional Food Problems in Kenya
Progress Report: March 1984
8. FNSP(1984c) Agricultural Pricing Policy in Kenya.
Progress Report: May 1984
9. FNSP(1984d) Nutritional Aspects of Rice Irrigation in Nyanza Province
Progress Report: May 1984
10. Kliest,T.(1985) Regional and Seasonal Food Problems in Kenya
11. Meilink, H.A. (1985) Agricultural Pricing Policy in Kenya:
Scope and Impact
12. FNSP(1985a) Nutritional Conditions at Settlement Schemes in Coast
Province-Kwale and Kilifi Districts (Research Outline)
13. FNSP(1985b) Seasonality in Food Production and Nutrition in the Coastal
Lowlands of Kenya - Kwale and Kilifi Districts (Research Outline)
14. Niemeyer, R, Geuns, M., Kliest, T., Ogonda, V. & Hoorweg, J. (1985)
Nutritional Aspects of Rice Cultivation in Nyanza Province, Kenya
(Draft)
15. FNSP (1985c) Women's Associations and Their Importance for Rural
Development: A Study at Two Settlement Schemes in Coast
Province - Kwale and Kilifi Districts (Research Outline)

Appendix 1, continued

Nutrition Intervention Research Project

- Hoorweg, J. & Niemeijer, R. (1980) The Impact of Nutrition Education at Three Health Centres in Central Province, Kenya.
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- Hoorweg, J. & Niemeijer, R. (1980) The Nutritional Impact of the Pre-School Health Programme at Three Clinics in Central Province, Kenya.
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5. INCORPORATING NUTRITION INTO AGRICULTURE AND RURAL DEVELOPMENT PROJECTS

5.1 FAO METHODOLOGY FOR INTEGRATING NUTRITION IN AGRICULTURE

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I. Introduction

Well-intentioned programmes of nutrition intervention such as food distribution and subsidy schemes, fortification or enrichment of foods and rehabilitation of the severely undernourished, have only enjoyed limited success in combating malnutrition. For one thing, nutrition intervention measures are expensive and therefore hardly affordable by developing countries for application commensurate with the magnitude of the problem. Another and equally compelling reason is that nutrition interventions serve only as temporary relief measures and therefore are not usually designed to address the underlying causes of malnutrition, which are closely linked with those of poverty. Despite these limitations, nutrition interventions will continue to serve useful functions in ameliorating nutritional problems which may arise from emergency situations or clearly established deficiencies for specific nutrients, and as interim measures until benefits from development projects accrue.

The incorporation of nutrition policies into government development plans in Third World countries has been advocated as a means of bringing about improvement in food consumption and nutritional status. The World Food Conference which was held in 1974 gave an added impetus to the idea. However, despite more than a decade of nutrition advocacy, most developing countries have yet to adopt nutrition policies as a high priority. Even in the few cases where development plans have enunciated broad nutrition policy measures, the task of translating them into effective programmes and projects has been difficult. This is not to say that no progress has been made at all.

The decade after the World Food Conference witnessed the creation or strengthening of nutrition units within international development institutions. As a result more attention was given to alleviating nutritional problems through the implementation of impressive programmes

in several countries. However, for every country that has made significant progress, there are several where nutritional concerns and actions are not much further than they were a decade ago.¹ The food and nutrition situation in Sub-Saharan Africa has considerably worsened - perhaps 50 per cent worse off in 1980 than in 1970 according to some estimates.² And this is before the onset of the most severe drought in living memory, which is still affecting many countries in the region.

The Harare Declaration on the Food Crisis in Africa which was adopted at the Thirteenth FAO Regional Conference for Africa in July 1984 expounded the self-reliant approach to the food and nutrition problems of Africa. The assembled ministers declared that the burden of developing African agriculture and rural areas and raising the nutritional standards of all peoples, rests substantially on the efforts of the concerned governments and peoples. They have pledged to accord the highest priority to agriculture by adopting more effective policies for food and agricultural development. It is important to seize on this heightened interest in food and nutrition and build on these foundations in attempts to find solutions to the continuing and intensifying food crisis of the continent.

In an extensive review, Pines³ concluded that national nutrition planning had failed to fulfil its initial promise because of inadequate consideration of the political and administrative obstacles. He contends that the multi-sectoral approach to nutritional problems has substantially contributed to formulating more effective programmes, but has done little to affect policy. Significant nutrition improvement of the population cannot come about without political commitment. Let us hope that the Harare Declaration, which is a solemn political commitment of the African governments represented in the Conference, will be followed by action programmes.

II. Nutrition in Development

The ultimate goal of development must be to improve the quality of life of the population. Obviously, one of the most important measures

of the quality of life is nutritional well-being. Improved nutrition has important production and equity benefits. There is evidence to show that adult productivity increases with better nutrition. Improved school attendance and receptiveness to education has been observed as a result of better nutrition. Good nutrition, with the attendant improved resistance to infection, results in better physical development of the child. In the long run this leads to decreases in child mortality. All of these benefits are expected to lead towards the stabilization of family size and hence population.

Proponents of the human capital development theory would however argue that the equity benefits (that is, ensuring an adequate diet for all) are sufficient to outweigh any uncertainties there may be over precise rates of returns. Development efforts cannot succeed without people's participation. It is therefore unrealistic to expect people who do not have sufficient and secure access to food to fully participate in development projects, or to adopt innovations introduced by the projects.

Most policy-makers and project-planners are acutely aware of the benefits of better nutrition. The main issue to them is to find out a practical means of improving the nutritional status of the population with minimum investment and dislocation of the economic development plans. As indicated above, nutrition policies have yet to be adopted as a high priority in most developing countries despite more than a decade of advocacy. Direct nutrition interventions on a scale large enough to have significant impact on nutritional status are beyond the means of most developing countries. For example, the complete health budgets in most developing countries do not exceed \$5 per caput per year. This is the minimum level which, if spent on direct nutrition interventions, is thought to bring about detectable nutrition improvement.⁴

There is overwhelming evidence to show that poverty, and specifically inadequate real income, is the most important cause of malnutrition. Therefore, programmes and policies directed against the causes of

poverty are likely to have important impact on the eradication of malnutrition. A large proportion of malnourished people are the rural poor. The resources available for improving the standard of living and nutrition in rural areas are to a large extent from development projects and programmes. It has been argued that agricultural development efforts, through increased food production and the "trickle down" effect should bring about improvement in the living standards, and particularly in the nutritional status, of the poorer segments of the population. However this view has been strongly challenged by others who claim that the benefits accruing to nutrition from development projects are not automatic. A number of studies have documented that the changes brought about by agricultural development projects often benefit only the privileged few at the expense of the majority of the peasants.⁵ The study by Hernandez *et al.*⁶ of a development project in Mexico over a 13-year period showed that substantial increase in agricultural production did not result in an improved nutritional status for the lowest income groups. As a result of the emphasis placed on the production of cash crops, agricultural development in many Third-World countries has led to a worsening of the quality of life of most rural people. As peasants abandon subsistence crops to produce cash crops, or are deprived of sufficient land and forced to work in large-scale commercial agriculture projects, the resulting economic and dietary changes have led to poorer health and nutrition status.

III. The Incorporation of Nutrition Planning in a Project

The main rationale for integrating nutritional concerns into agricultural and rural development projects is based on the evidence that improvement in nutritional status of the poor was frequently not associated with overall increased agricultural production as a result of development projects.⁵ In some instances, the nutritional status of the poorer sections of the population has deteriorated as a result of the introduction of development projects. Therefore, positive effects on nutrition cannot be assumed to occur without deliberate planning. It is for this reason that the emphasis is now placed on introducing nutritional considerations into the planning of non-nutritional activities. This way it will be possible to target the benefits

of the project to the nutritionally vulnerable groups. In circumstances when this is not feasible, it will be possible at least to ensure that the project does not cause further deterioration in the nutritional status of the poor.

FAO Methodology for Integrating Nutrition in Agriculture

a) Background

It is in recognition of the points discussed in the preceding paragraphs that the Nineteenth Session of the FAO Conference in 1977 recommended that the Director-General of FAO "suggest methods for ensuring that nutritional considerations are, as appropriate, adequately included in FAO's planning and execution of agricultural projects and programmes". The World Conference on Agrarian Reform and Rural Development (WCARRD) in 1979 resolved that nutritional considerations should be explicitly considered in the planning, design and implementation of rural development projects. In response to these concerns, FAO has developed a methodology that has been field tested in 6 countries - Kenya, Zambia, Sri Lanka, Peru, Haiti and Philippines - in which agricultural and rural development projects had been recently undertaken or were in the planning stage. The experience gained from these case studies was used to revise the methodology which has subsequently been published as Manual No. 1 Nutrition in Agriculture.

The objectives of the Manual are to provide a methodology for integrating nutrition into agricultural and rural development projects, to help nutrition planners understand the processes involved in the cycle of a development project so as to enable them to co-ordinate their work with other planners, and to foster communication among planners, administrators and recipients in development projects.

It should be pointed out that the Manual is intended to equip the planner with a methodology for influencing design and for organizing available information and seeking more. It should be used only as a guideline to sharpen and supplement the judgement of the planner on

the project site. Generally speaking, the planner would like to have answers to the following questions, for integrating nutritional concerns into the project: What is the extent of malnutrition? Who is malnourished, for which nutrients, by how much and when? What is being done already about malnutrition in terms of government planning and project intervention? What can be done in the project about these nutrition problems?

The underlying theory for integrating nutrition into agriculture is given as follows:⁹

- the main effect on nutrition of agricultural and rural development projects is through increasing the real incomes of malnourished households;
- a major concern is that malnourished households participate in the project and hence derive increased real income from the project. An important reason why projects do not have a positive effect on nutrition is simply that the needy do not gain the benefits (typically the larger farmer benefits, but the smaller landholder and the landless do not);
- virtually all agricultural and rural development projects aim to increase the real income of participants;
- in many circumstances increased real income leads to improved nutrition, therefore the first question is whether the needy derive income, then the question of whether income in fact improves nutrition, should be examined;
- the main circumstances in which income does not lead to improved nutrition is when the income source changes; most negative effects of agricultural development can be related to this. For example subsistence consumption substantially decreases and is not compensated by increased food purchases, crops grown change, income distribution within the household changes.

b) Potential Impact of Agricultural and Rural Development Projects on Food Consumption and Nutritional Status.

The main objectives of introducing nutritional concerns into project planning are to make rational decisions on design so as to balance nutritional with other expected outcomes, notably economic, and to direct resources to the malnourished for bringing about improvement in food consumption and nutritional status. The assessment of projects for nutritional impact in the absence of a policy commitment to take account of project recommendations becomes a futile task. Therefore, both policy and practical means of carrying it out are needed.

There are three types of decision needed for influencing project design. These are classified as planning, management and policy decisions. Some of the key questions for which information is needed under each of these decisions have been described in Nutrition in Agriculture Manual No. 4 and are summarized as follows:

Planning decisions

Targeting:

Who is to participate in the project?

How many of the malnourished can be included?

Design of activities:

What activities (components) are included? Targeted to whom?

What is the expenditure per head?

What are likely effects of these activities on nutrition of participants? Hence, are modifications to these activities indicated? Are additional activities needed?

Indirect effects:

Are effects on food consumption of non-project participants intended to be important? If so, how are those balanced with effects on participants?

Management decisions

Are goods and services being delivered as planned to the target groups?

Is the trend in nutritional indicators adequate for the target groups?

Policy decisions (from evaluations)

Was the improvement in nutrition as planned?

Was the outcome due to project activities? Which activities?

Is nutritional impact expected if the project is replicated under similar conditions? Different conditions? How should future designs be modified?

c) Linkages between food availability, household consumption and nutritional status.

The most important cause of malnutrition is poverty. The recommendations on project design should address themselves to practical ways by which the conditions of poverty can be ameliorated by improving real income of the household. For example, one major cause is maldistribution of resources. Landlessness may be found to be a cause of malnutrition. It may be beyond the scope of the project to remedy the situation through land reform. However, a realistic recommendation is to target job opportunities arising from the project to the members of landless households, especially to women.

If the malnourished household controls land, then efforts to increase production through the application of improved technology and modern agricultural inputs should lead to increased food consumption. In some cases, food consumption may have deteriorated because of shifts away from food production in favour of cash cropping. The obvious recommendation in such cases is to adopt a balanced approach so as to ensure a dependable source of food for the household.

If analysis of the nutrition problem shows that the deficiencies are seasonal, then project strategies may involve one or more of

the following measures:

- improve crop marketing and storage;
- encourage production of "minor crops" which will fill seasonal gaps (such as cassava and vegetables);
- encourage a farming systems approach where intercropping and ecologically sound mixture of livestock and crop production is practised;
- improve water management.

If the nutrition problem is other than that of energy deficit, but of nutrients such as proteins, vitamin A or iron, the project should encourage the production and consumption of those crops that supply the nutrients. Special emphasis must be made for the malnourished rural household to produce their own foods rather than exclusively depend upon purchasing food from income derived from cash cropping.

In order to translate increased food consumption into improved nutritional status, infection levels must be decreased. Therefore, components of the project which increase household sanitation, or provide health services and immunizations, will have a significant impact on nutritional status, through the lowering of infection levels. Where poor nutritional status persists under conditions of adequate food availability at the household level, intrafamilial maldistribution of food and poor weaning practices may be the cause of malnutrition. The project response to this should be nutrition education.

Overall the project should strive:

- to avoid negative nutritional impacts: not undermine subsistence food production or reduce the purchasing power of the poor; not to add to the household work-load of women; not to increase infection; not to undermine the strategies that people employ to provide security of access to food;
- to develop positive impacts: increase availability of food for consumption (provision of extension services, improved

seeds and other inputs); increase amount of food available in the market; encourage the participation of intended beneficiaries in decision-making; provide appropriate technology for farm and household work; provide improvements in sanitation and health conditions.

d) The FAO Methodology

Manual No. 1, Nutrition in Agriculture is designed for use in projects concerned with investment, development and management of resources, and area development. The seven stages of a project cycle as used by UN agencies and the corresponding stages in the nutrition planning process are as follows:

<u>Project cycle</u>	<u>Corresponding stages in nutrition planning</u>
Reconnaissance (Pre-Identification)	Desk review
Identification	Initial assessment
Preparation	In-depth study
Appraisal	
Approval	
Implementation	Monitoring and evaluation
Evaluation	

Project stages

(i) Pre-Identification: Desk Review Project ideas may emanate from a government agency, a national development plan or from economic studies by international agencies. Whatever their origin, they must address specific priority areas of development. These ideas are examined by a team involving government experts and often those from international and/or bilateral agencies. It is at this initial stage of project development that nutritional concerns are best introduced. In the Desk Review the nutrition planner examines all background information related to nutrition and food consumption in the project area as well as finding

out government interest in alleviating malnutrition. Specifically, the planner seeks information on the causes and extent of malnutrition and existing efforts to combat it. Furthermore, he studies the extent to which the project will deal with the problems of the disadvantaged people in the area, the potential of the project to improve the nutritional situation, and the feasibility of influencing the concept or design of the project to introduce nutritional considerations.

The Manual enumerates some of the ways by which the nutritional situation of the people in the project area can be assessed. Examples of information needed are anthropometric data, levels of food consumption, infant and child mortality rates and the incidence of nutrient deficiency diseases. A check list for the Desk Review is also given in the Manual. One to two weeks is required for this stage of nutrition planning.

(ii) Identification: Initial Assessment This stage in the planning cycle forms the basis for decisions on the scope of the project and on whether to proceed with its preparation. Objectives are identified, technical viability is assessed, broad descriptions are made of the components of the project, costs are estimated and financing is suggested. The corresponding stage in nutrition planning is Initial Assessment. This involves visiting the project area and undertaking further analysis of the food and nutrition situation. The objectives for this stage may be summarized as follows: to specify the apparent major food and nutrition problems in the project area; to specify population groups at risk nutritionally in terms of their demographic, socio-economic and geographical characteristics; to identify any relationships of such problems to government agricultural production, price, export and import policies and controls; to formulate nutrition objectives to be included in the project; to discuss with other planners suggestions by which the project could address the needs of the disadvantaged without substantial increase in cost; and to continue to search for existing data and determine whether to proceed to the next stage, In-Depth Study.

An important aspect of the Initial Assessment must be the provision of training opportunities for country professionals. The team's report should include: preliminary conclusions on main food and nutrition problems; long- and short-term effects of the project on food consumption and the desired modifications; recommendations for further data needs; preliminary identification of indicators to monitor and evaluate the project's effect on food and nutrition; and appraisal of existing food and health interventions which might reinforce the impact of the project, possibly a recommendation for a nutrition intervention. Generally, this stage of nutrition planning will involve 3 to 4 weeks.

(iii) Project Preparation: In-Depth Study This stage in the planning cycle involves much more thorough investigation of proposals made at the Identification stage. Detailed costing of investment items is made. Feasibility studies of the several components of the project are conducted. The end product is a report on the basis of which the project is appraised.

The corresponding stage in nutrition planning is the In-Depth Study. For most development projects, this step may not be necessary because of the expense involved. What is more, In-Depth Study may take up to nine months to carry out. The scope and activities of this study may involve a survey and re-analysis of existing data. The main purpose should be to lend objective evidence to the subjective impressions derived from the Initial Assessment. The specific objectives include: to determine nutritional status, food patterns and socio-economic situation of the disadvantaged; to contribute towards a rational decision on project objectives, participants, inputs, outputs, activities and means of evaluation; to provide information on projected nutrition benefits with possible economic and political costs; and to identify intervention measures or nutrition components that may be needed to complement broader strategies of the project in order to serve as interim measures until benefits from the project materialize.

(iv) Project Appraisal The data, procedures and conclusions of the prepared project are examined for validity by the financing agency. The report indicates the assurances of government and its conditions to be fulfilled before the project is approved for financing. It will be concerned with aspects of organization and management. The role of the nutrition planner is largely over by this stage.

(v) Approval Negotiations take place between government and financing agency. Finally the project is approved.

(vi) Implementation: Monitoring and Evaluation Government implements directly or through contractors. During this stage the financing agency exercises control or supervises the part it finances. Both parties monitor feed-back on the performance and progress of the project. An output of the planning methodology is to provide guidance for monitoring and evaluation during the implementation stage. Information collected in the Desk Review, Initial Assessment and In-Depth Study would serve as base-line data.

(vii) Evaluation Ex-post evaluation is undertaken after completion of the project. Results, effectiveness, design and other issues are critically examined. This is done by persons who were not associated with project formulation and implementation. It is usually composed of representatives from government, financing agency and executive agency.

(viii) Project Revision and Expansion Planning for an expanded project follows the same sequence as the original cycle.

FOOTNOTES

1. A. Berg and J. Austin, "Nutrition Policies and Programmes: a decade of redirection, Food Policy, Vol. 9, No.4, November 1984 pp. 304-12.
2. Calculations from World Bank work-in-progress and quoted in (1).
3. J.M. Pines "National Nutrition Planning: lessons of experience" Food Policy, Vol. 7, No.4. November 1982 pp. 275-301.
4. Davidson R. et al. "Can Health & Nutrition Interventions make a difference", Overseas Development Council, Monograph No. 13, February 1980.
5. Dewey, K.G. "Commentary: Agricultural development, diet and nutrition", Ecology of Food & Nutrition, Vol. 8 1979 pp. 265-73.
6. Hernandez, M. et al. "Effects of Economic Growth on Nutrition in a Tropical community" Ecology of Food & Nutrition Vol. 3 1974 pp. 283-91.
7. Dewey, K.G. "Impact of Agricultural Development on Child Nutrition in Tabasco, Mexico" Medical Anthropology, Vol. 4, No. 1 1980, pp. 221-54.
8. Fleuret, P. "Nutrition consumption and Agricultural Change", Human Organization, Vol. 39. No. 3, 1980 pp. 250-60.
9. FAO, Nutrition in Agriculture No. 4 "Data Needs for Assessing the Nutritional Effects of Agricultural and Rural Development Projects", 1983 p.7.

5.2 THE PROCESS OF INTRODUCING NUTRITION OBJECTIVES INTO RURAL & AGRICULTURAL DEVELOPMENT PROJECTS: LESSONS FROM BARINGO, KENYA

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5. SUMMARY AND IMPLICATIONS

I. INTRODUCTION

1.1 The Food crisis in Africa and the quest for effective food and nutrition planning strategies.

The deepening food crisis and widespread hunger and malnutrition in Africa today are a threat to national security and equitable socio-economic development. These realities call for innovative and pragmatic food and nutrition planning approaches. Several African countries^{1,2} are beginning to search for ways of integrating nutrition goals into their development plans in an effort to guarantee adequate access to food and adequate nutrition to all the population. Governments of independent African countries which are advocating the explicit incorporation of food security and nutrition concerns into their overall development goals are acutely aware that national food security, household access to adequate food, and nutrition are necessary first steps in the improvement of the general quality of life of the population.

All these concerns argue for a new approach to nutrition planning which will take into consideration the weakness in the existing planning procedures, and reflect the peculiar constraints which the developing countries of Africa face today. A new approach to nutrition planning is desirable, particularly in African countries "because old approaches have failed in situations far less serious than those now faced and because, if they (that is, the old approaches) are continued, they may well lead to more rather than less malnutrition. They may well lead also to less rather than more 'development'".³

1.2 Summary Review of Nutrition Planning Approaches in Africa

The approach to nutrition planning in African countries has closely reflected three major perspectives. These perspectives are (a) the interventionist, (b) multisectoral, and (c) advocacy.

1. WHO, "The Importance of Nutrition in Socio-economic Development." WHO Regional Office for Africa, AFR RC 28 14, 4 July 1978.

2. WHO, Afro-Memorandum, "The Importance of National and International Food and Nutrition Policies for Health Development", 27 August 1976, p.7.

3. FAO/WHO, Food and Nutrition Strategies in National Development, Ninth Report of the Joint FAO/WHO Expert Committee on Nutrition, Technical Report Series, No. 554, Geneva, 1976, p.11.

According to the interventionist view, nutrition programming is identified, not so much by any subset of specified activities but rather, by "... a set of quantitative objectives for which any member and combination of different activities may be relevant ... Nutrition planning covers anything and everything that is thought to impinge upon nutritional status".¹ Hence, the nutrition planning sequence is (a) an analysis of the entire "nutrition system", (b) identification of strategic points of intervention within the "nutrition system",² (c) specification of action programmes, (d) implementation and (e) evaluation of postulated impact. Proponents of the interventionist view of nutrition planning, "... seek to analyze the dynamics of malnutrition, observe the entire flow of nutrients through the socio-economic system, identify promising points of intervention so as to link programmes to need, calculate the relative cost-effectiveness of different options and only then devise monitoring and evaluation techniques to gauge programme performance."³ The interventions suggested generally cover areas which, by common consensus, are assumed to be important for improving the nutritional well-being of clearly defined target groups. Such interventions may range from child feeding, food fortification, nutrition education, up to the design of storage facilities aimed at the reduction of food loss.

The implementation of any one, or set, of these activities generally relies on funds and personnel provided, wholly or in part, by external donors.

The sectoral perspective differs from the interventionist perspective in one major respect. Here, nutrition is assumed, or accepted, as a major social sector concern. Nutrition planning then becomes one of delimiting activities for inclusion into programmes of existing

1. John Osgood Field, "The Soft Underbelly of Applied Knowledge: Conceptual and Operational Problems in Nutrition Planning," Food Policy 8 (1977): 236.

2. James Pines, "Basic elements of the planning process". in Mary Ann Anderson and Tina Grewal, Nutrition Planning in the Developing World. New York: CARE, Inc., 1976, p.5.

3. Agency for International Development, Planning a National Nutrition Programme: A Suggested Approach, especially Volume 1: Summary of the Methodology, January 1973.

ministries or sectors. In this case, nutrition activities are consciously tacked onto ongoing activities in public health, education, water supply, family planning, agriculture, and so on. The responsibility for implementing the specified nutrition activities is left to separate ministries. In short, nutrition policies, programmes and interventions are carved up for different sectors or agencies by a select body or organization which is given a mandate by the Government to integrate nutrition concerns into ongoing sectoral activities. With regard to the sectoral approach: "General strategy is not the issue. Certain kinds of activity are given: they may even have been set in motion. The task becomes one of circumscribed, operational and often technical tampering, with a mechanism already in place. ¹

A third perspective of nutrition planning--advocacy-- is less ambitious than the first two. This approach aims at integrating nutrition considerations into the activities of separate ministries. The task is to encourage each ministry-- or other bodies-- to examine the nutritional implications of their activities. In the case of the Ministry of Agriculture, for example, the purpose will be to assess the nutritional implications of contemplated policies on food production pricing and export. ^{2,3}

It is important to stress that although each of these styles of planning calls for evaluation, in practice evaluation has not been part of the planning process.

In sum, the state of the art of nutrition planning in a number of African countries may be summarized as follows:

- emphasis on data collection by individuals or agencies;
- much of such data are nutrition-specific, for example, anthropometry, biochemical and food consumption;

1. John Osgood Field, op. cit., p.230.
2. James M. Pines, Review and Advocacy: First Steps in Nutrition Planning. Document 1.1713 Protein Advisory Group of the United Nations System, 22nd Meeting, Rome, 1974, pp. 24-27.
3. L. Lynch, "Nutrition Planning Methodologies: A Comparative Review of Types and Applications". Food and Nutrition Bull. 1 3(1977): 1-14.

data are often not adequately analyzed;

the collection and analysis of data is done independently of a conceptual framework or action theory of nutrition;

data collection and analysis make little or no reference to the development goals and policies of the country;

too much time and money is spent on data collection and very little consideration is given to the administrative constraints that hinder the implementation of any action programme;

where action programmes are implemented, they often take the form of discrete activities; nutrition-related programmes are not wholly integrated into existing sectoral programmes;

where very little or no provision had been made for the training of local counterparts, such action programmes, if they are initiated and/or directed by foreign nationals, also end as soon as the foreign nationals supervising the task leave the country;

evaluation criteria are often never built into ongoing programmes; because of this, most nutrition-related projects come to a sudden end without being evaluated;

the evaluation of nutrition-related programmes has always been conceived as an isolated project or discrete activity in itself; invariably, such an evaluation exercise results in the collection of massive data, through expensive surveys, most of which are either unanalyzed or only partially analyzed;

consequently the decision-maker is left with little or no information on which to base his policies. ¹

In an exhaustive and critical review of past planning approaches in general and nutrition planning in particular, Burkhalter has to conclude that the existence of a wide gulf between theory

1. Kwame M. Kwofie, Nutrition Planning: Introducing Nutrition Considerations into the Development of Zambia. Lusaka: National Food and Nutrition Commission, 1979, pp. 1-5.

and practice "... is responsible for our ineffective social planning ..."¹ This divergence, is most evident in African countries. Here as elsewhere, "... nutrition planning still remains experience and data rich, but theory and analysis poor. Projects abound, but we still have only the most hazy idea of what works under what conditions"² (emphasis added).

In general, in several African countries where attempts are being made to integrate nutrition considerations into overall economic and social development, the approach has involved the formulation and implementation of "isolated programmes outside the general development plans of the country".³ Given the constraints which African countries face, such isolated programmes have not had adequate financing and technical support and many could not even extend beyond the pilot stage. The current opinion is that such programmes should be complementary to more fundamental measures aimed at the overall national development as opposed to the past "piece-meal", often "therapeutic", approaches.⁴

1.3 An Alternative Food and Nutrition Planning Approach

In an effort to address the root causes of lack of household access to food and adequate nutrition, member Governments of FAO urged FAO to assume a leading role "... in promoting an approach incorporating nutrition objectives and perspectives into all relevant programmes and projects, and expressed the wish that FAO take the initiative to share its experience and exchange views with UN and other international organizations and bilateral agencies concerned, especially on method development, training procedures and support materials".⁵

1. Barton R. Burkhalter, A Critical Review of Nutrition Planning Models and Experience. Prepared for the Office of Nutrition, USAID, December 1974.

2. Ibid., p.8. See, also J.M. Pines, "National Nutrition Planning: Lessons of Experience". Food Policy, Vol.7, No.4, Nov. 1982, pp.275-301.

3. FAO/WHO, Food and Nutrition Strategies in National Development, Ninth Report of the Joint FAO WHO Expert Committee on Nutrition, Technical Report Series, No.554, Geneva, 1976, p.11.

4. Ibid., p.11.

5. FAO, Report of the Sixth Session of the Committee on Agriculture (COAG), Seventy-Ninth Session, Rome, 22 June - 3 July 1981, p.v.

Between 1977 and 1982 the FAO developed a method to incorporate an explicit concern for nutrition improvement into the design of agricultural and rural development projects. This method has been field-tested with the co-operation of national institutions in several countries, including Kenya. The basic rationale of the FAO methodology for incorporating nutrition objectives into rural and agricultural development projects may be stated as follows: the magnitude and prevalence of poverty, hunger or malnutrition can be significantly reduced through rural and agricultural development projects which are consciously designed and implemented with the poor and malnourished as one of the target groups. The methodology shows how nutrition objectives can be routinely incorporated into all stages of a project planning cycle. It also describes the planning activities that should be undertaken at each stage. These planning activities are desk review, initial assessment and/or in-depth study.¹

- Step 1. Desk review is undertaken at the Reconnaissance Stage.
- Step 2. Initial Assessment at the Identification Stage (existing information on the project is evaluated and discussions held with Government officials, project financiers, and recipients).
- Step 3. In-depth study is carried out during the Identification/Implementation Stage to supplement, where needed, the information from the initial assessment.

The above methodological procedures have been adequately field-tested in a number of developing countries including Kenya and Zambia.² However, it was felt that the practical applicability of the proposed procedures in real situations needed further demonstration as to the actual efficacy of the approach in maximizing the effects of development projects on the nutrition of target populations. In order to promote the widespread application of the above procedures, it was necessary to show how

1. FAO, Integrating Nutrition in Agriculture and Rural Development Projects: A Manual, Nutrition in Agriculture, No.1, Rome: FAO, 1982.

2. FAO, Integrating Nutrition into Agricultural and Rural Development Project: Six Case Studies, Nutrition in Agriculture, No.2, Rome, 1984. pp 1-132.

a national nutrition planning institution can apply the procedures through the mobilization of its own resources.

It should be noted that in other developing countries where the methodological procedures have been applied there is lack of information on the actual planning process,¹ that is, the context within which the planning activities (desk review, initial assessment and/or in-depth study) were carried out. An attempt has been made in Kenya to close this information gap.

In the section that immediately follows, we provide a general planning framework that describes the food and nutrition planning process of FNPU. This framework is useful for understanding the implementation of the desk review, initial assessment, and in-depth study activities that have been completed in BPSAAP.

1. FAO, Integrating Nutrition into Agricultural and Rural Development Project: Six Case Studies, Nutrition in Agriculture, No. 2, Rome, 1984. pp 1-132.

2. STYLE OF NUTRITION PLANNING IN THE FOOD AND NUTRITION PLANNING UNIT (FNPU)

We provide below a summary description of the food and nutrition planning process of FNPU. This is done for two reasons. Firstly, to enable the reader to grasp the essential features of the Food and Nutrition Planning Unit (FNPU) planning process and secondly, to show how FNPU implemented the FAO methodological procedures, namely, desk review, initial assessment and in-depth study, within its planning process.

The entire nutrition planning process in FNPU is based on the principle of learning-by-doing, and reflection on the outcome of previous actions, and using lessons learned to initiate new action, or modify/discontinue ongoing actions. This planning process has been variously described as closed-loop¹ or reflection-in-action planning.² The planning process is incremental in the sense that it is continuous, as opposed to discrete and sporadic. This style of planning attempts to synthesize the best elements of the advocacy, interventionist and multi-sectoral perspectives³ to nutrition planning described earlier (Section 1.2).

2.1 Food and Nutrition Planning Process in Kenya

Fig. 1 describes the food and nutrition planning process within which FNPU nutrition planning is carried out. The implementation of the FAO procedures for introducing nutrition objectives explicitly into rural and agricultural development planning was carried out within the framework of this planning process. Food and nutrition planning in Kenya involves:

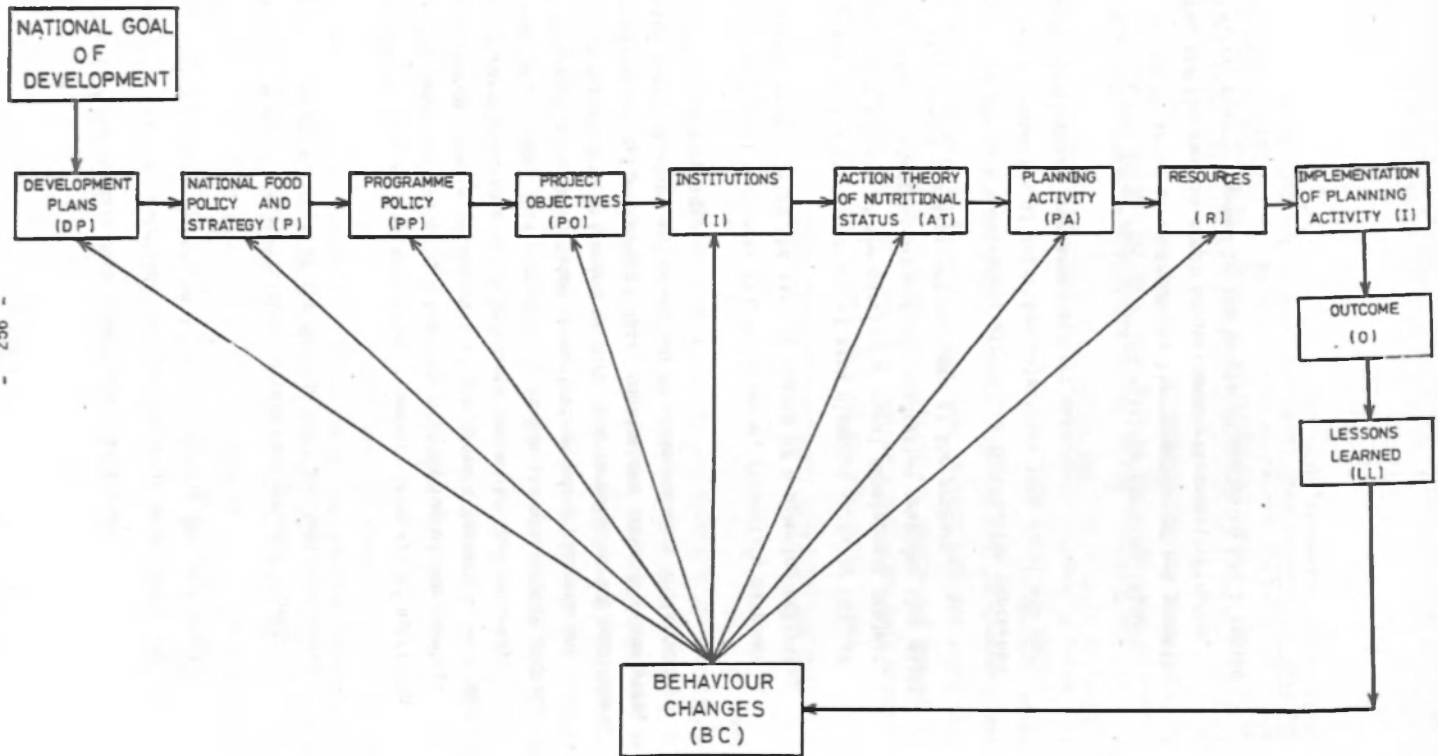
1. Kwame M. Kwofie, Theory and Practice of Nutrition Planning, mimeo, University of Michigan, Ann Arbor, 1976.
2. William D. Drake, Roy J. Miller and Donald A. Schön, "The study of Community-level Nutrition Interventions: An argument for reflection-in-action." Human Systems Management 4 (1983): 82.
3. L. Lynch, "Nutrition Planning Methodologies: A Comparative Review of Types and Applications", Food and Nutrition Bull, 13 (1977): 1-14; and A. Horwitz, "Food and Nutrition Planning". in Process of Food and Nutrition Planning, edited by Jose Aranda-Pastor and Lenin Saenz, Proceedings of International Conference held in Antigua, Guatemala, April 15-18 INCAP, Guatemala, 1981, pp. 1-10.

- . analysis of the overall development goals of Kenya;
- . advocating explicit nutrition goals in national development plans; sensitizing decision makers on issues concerning food and nutrition;
- . analysis of rural and agricultural development project objectives (PO), for example, those of the Baringo Arid and Semi-Arid Areas Project;
- . formulation of a unified analytical framework (theory) of nutrition (T) that takes into account the policy orientation of the country. The framework permits an analysis of the dynamic factors as well as their interrelationship which influence household food security, occupation, income, food consumption, health and nutritional status. The framework also facilitates communication among planners and decision makers from different sectors, the formulation of hypotheses, the collection and analysis of data, conclusions drawn from analyses, and the identification and selection of socio-economic indicators for monitoring purposes;
- . identification of resources (R), for example, financial, manpower resources needed during the various phases of a planning activity;
- . analysis, during the execution of each planning activity (I), of the planning process of the particular rural development project, with a view to detecting project implementation problems that might negatively affect the expected outcomes of the project;
- . analysis of the main constraints within the institution concerned with the introduction of nutrition objectives into rural and agricultural development programmes and projects.

The outcome (O) of each planning activity provides lessons learned (LL) which serve as an input for the selection of new planning activities, and the re-assessment of available resources. Finally, the cumulative lessons learned in the course of executing the planning

FIG 1

A DIAGRAMATIC VIEW OF FOOD AND NUTRITION PLANNING PROCESS IN KENYA



activities lead to behaviour changes (BC), which in turn feed back into national development plans and policies, programme goals and project objectives. Lessons learned (LL) in the course of implementing each activity, for example the initial assessment, serve as direct inputs into national development plans (DP) (for example, the inclusion of explicit nutrition objectives in the 1979-83 and 1984-88 development plans), national food policy and strategies (P) (for example, the monitoring of household food security and nutrition); rural and agricultural development policies (for example, inclusion of food security and nutrition within the goal of ASAL); project objectives (for example, the reorientation of BPSAAP targetting towards highland pastoralists).

The execution of each planning activity proceeds against the background of an explicit theory of nutritional status. It directs the learning process itself. The learning process is said to be complete (closed-loop), where; (i) the consequences from the implementation of a planning activity serve as feedback into the action theory of nutritional status, and (ii) when lessons about the validation (or invalidation) of the action theory of nutritional status serves as renewed input or feedforth into the goals or policies or project objectives. Thus, current actions are modified, or discontinued, as a consequence of an evaluation of lessons learned from previous actions. An overview of the action theory of nutritional status that guides the learning process is summarized below.

2.2 Framework for analysis of causes of food insecurity, hunger and malnutrition

In order to provide a meaningful insight into the analysis of the root causes of food insecurity, hunger and malnutrition, particularly in the rural areas of Kenya, a general, practical testable, unified

framework (theory) of nutritional status^{1,2,3} was articulated as part of the effort to implement the FAO procedures described earlier (Section 1.3).

The unified framework (theory) is shown in Fig.2. It identifies five basic systems relevant to food security nutrition and health situations, particularly in the rural areas of Kenya. These systems are the Family (F), Community (C), Environment (E), Food Production and Supply (P), Nutrition and Health (N). A diagrammatic representation of these systems, and the direction of their relationships, is depicted in Fig.2. As shown in F.2, the dependent system in the nutrition status theory is Nutrition and Health (N). That is to say, this system (N) is dependent on, or influenced directly by, the Family (F), Environment (E) and Food Production and Supply (P) systems, and indirectly by the Community System (C). The Community System (C) influences the Nutrition and Health System (N) only through the Family (F) and Food Production and Supply (P) systems. The diagram (Fig.2) also indicates that the Food Production and Supply System (P) is influenced directly by the Family (F), Environment (E) and the Community (C) systems. The Community (C) is closely influenced by the larger World Economic System (W). The World Economic System (W) contains such variables as: international trade, aid flows; international private investment; access to, and price of, raw materials and processed agricultural commodities in industrialized markets; international pricing and market system, and so on. The Community system (C) is shown as external to the five basic systems. All the systems, shown in Fig. 2, are dynamic.

1. Kwame M. Kwofie and Luke M. Wasonga, Nutrition in Rural Development: Baringo Arid and Semi-Arid Integrated Rural Development Project, Kenya, (Nairobi). Ministry of Finance and Planning, Food and Nutrition Planning Unit. On the functional specification of the nutritional status theory, see, Kwame M. Kwofie, An Approach to the Introduction of Nutrition Considerations into Rural and Agricultural Development Projects: Baringo Arid and Semi-Arid Area Project. (Nairobi), November 1983. For the calibration of the system components, see Milton M. Harvey, Consultancy Report, Baringo Semi-Arid area project, in Migot-Adholla, S.E., John A. Nkinyangi. Food and Nutrition Planning in Kenya. Institute for Development Studies, University of Nairobi, 1980.

2. On the need for a unified framework for balanced development, in general, see, United Nations Research Institute for Social Development, The Quest for a Unified Approach to Development, Geneva, 1980.

3. For a discussion on the need for food and nutrition theory to guide nutrition planning, see, for example L. Joy, "Food and Nutrition Planning Theory: Current Conception and Methodological Advances," in The Process of Food and Nutrition Planning, edited by Jose Aranda-Pastor and Lenin Saenz, Proceedings of an International Conference held in Antigua, Guatemala, April 15-18 1980, pp. 15-33.

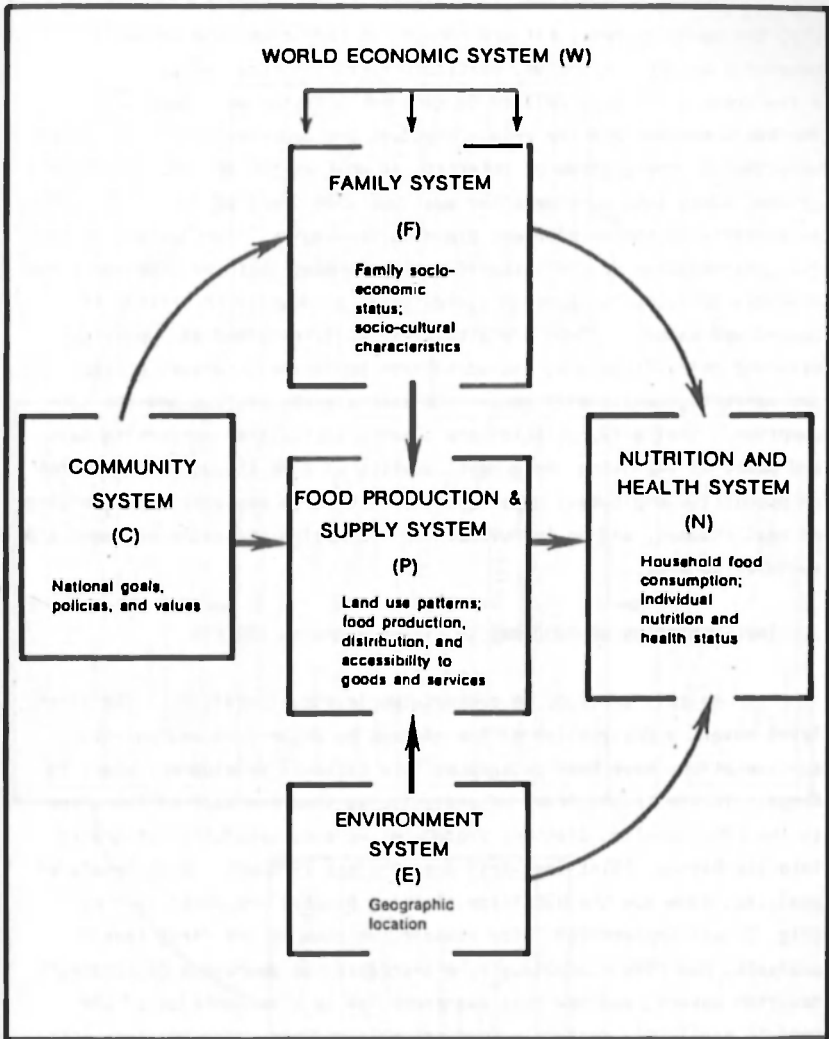


Figure 2: BASIC SYSTEMS IN NUTRITIONAL STATUS THEORY:
MAIN SYSTEM COMPONENTS

Having ascertained (i) the goals of development of Kenya and (ii) the basic systems that are thought to influence food security, nutrition and health status, particularly in the rural areas of Kenya, a few critical factors related to each basic system were considered. The basic systems and the related factors are depicted in Fig. 3. The selection of the systems of interest, as well as the factors within each system, takes into consideration what the Government of Kenya considers as priority in its development planning strategies. For instance, careful consideration of the sectoral policies shows that the Government has explicit policies to increase agricultural production to satisfy local demand and export. There are also clear policies aimed at improving existing infra-structure, including transportation, storage, processing and marketing, which will ensure the availability of food and its consumption. Similarly, policies are clearly articulated concerning ways and means of improving the general quality of life through the creation of productive employment opportunities in diverse sectors, the raising of real incomes, and an improvement in the health and socio-economic and cultural spheres.

3. IMPLEMENTATION OF FOOD AND NUTRITION PLANNING PROCESS

In this section, we present two levels of analysis. The first level covers a description of the process by which food and nutrition considerations have been integrated into national development plans in Kenya. In the second level of analysis, we show how each of the steps in the FAO nutrition planning procedures were successfully integrated into the Baringo Pilot Semi-Arid Area Project (BPSAAP). Both levels of analysis, show how the nutrition planning process presented earlier (Fig. 1) was implemented. For example, we show in the first level analysis, how FNPU's advocacy role increased the awareness of strategic decision makers, and how this awareness led to a recognition of the need to explicitly integrate food security and nutrition concerns into national development plans and policies.¹

1. Luke M. Wasonga, Kenya Nutrition and Economic Development- Policies and Strategies, Mimeo, June 1985.

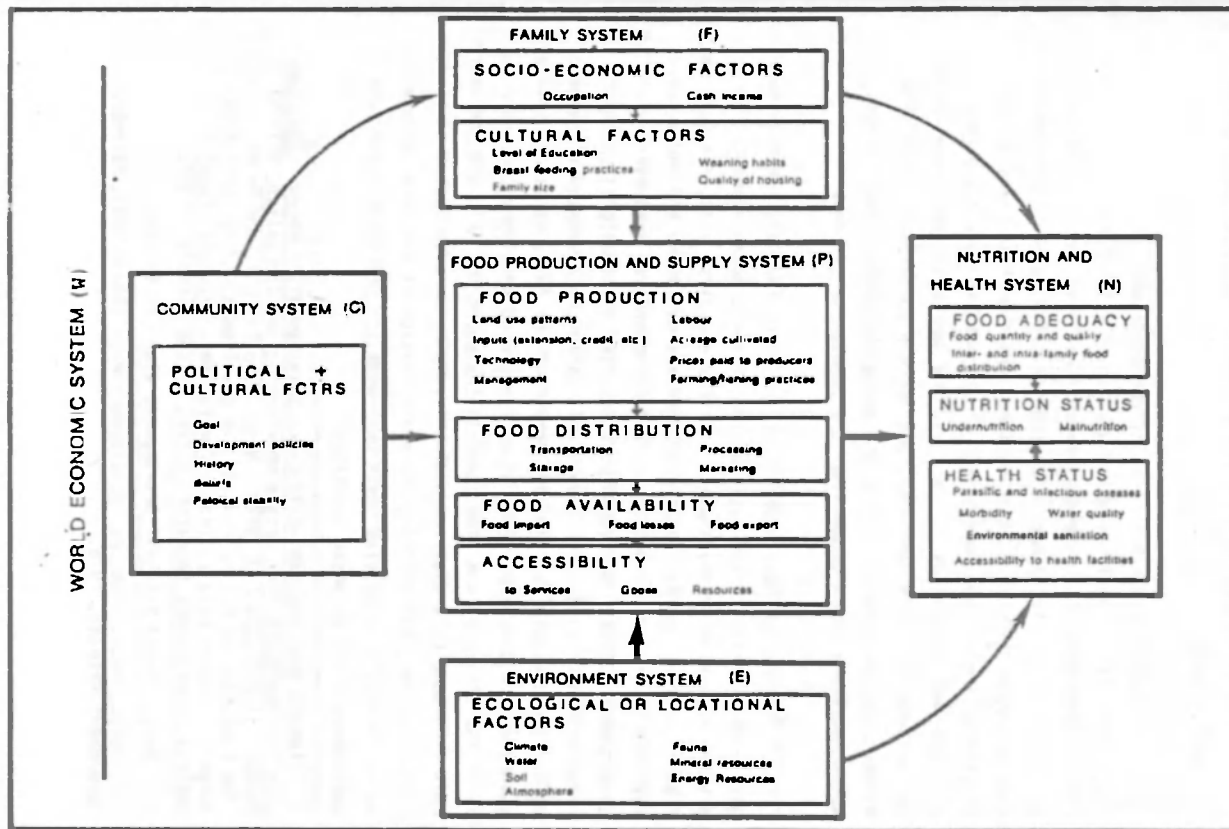


Figure 3: DIAGRAM OF THE NUTRITIONAL STATUS THEORY

3.1 Introduction of Nutrition Goals into National Development Plans and Policies

A major development goal of the Government of Kenya is the improvement of the well-being and quality of life of the population. In line with this goal, the Government formulated the Arid and Semi-Arid Lands (ASAL) Programme¹ during the third National Development Plan period of 1974-78.² ASAL outlined broad policies, and defined strategies for optimum development of the marginal and low potential arid and semi-arid lands. These arid and semi-arid lands cover 80 per cent of the country's land area, and contain 20 percent of its population. The inhabitants of ASAL are among the poorest and the most nutritionally at-risk segments of the population of Kenya.

During the Fourth Development Plan of 1979-83, the Government gave high priority to the satisfaction of basic human needs, as a primary objective of development.³ For the first time, the Government Plan included a special chapter on food and nutrition and underscored the need to integrate food and nutrition objectives into overall development policy. Motivated by an earlier International Labour Organization (ILO) Mission Report which strongly advocated a change of policy and strategy for the development of the ASAL, Kenya outlined a comprehensive programme aimed at an integrated development of ASAL. It is the policy of the Government to implement the Arid and Semi-Arid Land Programme on a district basis, relying on established administrative systems, and ensuring the participation of the local population at all levels in assessing their own needs and priorities, and also in implementing all proposed solutions.

1. Kenya, Arid and Semi-Arid Lands Development in Kenya. The Framework for Implementation Programme Planning and Evaluation, Nairobi. Prudential Printers Ltd. 1979. Migot-Adholla, S.E. and Peter D. Little. "The Evolution of Policy towards the Development of Pastoral Areas in Kenya." In John Galaty, (ed.), The Future of Pastoral Peoples, International Development Research Centre, Ottawa, Canada. 1980.
2. Kenya, Third National Development Plan (1974-1978)
3. Kenya, Fourth National Development Plan (1979-1983), Nairobi, Government Printer, 1978.

As evidence of the Government's concern for the nutritional condition of the population as a whole Parliament, in 1981, elaborated the National Food Policy, Sessional Paper No. 4.¹ This important policy document shows that Kenya's food supply planning system functions within the broader context of a national food security policy framework. This consists of a set of interrelated policies and action programmes supported by decision-making institutions, all aimed at ensuring broad food self-sufficiency and maintaining adequate nutrition and well-being. The Government is implementing broad and clear policies on price, agricultural input, research and extension, food processing and marketing, agricultural trade, resource development, employment and human nutrition. In addition, the Government is implementing a comprehensive range of programmes aimed at "promoting increase in national food production to keep pace with population and income growth and to maintain a position of broad self-sufficiency in food for the remainder of the decade".²

In 1980, FNPU, in collaboration with FAO, organized a national workshop in Mombasa to sensitize policy makers from various ministries on the need to include nutrition targets in national development plans and explicitly integrate nutrition objectives into the articulation of development policies and the selection, design, implementation and evaluation/monitoring of projects.³ This workshop increased the awareness among policy makers of the potential implications of various development programmes on food and nutrition.

1. Kenya, National Food Policy, Sessional Paper No.4, 1982.

2. Ibid, p.40

3. S.E. Migot-Adholla and John A. Nkinyangi: Food and Nutrition Planning in Kenya, Institute of Development Studies, University of Nairobi, 1980.

Summary of Lessons Learned

- the existence of a national institution of food and nutrition matters is essential for the promotion of nutrition in national development;
- national nutrition institutions can play a meaningful advocacy role; the advocacy role should be followed by efforts to sensitize strategic decision makers from different ministries in order for long-term action to be initiated;
- nutrition workshops can play a useful role in sensitizing national leaders to the issues relating to food security and nutrition;
- note, for example how FNPU introduced nutrition goals into the Fourth Development Plan of 1979-83: previous plans had no explicit nutrition goal;
- lessons learned from these experiences have been used by FNPU: the Fifth Development Plan also has an explicit nutrition goal (see Fig. 1).

It should be noted that prior to the establishment of FNPU in 1979, a number of rural development projects in Kenya had been initiated within the framework of the new ASAL policies and strategies. However, none of the projects had as an explicit objective the improvement of food consumption and nutrition of the most at-risk segments of the project beneficiaries. Lack of trained personnel and insufficient experience of nutrition assessment and planning in FNPU were the two major bottlenecks for effective orientation of development policies and programmes towards the poor and nutritionally at-risk segments of the population in rural and agricultural development programmes in Kenya.

In October 1981, the Ministry of Finance and Planning recognized the need to apply the procedures for incorporating nutrition in rural development projects on a routine basis and to train nutrition

and project planners for this purpose. The first attempts by FNPU with support from the FAO Food Policy and Nutrition Division to systematically apply these procedures began in 1981 with the Baringo Pilot Semi-Arid Area Project (BPSAAP). It is to this that we now turn.

3.2 Introduction of Nutrition Objectives into Rural and Agricultural Development Projects

The Baringo Pilot Semi-Arid Area Project (BPSAAP) is conceived within the context of the Arid and Semi-Arid Lands (ASAL) Programme. Baringo district is among the initial ASAL districts to start a systematic implementation of an integrated approach for rural and agricultural development. The implementation of BPSAAP began in early 1980.

3.2.1 Summary of Baringo Pilot Semi-Arid Area Project (BPSAAP)

BPSAAP covers an area of about 5,000 square kilometres. This represents nearly 50 per cent of the total area of the Baringo District (See Map 1). The BPSAAP roughly lies between 3,000 ft. (914 m.) and 5,000 ft. (1,520 m.) above sea level. The area is bordered to the west by the eastern slopes of Tugen Hills and to the east by the Laikipia Escarpment. Annual rainfall is 650 mm but there is considerable annual and seasonal variation, particularly in the flat lands of Njemps and Lobo locations and the eastern areas of Chachap, Ewalel and Saimo Locations. The semi-arid areas are found on the hilly slopes of the Tugen Hills and Laikipia escarpment (see Map 2).

The entire BPSAAP area comprises five ecological zones, namely, the upper midland (or highland) semi-arid zone (UM5), the lower midland semi-arid zone (LM5), lower midland zone (LM6), and the inner lowland zone (IL6). A sixth area designated transitional zone (LM4) runs along the western periphery of the project area. The arid zones are confined to the lowland areas to the North and South of Lake Baringo; the upland zones are primarily semi-arid. Soils in the semi-arid areas at the foot of the steep-sided slopes of the Tugen Hills tend to be shallow, with a

very rocky surface cover. In the low-lying arid region south of Lake Baringo, especially Njemps flats, there are alluvial soils, considered to be among the most fertile in the entire BPSAAP area. The semi-arid areas are more vulnerable to soil erosion, on account of the steep rocky slopes, than the arid areas. There are two distinct seasons; wet and dry. The wet season begins about March and ends in August. The remaining seven months (September through March) are dry. There is generally a great deal of variability in the onset of the wet and dry seasons. During the long dry season, various sources of water (still pond, small dam, sub-surface dam, piped water) dry up and the level of perennial rivers and streams drops. The dominant vegetation in the area is Acacia thicket and bush. In the lowland region of Njemps and Lobo locations and the eastern areas of Chachap, Ewalel and Saimo, annual grasses predominate.¹

The total population of the project area is 55,800 with a mean density of 12.0 people per square km. The three major ethnic groups in the BPSAAP area are the Njemps or Ilchamus (8,642), the Pokot (21,398) and the Tugen (22,760). On an administrative basis, the Pokot inhabit all of the Nginyang Division, the Ilchamus inhabit Njemps location in Marigat Division; and the Tugen inhabit the remaining locations in Kabarnet and Marigat Divisions. The majority of Ilchamus are concentrated on the low-lying flats south, west and east of Lake Baringo (3,000 ft altitude), the Tugen inhabit the Tugen Hills and lower slopes of the Tugen Hills (3,000-5,000 ft), and the Pokot the lowland areas north of Lake Baringo (2,500 ft altitude) (See Map 2).

Environmental and cultural factors have combined to reinforce the existing occupational structure. Nearly 98 per cent of the area is range-land. Cultivated land area covers only one per cent. Live-stock raising is, therefore, the principal land use and constitutes the dominant economic activity in BPSAAP. All land in BPSAAP area is communally owned, that is, there is no individual legal ownership of land. One of the objectives of the BPSAAP is to enable groups of pastoralists to have legal access to land.

1. Republic of Kenya, Baringo Pilot Semi-Arid Area Project: Summary of Interim Report, December 1984.

The BPSAAP area was selected for two major reasons: first, the geographic and sociological problems of the project areas are considered representative of those facing other Arid and Semi-Arid areas of Kenya, and second, Baringo district, as a whole, represents one of Kenya's poorest districts. It is hoped that lessons gained through BPSAAP will be applicable to development programmes in other Arid and Semi-Arid Areas of Kenya.

3.2.2 BPSAAP Objectives and Components

The overall goal of ASAL is the alleviation of poverty through providing basic needs and increasing opportunities for employment and income. BPSAAP is an integrated multi-sectoral project. The ministries that are currently implementing the above components are Agriculture and Livestock Development, Water Development, Environment and Natural Resources, Lands and Settlement, Culture and Social Services, and Education. The initial focus of the project has been the building up of a field-tested basis for the rehabilitation of the Arid and Semi-Arid areas of the Baringo District and on testing the viability of labour intensive techniques for developing the Arid and Semi-Arid areas with local labour. BPSAAP components that were being implemented: soil and water conservation; crop development; range management and livestock development; development of surface water supplies for human and livestock consumption; rural crafts; forestry and land adjudication; supply of basic equipment for schools. The project also contains a health component. Co-ordination of all BPSAAP activities was until 1983 entrusted to the Ministry of Agriculture and Livestock Development.

3.3 Implementation of the FAO nutrition planning activities into Baringo Pilot Semi-Arid Area Project

The three planning steps in the FAO methodology for introducing nutrition objectives into agricultural development projects have been successfully implemented in the Baringo Pilot Semi-Arid Area Project (BPSAAP). The entire planning process --from desk review, through initial assessment, in-depth study, monitoring-- can be seen as an

incremental learning process within the context of the BPSAAP planning cycle. Each of the activities, in the planning sequence, contributed information (0) that was used by BPSAAP planners. As the reader will also note, the execution of each of the three nutrition planning activities resulted in lessons which were used as fresh input for the initiation of the next planning activity. For example, the initial assessment was carried out as a result of lessons learnt from the desk review; and lessons from the initial assessment resulted in the decision to undertake the in-depth study.

3.3.1 The Desk Review

The first step of the FAO methodology implemented in BPSAAP was the desk review. During the preparation of the BPSAAP document by the Ministry of Agriculture and the International Development Association (IDA) of the World Bank, FNPU held a number of consultations with the officials of the District Development Committee (DDC) of Baringo, the Ministry of Agriculture (the co-ordinating agency) as well as with representatives of the World Bank. These consultations by the FNPU underscored the need for BPSAAP planners to include as beneficiaries the socio-economic and nutritionally disadvantaged population groups. There was an acknowledged dearth of data and information on the semi-arid areas of Kenya in general and Baringo district in particular. It was recognized that some of the components of BPSAAP would need to be modified as more information was gathered during implementation.

Two groups of beneficiaries were identified. The first group of beneficiaries included all the population whose main economic activity is pastoralism; the second group comprised all the population who cultivate food crops as the main economic activity. BPSAAP final document was approved in 1979, and project implementation began in 1980.

Lessons Learned and Nature of Behaviour Change

Salient among the lessons learned were:

during the desk review, a nutrition planning institution with limited resources of manpower and information can play an advocacy role.

- where the nutrition institution has limited information concerning the food and nutrition situation of the project area, the nutrition planning unit may have to accept the component as defined by the project authorities as well as the funding agencies.
- a nutrition planning unit can have very little or no influence in proposing modifications in a project design, including its components, especially when it (the unit) has no facts to justify such changes.
- the nutritional status framework (theory) can assist the planners in systematically deducing the likely effects of the project components on the food security and nutrition situation of the project beneficiaries.

3.3.2 Initial Assessment

The planning activity (PA) identified by FNPU was the initial assessment. After a careful assessment of its available manpower resources (R), FNPU requested assistance from FAO. The implementation (I) of the initial assessment took place during the first year of BPSAAP operations, 1980-81. FAO provided support to a field survey being carried out in the project area.¹ This field survey covered food production, marketing and consumption. FNPU reviewed the findings of this survey and made an assessment of other existing data of relevance to food and nutrition in the project area. The outcome (O) of this review allowed a broad geographical classification of sublocations according to qualitative assessments of food availability, food security, nutritional risk, water availability and economic advantage. The need for improved food security was evident in all locations. Non-irrigated areas were particularly at risk; and seasonal labour conflicts argued against progress in the proposed agro-pastoralist system.

1. Peter D. Little, "Food Production, Marketing and Consumption in the Semi-Arid Area of Baringo District." Nutrition Consultant Reports Series, No.44, FAO Rome. 1982 and Judith McGuire, Initial Assessment - Baringo Semi-Arid Area Project. Mimeo, FAO Rome, 1980.

FNPU also reviewed district level aggregate data on food production and income. Unfortunately there were no dietary or nutrition status data specific to Baringo. Although acute and chronic malnutrition were known to be prevalent in comparable locations FNPU learned that in order to assist BPSAAP planners to target BPSAAP beneficiaries, namely, the pastoralists and the crop cultivators, precise information on the geographic locations of at-risk pastoralists and crop cultivators was needed. This awareness led to a decision (BC) by FNPU to undertake a second planning activity. FNPU provided BPSAAP planners with the findings of their reviews. However, BPSAAP planners did not modify their targetting. In fact, findings from the field surveys led BPSAAP to increase project inputs to the populations living in the low lands, located in the more agriculturally productive arid areas near Marigat. The highland semi-arid areas were not covered by the preliminary field surveys reviewed by FNPU. Until in 1982, BPSAAP planners believed that the population groups worst off in the project area were located in arid areas rather than the semi-arid areas.

The initial assessment revealed to planners of FNPU and the BPSAAP several information gaps. It also raised crucial planning questions concerning ways and means of orienting BPSAAP activities such that it would benefit the population groups that were economically and nutritionally at risk. For example, information from the initial assessment did not lead to the identification of the population groups in the project area which are nutritionally disadvantaged in terms of their food security, demographic, socio-economic and of geographic characteristics. In order for the project to benefit the at-risk groups, it was considered necessary to identify, first, who these groups are. Next, knowledge of where such disadvantaged groups are located was deemed essential. It is also important to know why there are at-risk groups. Information from the initial assessment answered, to a large extent, questions pertaining to the identification of at-risk locations. What was lacking was household information to identify the at-risk population groups and the reasons underlying their present socio-economic situation.

Summary of Lessons Learned

Salient among lessons learned from the initial assessment are:

- a nutrition planning institution can use information collected by individual researchers or institutions to provide tentative insights into the food and nutrition situation of a given project area.
- the selection of existing information for food and nutrition planning purposes should be guided by an explicit nutrition status theory (Fig.3).
- great caution needs to be exercised by project planners not to extrapolate research conclusions covering geographic areas with great diversity.
- information derived from aggregated data will need to be supplemented with disaggregated information covering, as far as possible, a representative area of a whole project area. Such disaggregated data may be obtained during the course of project implementation.
- proposals made by nutrition planning agencies for major modifications in a project design (such as components, beneficiaries) usually receive little or no consideration from project planners unless such proposals are supported by factual information.

Information from the initial assessment was not sufficient to identify nutritionally at-risk groups with the precision needed for effective project planning. There was little justification for re-orienting BPSAAP targetting and components without further information.

Nature of Behaviour Change

Lessons learned from the initial assessment resulted in an important decision by FNPU to request technical assistance (R) from FAO. The request had both long- and medium-term objectives. Under

the former, FNPU requested FAO to:

build up the capacity of the Ministry of Finance and Planning (MFP) at the central level and that of project planners and managers at the local level for introducing an explicit concern for nutrition in project planning, monitoring and evaluation.

- provide ministries and non-governmental organizations with a methodological framework for taking informed decisions, with the participation of the people concerned, on the definition of inputs required at the project level, and for adequate implementation of national and provincial food and nutrition policies.
- the medium-term objectives of FNPU request to FAO was to enable FNPU to: promote the routine application of current procedures for the incorporation of nutritional considerations in the design and planning of rural development projects in the arid and semi-arid zones of Kenya.
- develop methods, adjusted to local conditions, for monitoring and evaluation of rural development projects' inputs, effects and impact on the nutritional conditions of project participants.
- provide orientation for administrators and project management personnel, from arid and semi-arid land development projects, in nutrition assessment and planning.

In July 1982 FAO approved the request by FNPU for technical support. A staff member of the FAO Food and Nutrition Policy Division was outposted to Kenya to work closely with FNPU to achieve the above stated objectives. The implementation of the third step in the FAO nutrition planning methodology, namely, the in-depth study, was accomplished within the context of the above objectives.

3.3.3 In-depth Study

The in-depth study began in 1982. This stage in the FAO methodology was implemented during the second year of BPSAAP operations. The in-depth study involved carrying out four major planning activities (PA). These major planning activities and their related sub-activities are:

- a) Data collection: This covered such sub-activities as sample design; questionnaire design; data collection; coding and key punching of survey data;
- b) Data/Information analysis leading to the production of information for BPSAAP planning purpose;
- c) Identification and selection of Project Target Groups, on the basis of the results from the data/information analysis;
- d) Assessment of expected project impact on the project beneficiaries/target groups;
- e) Identification of food and nutrition interventions intended to strengthen some elements or components in the BPSAAP, or re-designing BPSAAP, in order to meet its expected target for nutritional improvement.

A brief description of how each of these planning activities (PA) were carried out within the frame of FNPU planning process described earlier (Fig.1) is presented below:

(a) Data Collection

In order to have information that was representative of the arid and semi-arid ecological zones in BPSAAP the Central Bureau of Statistics (CBS) selected 16 primary sampling units from the entire BPSAAP area. ¹ Questionnaires were prepared by a local consultant. ²

1. Jason Ondora, Design and Implementation of the Survey Design for the Baringo Semi-Arid areas Project, (Nairobi) March 1983 and Akiiki Kahimbaara, Baringo Arid and Semi-Arid Project. Conduct of the In-Depth Survey, Field Data Acquisition. March 1983.

2. Akiiki Kahimbaara, Ibid.

Concerning the content of the questionnaire FNPU received inputs from CBS and other staff members of the Ministry of Finance and Planning. Decisions on which data to collect were guided closely by the nutritional status (theory) framework (Fig.2). For example, on households, data to be collected included: household size, access to basic resources and services (such as water, markets, health centre or clinic, matatu or bus stop), method of sewage disposal, structures on holding, type of cooking fuel, number of household income contributors, and household decision making. Data on household members included: main and secondary occupation, ethnic origin, place of birth, marital status, age, sex and relationship to household head. Variables describing children's nutritional and health status and feeding practices included: age and sex, height, weight, length of breastfeeding, age at initiation of supplementary feeding, type of porridge, duration of sickness over a period of two weeks, and type of sickness.

Training of fifteen enumerators was done by the staff of CBS assisted by FNPU. Data collection took place during the dry season (February through March) of 1982. This was followed by data coding, first in the field, and then at FNPU in Nairobi.

A second type of information, of a qualitative nature, was collected using the techniques of participant observation.¹ Information covered occupational activities of local people in the BPSAAP area, their mode of travel, type of foods eaten and their preparation, activities of women, the use of clinic facilities, and so on. Information on the ASAL programme, salient event histories of the local area, and the planning of operations of the BPSAAP, were also obtained through direct interviews and written records. This class of information was collected during the course of analyzing the survey data. It served as a basis for improving on the analytical framework (theory) that guided the formulation of hypotheses and the subsequent analysis and interpretation of the information obtained from the survey data. This completes the data collection planning activity (PA) (See Fig. 1).

1. B.H. Junker, Field work: An Introduction to Social Sciences, London, University of Chicago Press, 1980.

(b) Data Analysis and Results

Prior to the data analysis, computer programmes were used to validate the data, and to create files for analyses. Survey data were analyzed on the IBM/370 of the Government Computer Services (GCS), Ministry of Finance. Initially, a number of software including SPSS were used to process and analyze the survey data.

The nutrition status theory (Fig.2) was integrated in the planning steps as follows:

- i) Description of the magnitude, severity and location of under-nutrition and an analysis of the characteristics of the household members was the starting point in the theory-oriented analysis. For each of the sub-systems identified in Fig. 2, a descriptive analysis was made of the factors considered to be causally related to undernutrition. For example, available data on income contributors, family size, and health status are analyzed in order to provide an understanding of the relationship between nutritional status and the remaining systems. The analysis of factors in the Community System (C) focused on sector activities at the project level as well as on the existing administrative operations and showed how these can influence the outcome of the project.
- ii) The analysis had three purposes. The first purpose was to estimate the percentage of households with malnourished children. The second purpose was to identify the characteristics of households with a high risk of malnutrition and those with a low risk; and the third was to establish the relative importance of the variables considered to be associated with the risk of malnutrition in BPSAAP.

Summary of Findings from Data Analysis

Details of the analysis and the survey findings are presented and discussed elsewhere ¹ and are summarized below. A major finding of

1. Kwame M. Kwofie, Identification of Population Groups with High Risk of Hunger and Malnutrition in Drylands: The Case of Baringo District, Kenya, Ministry of Finance and Planning, Food and Nutrition Planning Unit, August 1984.

the analysis was the classification of socio-economic groups in terms of ecological areas and relative degrees of risk of food insecurity and malnutrition. These four socio-economic groups are: the nomadic pastoralists (Group 1), the semi-nomadic pastoralists (Group 2), the agro-pastoralists (Group 3), and wage earners (Group 4). The risk of malnutrition is higher among the nomadic (Group 1) and semi-nomadic pastoralists (Group 2) than among the agro-pastoralists (Group 3) and wage earners (Group 4). The salient characteristics of each of these types of socio-economic group are outlined in Table 1.

Table 1: Classification of Socio-economic Groups According to Risk of Hunger and Malnutrition, Arid and Semi-Arid Areas, Baringo District, Kenya

Socio-economic Group	Risk of Hunger and Malnutrition
Group 1: <u>Nomadic Pastoralists</u>	Risk - High
Nomadic pastoralists are found in the highland semi-arid areas east of Lake Baringo. The dominant occupation is pastoralism only; household food insecurity is very high due to inadequate food availability; soils are poor and slopes are very steep, making food cultivation difficult. The average distance to market, clinic and means of transportation is about 20km. Dry-land farming methods have only recently been introduced by BPSAAP and some maize, finger millet, cowpeas and beans are cultivated during the rainy season, few households have begun crop cultivation using dryland farming methods, and crop yields are very low. The average household size ranges between 7 and 12 persons.	
Group 2: <u>Semi-Nomadic Pastoralists</u>	Risk - High
Semi-nomadic pastoralists are located in the remaining semi-arid areas of BPSAAP. They cultivate food crops, using local small-scale irrigation methods, as a secondary occupation. During the wet season, they migrate in search of pasture and water and return	

Socio-economic Group

Risk of Hunger and Malnutrition

during the start of the rainy season. They have limited time for preparing fields for cultivation, hence less than 1 hectare is planted. Access to basic services such as markets, clinic and transportation, is extremely difficult. Average distance to such services ranges from 8-12 km; households are large, often with more than 5 persons. The risk of food insecurity, particularly during the dry season, is high.

Group 3: Agro-Pastoralist Risk - Low

Among agro-pastoralists, pastoralism and crop cultivation are practised mainly in the arid lowland areas: They have easy access to seasonal streams, perennial rivers, or Lake Baringo; easy access to all-year-round irrigation water to permit the cultivation of hybrid maize, cowpeas, beans and finger millet. The average distance to basic services, such as markets, clinic, transportation and school, ranges between 0-2 km. Most households have grain stores; food insecurity is not a major problem except during periods of drought when crops fail and animals die. Family size is relatively small, ranging from 3-5 members. Small family size and dual occupations (pastoralism and cultivation) create severe labour bottlenecks, particularly at the start of the rainy season when household labour has to be shared between land preparation, clearing, as well as cattle rearing. The workload of household members, especially that of women, increases during the planting season.

Group 4: Wage Earners Risk - Low

This group of households is located mainly in the arid lowland areas in the vicinity of Marigat -- the largest settlement -- and is composed of casual labourers, government employees and vegetable vendors. They have easy access to all basic services

Socio-economic Group

Risk of Hunger and Malnutrition

located in Marigat, own small vegetable gardens and keep poultry and small animals, for example, goats. The average family size is less than 5 members. Because of relatively secure income and access to marketable food (maize meal, oil, meat and vegetables) the wage earners have a relatively low risk of food insecurity.

Variables that best discriminate the above four groups are access to market; ecological zone; household size; whether or not household heads migrate in search of water during the dry season; and the dominant occupation of the household. All these variables are closely associated with the risk of hunger and malnutrition. But the most important of them is access to market ($\eta=0.40$; $\beta^2=0.112$) (See Table 2 in Annex). Relative access to market is associated with access to marketed food, and other basic social services, such as a health centre or clinic, and schools.

Note that the analysis of the survey-based data covered Family System (F), Environment System (E) and the Nutrition and Health System (N). Information from the initial assessment adequately covered the Food Production and Supply System (P). (See Fig. 2). Information on the Community System (C) were obtained, during the data analysis phase, through the method of participant observation. Briefly, the results noted the coverage of various BPSAAP components: range management had the widest geographic coverage; the livestock component was being implemented largely in the arid lowlands which has the highest concentration of the least disadvantaged socio-economic groups; the implementation of the water component, considered one of the most critical in the entire BPSAAP, began two years after initiation of BPSAAP operation due largely to lack of technical staff; forestry and land adjudication components were also late in starting; activities under health and transportation and communication components had not yet begun; co-ordination of project activities and financial control were two main planning

issues; inter-sectoral co-ordination by the co-ordinating Ministry (Agriculture and Livestock) was almost impossible; delays in implementation of project components under different ministries, and priority sequencing of the components, were attributed to poor co-ordination.

On finance, it was noted that the percentage of funds allocated varied from Ministry to Ministry, with little regard to the weight of the components; little relationship existed between funds requested in annual work plans and the money actually released for use by the project. Factors external to the project operation, such as the External Economic System (W) that could affect negatively the nutrition outcome of the project, included recurrent droughts and the general worldwide recession.

The above findings were presented and discussed in a workshop in Eldoret in 1982¹. The cumulative lessons learned (LL) from the seminar, supplemented with deductions from the nutritional status theory, enabled FNU to undertake the remaining nutrition planning activities described below.

(c) Identification of Project Target Groups

The next activity in the planning process, the selection of target groups, was done with reference to the general nutrition theory and to Kenya's development goals and policies, and the objectives of BPSAAP. Nomadic pastoralists (Group 1), semi-nomadic pastoralists (Group 2), agro-pastoralists (Group 3) and wage earners (Group 4) were identified, through the analysis, as the target groups.²

1. L.M. Wasonga and J.O. Otieno (ed.), Nutrition in Agriculture Development Projects. Nairobi, November 1983.

2. Kwame M. Kwofie and Luke M. Wasonga. Nutrition in Rural Development: Baringo Arid and Semi-Arid Integrated Rural Development Project, Kenya, Nairobi. Ministry of Finance & Planning, Food and Nutrition Planning Unit. On the functional specification of the nutritional status theory, see, Kwame M. Kwofie, An Approach to the Introduction of Nutrition Considerations into Rural and Agricultural Development Projects: Baringo Arid and Semi-Arid Area Project. (Nairobi), November 1983. For the calibration of the system components, see, Milton M. Harvey, Consultancy Report, Baringo Semi-Arid Area Project in Migot-Adholla, S.E. John A. Nkinyangi. Food and Nutrition Planning in Kenya. Institute for Development Studies, University of Nairobi. 1980.

(d) Assessment of Expected Impact

Using the above information, and guided by the nutritional status theory (Figure 2) FNPU and BPSAAP planners were able to deduce the likely socio-economic (including nutrition) impact of the project on the four target groups.

The impact analysis indicated that the percentage of households at risk of malnutrition can be expected to decrease among socio-economic Groups 3 and 4, namely the agro-pastoralists and the wage earners, living in the lowland arid areas near Marigat. These two groups already have easy access to markets and other basic service facilities, and access to food either produced from their own farms or purchased from local shops. Significant reduction in the percentage of at-risk families who have access to irrigation water and also have a reliable source of income should also be expected. Among the nomadic (Group 1) and semi-nomadic (Group 2) people the percentage of households with malnutrition will not be reduced by the current BPSAAP approach. These two groups were not being reached by BPSAAP, prior to the in-depth study. The overall percentage (currently 21 per cent) of the number of households with the risk of malnutrition, may increase unless the project reaches the nomadic (Group 1) and semi-nomadic (Group 2) populations who currently form the greatest proportion of the high-risk households in BPSAAP. These findings are summarized in Table 2.

The definition of expected food security and nutrition goals were guided by: information on the extent and severity of the nutritional problems identified under (a) above; a consideration of the likely benefits that will accrue from solving the food security and nutrition and health nutrition problems; and the feasibility of solving the problems within existing BPSAAP financial and administrative constraints.

Table 2: Expected Impact of Baringo Pilot Semi-Arid Project Kenya

Question on Expected Project Impact	Yes/ No	Comments
Will the crop component make a significant contribution to household food availability?	Yes	The potential for significant increases in available food can be seen in arid lowland areas, especially in households where farmers have easy access to irrigation water. Year-round access to irrigation water in semi-arid and arid areas will result in significant increases in food availability.
Will project modify current dependence on livestock?	No	Participants, particularly those in semi-arid areas (Groups 1 & 2) have no easy access to water.
Will project significantly modify the food consumption behaviour of the beneficiaries?	Yes	The crop component in currently introducing new crops, such as beans, cowpeas and other vegetables, previously uncultivated by farmers; adoption rate of new techniques of cultivation of new crop varieties is reported to be slow; extension service reorientation and nutrition education is needed to stimulate the preparation and consumption of these new foods. Finger millet and sorghum are still cultivated. Time constraints experienced by people (Groups 1 & 2) in the semi-arid areas due to difficult access to irrigation water limits the cultivation of these crops. Every effort should be made to ensure that maize does not completely replace finger millet and sorghum as foods.
Will project lead to year-round access to irrigation water for crop cultivation?	No	Current crop development component builds on experience already gained by local people (Groups 2 & 3) in the area of small-scale irrigation schemes. However, water for irrigation especially in the semi-arid areas (Group 2) is dependent on short, erratic rains. Year-round irrigation can make dryland farming activities more rewarding.

Table 2 (cont'd)

Question on Expected Project Impact	Yes/ No	Comments
Will project lead to significant reduction in the number of households with a high risk of malnutrition?	Yes	A measurable reduction in the number of households with malnourished children can be detected in the arid lowlands where the population (Group 3) already has easy access to irrigation water, markets, and wage earning opportunities. In the semi-arid areas, where access to water and markets is still very difficult, and the risk of food insecurity among Group 2 population is high, changes in the absolute number of severely undernourished children can be expected after year-round water and access to markets for food purchases have been assured.
Will current project component on land adjudication (that is communal livestock grazing grounds) lead to legal title to land ownership by individual households?	No	The land adjudication component favours group ranches rather than individual beneficiaries. Water and grass are top priority for pastoralists. If water is made available, the desire for individual legal land ownership will be intense. Legal access to land will provide additional motivation to implement measures on range management and soil conservation.

(e) Identification of food and nutrition interventions

The selection and comparison of appropriate interventions to achieve the nutrition goals of the project follows directly from the theory-oriented analyses. Two types of nutrition interventions were proposed (see Table 3). The first type -- food interventions are intended to improve food distribution, and the intake of food staples, and hence to reduce the extent and severity of chronic hunger or malnutrition. Nutrition/health improvement measures -- distribution of medicines via "health packs" for nomadic pastoralists and vaccination against common infections -- are intended to reduce morbidity and

mortality among the population in the BPSAAP area, particularly the nomadic (Group 1) and semi-nomadic (Group 2) population. These interventions can be most effective when all family members have access to adequate food for consumption.

In view of the current district focus policy of the Government, it has been decided that the above proposals should be discussed at two levels of decision-making. The first level of discussion, organized by FNPU in 1984, involved the staff of the BPSAAP in Marigat. The second level of the discussion will require a series of negotiations with the District Development Committee (DDC) at Kabarnet. This meeting is scheduled to take place sometime in 1985.

Table 3: Proposed Food and Nutrition Interventions to Maximize food consumption, Nutrition and Health Impact of BPSAAP

Target Socio-economic Groups and Geographic Locations	Action Needed	Agency/Ministry	Expected Impact/benefits
i) Nomadic (Group 1) and Semi-nomadic (Group 2) pastoralists living in the semi-arid areas of Nginyang and Korossi divisions (Map 2, Annex)	Establish livestock-buying depots or market	Min. of Agriculture and Livestock Development	<ul style="list-style-type: none"> - Reduce over-stocking and over-grazing. - Increase income of pastoralists, particularly the nomadic (Group 1) and semi-nomadic (Group 2) households. - Increase purchase of local food staples, such as millet and maize.
ii) Nomadic (Group 1) and semi-nomadic (Group 2) in the semi-arid and arid areas of Nginyang/Korossi divisions. Food distribution at points during the dry season where a majority of pastoralists migrate (for example, spring rivers and Lake Baringo).	<ul style="list-style-type: none"> - Make available in local shops (duka) and livestock depots, millet, maize and commodities such as oil and salt. - Encourage use of camels and/or donkeys for distribution of food to local shops. 	Min. of Agriculture and Livestock Development.	<ul style="list-style-type: none"> - Raise the energy intake levels of the population. - Enhance productivity. - Reduce morbidity through improved resistance against common infections. - Reduce the risk of malnutrition among poor families.
iii) Nomadic pastoralists (Group 1) and Agro-pastoralists (Group 3).	Extend small-scale water works to lowland arid and semi-arid areas, (for instance the Tugen foothills).	Min. of Water Development.	<ul style="list-style-type: none"> - Increase food crop production
iv) Nomadic pastoralists (Group 1)	Teach preparation of maize, beans and millet in nutrition demonstration classes	Min. of Health Min. of Culture and Social Services	<ul style="list-style-type: none"> - Encourage consumption of maize and beans which are now being cultivated by nomadic pastoralists.

Table 3: Cont'd

Target Socio-economic Groups and Geographic Locations	Action Needed	Agency/Ministry	Expected Impact/Benefit
v) Population Group 1 and 2 in the semi-arid areas and the areas of Nginyang and Korossi divisions.	<ul style="list-style-type: none"> - Consider a "health pack", particularly for nomadic and semi-nomadic pastoralists during the dry season. - Make tablets (such as Aspirin) available in dukas. Expand health education programme on sanitation and control of infection by rural health attendants. Involve local people in health care delivery, for example, by the use of donkeys and camels by local people and extension workers in implementing community health programmes. 	Min. of Health	<ul style="list-style-type: none"> - Reduce number of days of morbidity. Control prevalence of illness among the vulnerable segments of the population. - Improve nutrition conditions. Reduce malnutrition. Improve community participation in the diagnosis and a solution of common health problems.
All population in project area	<ul style="list-style-type: none"> - Immunize population against common infections 		<ul style="list-style-type: none"> - Reduce morbidity and mortality due to common infections.
vi) Nomadic (Group 1) and semi-nomadic (Group 3) pastoralists in semi-arid areas of BPSAAP; other nomadic pastoralists living in Nginyang and Korossi divisions.	<ul style="list-style-type: none"> - Provision of water within 2 km. walk from settlement centres for both human and animal consumption. Enlist the participation of the population to assume responsibility for maintenance of dams, wells, irrigation schemes. 	Min. of Water Development	<ul style="list-style-type: none"> - Reduce seasonal migration. Reduction in water related diseases, such as diarrhoea, hookworm. Improved nutritional status. Improved health status. Savings in time that can be used for other profitable tasks (participation in community-related actions, adult education, harambee and other income generating activities such as crafts, bee-keeping and so on.

Table 3 cont'd

Target Socio-economic Groups and Geographic Locations	Action Needed	Agency/Ministry	Expected Impact/benefit
vii) All BPSAAP Population	Train female extension officers to cater for the special needs of female pastoralists and food producers	Min. of Agriculture and Livestock Development	Increase the participation of women pastoralists in the cash economy. Enhance participation of women in household decision-making on livestock and food crop cultivation.
viii) All BPSAAP Population	Ensure availability of agricultural inputs and services Intensify agricultural extension services to ensure adoption of innovative agricultural practices already tested during the pilot phase of BPSAAP.	Min. of Agriculture and Livestock Development	

4. SUMMARY OF CUMULATIVE LESSONS LEARNED

Lessons have been learned in the course of implementing the desk review, initial assessment and in-depth study in BPSAAP. These lessons clearly demonstrate that FNPU's nutrition planning efforts at the national level have influenced national development goals and policies. The location of FNPU in the central planning/co-ordinating ministry has reinforced its advocacy role. In BPSAAP, for example, FNPU has succeeded in modifying BPSAAP original target groups in favour of nutrition goals. FNPU has also influenced ASAL policies, modified its own planning activities, such as data collection, and increased its capacity for data analysis. FNPU's effectiveness in food and nutrition planning has been greatly enhanced through the adoption of a systematic planning approach which is based on the principle of learning by doing.

4.1 Strengthening the capacity of the Food and Nutrition Planning Unit for Nutrition Planning, data analysis and monitoring

At the outset, FNPU correctly recognized the need to strengthen its capacity for overall food and nutrition planning at national and local levels. By directing external resources to institution building - as opposed to execution of isolated nutrition - related tasks - FNPU is systematically acquiring the critical skills and experience needed to sustain its operations. FAO technical support has been directed to long-term objectives aimed at strengthening the capacity of the Ministry (Planning and National Development) in which FNPU is situated. The ministry, is thus a focal point for harmonizing practical approaches related to the introduction of explicit concern for nutrition, in project planning, monitoring and evaluation. This focus has avoided the creation of parallel, often duplicative, institutions for food and nutrition planning. The technical support has also been extended to institutions on which FNPU depends for information to carry out its planning. For example, FNPU realizes its limitations of manpower; therefore one of its short-term strategies has been to strengthen the technical services of such institutions as the CBS and the Government Computer Services (GCS), both in the Ministry of Finance and Planning, and delegating

activities, such as survey data collection and software management, to them.

The implementation of the survey data collection, for instance, was made possible through the initiatives taken by the Food and Nutrition Planning Unit (FNPU), in collaboration with the Central Bureau of Statistics (CBS) and the Government Computer Services (GCS). At the field level, the contributions of the managers of the BPSAAP programme and those of the provincial and district-level planners responsible for the area of Baringo, were essential.

4.2 Promoting an Effective Nutrition Planning Approach

One of the short-term objectives of FAO technical support to FNPU is to build up the capacity of FNPU so that it can promote the procedure for the incorporation of nutritional considerations into the design and planning of rural development projects in the arid and semi-arid areas of Kenya.

The application of these procedures in BPSAAP has entailed the acquisition by the staff of FNPU of skills that will enhance their effectiveness. Salient among such skills are those related to data and information acquisition and management, to serve the needs of area-level project planners. It is noteworthy that FNPU saw the implementations of FAO methodology as a means for building on its own existing knowledge and skills. The application of the methodology was, therefore, conceived by FNPU not as an isolated set of activities, but rather integral to FNPU's own on-going planning process (Fig. 1). FNPU's success in implementing the desk review, initial assessment and in-depth study, therefore, derives largely from its overall approach to food and nutrition planning - an approach which sees planning as a continuous learning-by-doing process.

The nutrition planning approach just implemented in BPSAAP has provided a motivation for placing traditional nutrition, food and agricultural planning in a broader, macro-economic context. This was

achieved in part through the formulation and use of a unified analytical framework (Figure 2) which takes into account the broad policy goals of Kenya, and simultaneously establishes the connection between access to resources and basic services, ecological environment, food availability, access to food and its consumption.

The use of this analytical framework by FNPU, as well as decision makers and the BPSAAP planners, has helped to improve a broader understanding of the context and causes of malnutrition. By forcing attention to both macro and micro food policy issues, the framework has facilitated communication about the direct and indirect causes of malnutrition not only in the BPSAAP area but also within the broader Kenya food system. The analytical framework has proved especially useful for the organization of data and information and for the formulation of hypotheses in the course of selecting and analyzing survey data.

Greater insight can be gained into the root causes of food insecurity, hunger and malnutrition by inserting into the nutrition planning process an explicit, simple, general and verifiable analytical framework or theory of nutrition. Such a theory can:

- provide a basis for the selection and organization of variables-of-interest in food, nutrition and health planning;

- formalize the analysis of existing data;

- facilitate the communication on such issues as food security, health and nutrition among different levels of people --the layman, the development planner or decision-maker, and academic scholars of diverse disciplines;

- provide a basis for studying and understanding the interactions between variables and processes of many different kinds;

- permit consideration of such interaction at all levels. That is, at the level of: the individual, the family, the community, the region, the country or the world, and between variables at these different levels;

provide a rational means of identifying the critical components of the complex network of influences or factors that affect the quality of life with respect to food, nutrition and health;

take into consideration the goal and policy orientation of the country as a whole.

4.3 Integrating Concept of Food Security and Nutrition into Rural and Agricultural development projects

FNPU is now in a position to promote the systematic application of FAO methodology. This knowledge derives from the lessons it has learned from the execution of the desk review, initial assessment and in-depth study in BPSAAP.

(a) Desk Review

FNPU prior experience in reviewing sector development projects was an important asset in carrying out the desk review.

(b) Initial Assessment

Due to lack of existing data on BPSAAP, FNPU reviewed research findings based on field surveys supported by BPSAAP and FAO. FNPU, however, supplemented these reviews with information from field observations.

As indicated earlier, the target population of BPSAAP prior to the in-depth study was pastoralists and cultivators. This categorization was too general since the entire population of BPSAAP is made up of these two groups of population. Based on the classification of the socio-economic groups in BPSAAP, presented earlier in Table 1., Groups 1 and 2 should have also been specifically included as direct beneficiaries.

The population originally targetted as a project beneficiaries, the agro-pastoralists (Group 3), have easy access to irrigation water,

to a clinic, market, means of transportation, and a primary and secondary school, which are all located in Marigat. These beneficiaries are all located in the arid lowlands near Lake Baringo (see Maps 1 and 2). The decision to select this occupation group in the lowland was influenced by a number of considerations. First, the target area has a high population density coupled with the availability of services such as market, transportation, clinic, school and easy access to water and proximity to BPSAAP headquarters at Marigat, and a settled population which was willing to participate in the implementation of project activities, which were understood to be experimental. Secondly, the target population in the arid lowlands (Group 3) already practice crop cultivation and have some knowledge of irrigation practices. Thus, it was considered useful during the pilot phase of BPSAAP to build on these experiences. The third major consideration was the duration of the pilot phase of the project itself. The pilot phase of BPSAAP was to last for 5 years. BPSAAP planners, therefore, targetted the agro-pastoralists in the lowland arid areas which have the greatest potential for achieving project targets in order to demonstrate to decision makers not only the results from the project activities, but also the viability of extending the BPSAAP approach to other arid and semi-arid areas in Kenya.

Information from the initial assessment was quite inadequate in coverage. Throughout Kenya, it is already acknowledged by decision makers and planners that all the arid and semi-arid areas have inadequate information for planning purposes. The initial assessment provided preliminary and general information about nutritional conditions, food production, marketing and consumption. Such information was limited largely to the arid lowland areas of the project environment. Prior to the in-depth survey, project planners had no information concerning household occupation, income, access to community resources, (such as water) and services (for example, markets, transportation, education, health, fuel, information). Since the project is expected to have a significant impact on the above factors, it was felt desirable to obtain carefully collected and analyzed baseline information.

Information collected during the in-depth survey has proved particularly useful for identifying the socio-economic groups in BPSAAP who are at risk of malnutrition, the geographic areas where such population groups are to be found and suitable indicators that can be used to identify nutritionally at-risk socio-economic groups in other arid and semi-arid areas within the districts where the ASAL programme is being implemented. In future, the introduction of nutrition considerations into the remaining arid and semi-arid areas of Kenya will entail the use of the indicators identified. And such data can be readily collected by trained agricultural extension officers.

Following from the results of the in-depth study, a decision has now been made by Government officials and BPSAAP planners to include as direct BPSAAP beneficiaries the nomadic (Group 1) and semi-nomadic (Group 2) pastoralists. It is now recognized that if the BPSAAP/ASAL objectives of alleviating poverty and the reduction of the risk of hunger and malnutrition are to be achieved, these two nutritionally at-risk groups should be reached by BPSAAP activities. Recognition of the need for disaggregated information for nutrition planning and monitoring has led FNPU to collaborate with CBS in analyzing existing data, and to set up an information bank.

FNPU has learned that it can use the energies of individual researchers and research institutions to obtain information relevant to its own nutrition planning operations and the need for disaggregated baseline information derived from experience from the initial assessment of BPSAAP. It is now quite evident that correct identification of project beneficiaries is essential if project planners are to modify project inputs, design, and operations in favour of the poor. Information disaggregated to household level is suitable for classifying at-risk population groups in terms of their deprivation. Such disaggregated information may not always be available for an area-level project, but can be obtained during the project's implementation.

(c) In-depth Study: Problems and Justification

The chief problem encountered in the implementation of the in-depth study in BPSAAP was the initial delay in data processing and analysis. This problem was related to lack of adequately trained manpower in the FNPU. Attention was, therefore, devoted to strengthening the capacity of the unit. The installation of an analytical system - ARIEL - in the CBS greatly facilitated the analysis of the in-depth survey data.

It is against the above short- and long-term developmental benefits that the cost of implementing the in-depth study in BPSAAP should be objectively assessed. It should be stressed that like all dry-lands in Kenya the population in BPSAAP is dispersed rather than concentrated; inadequate road infrastructure, and the distances that have to be traversed to obtain household-based data, all have direct implication on costs. Initial delays encountered during data processing and analysis contributed also to costs. Under the district focus for rural development policy it should be possible for CBS to systematically obtain adequate disaggregated information on all districts in Kenya. Our experience in data collection in BPSAAP should provide useful lessons for future rural development efforts in other ASAL areas.

The in-depth study embraces a wide range of major activities and related sub-activities (for example, sample design, questionnaire design, data collection, coding, keypunching, data analysis, leading to identification of project target groups, assessment of expected project impact and the identification of food and nutrition interventions). Each of these activities has been successfully carried out and contributed useful feedback to BPSAAP planning operations and FNPU's experience.

4.4 Promoting awareness of food security and nutrition concerns for equitable development

At the initial stages of the in-depth study, some key planners of BPSAAP viewed it purely as a research project. This impression derives

from the fact that much of the information for the initial assessment was drawn from field studies partly sponsored by BPSAAP and FAO. The in-depth study was therefore seen as a sequel to this research. During the 1982 project workshop, in Eldoret, this impression was corrected. A great number of the BPSAAP staff considered nutrition in terms of micro-nutrients, breastfeeding and child feeding practices. Some saw it as synonymous with cookery. For these groups of individuals, the concept of nutrition in rural and agricultural development projects meant nutrition interventions, which emphasized particularly the promotion of breastfeeding, food preparation and nutrition education.

Workshops have served as useful means of sensitizing policy makers to the need to integrate nutrition into development goals, modifying the perceptions of project planners and discussing findings related to the project operations.

Interaction between staff of nutrition planning institutions and project managers and technicians is vital during the implementation of all the nutrition activities (desk review, initial assessment and in-depth study). Proper communication between nutrition planners and other development planners is essential to obtain an adequate understanding of the nutrition problems, interest in their solution through development, and actual mobilization towards policy re-orientation.

For example, experience from BPSAAP contributed to the preparation of the nutrition chapter of the Five-Year Development Plan of 1984-88. FNPU has accepted the national food policies and strategies, but has proposed to monitor the household food security and nutrition situation and provide regular information on this activity to national and local-level decision makers.

The workshop organised in 1982 increased the awareness of BPSAAP planners of the nutrition implications of the overall BPSAAP strategy. At a recent (April 1984) ASAL workshop in Kabarnet, the findings of the in-depth survey were presented as a background against which policy makers could propose modifications in the ASAL programme.

During this workshop, it became apparent that a number of district-level planners who are directing various ASAL projects had difficulty in understanding the food consumption consequences of an agricultural production strategy.

On the policy side, the authorities in charge of the Arid and Semi-Arid Lands (ASAL) programme have accepted to take account of the project findings in their future planning activities. Specifically, the response of the BPSAAP planners to the findings on the in-depth survey includes a decision to reinforce the involvement of two types of at-risk groups, namely, the pastoralists in the highland arid areas, and the pastoralists with crop cultivation as a secondary occupation who migrate during the dry season, two groups which were not the focus of the original project.

This decision, which illustrates the effect of the project, was taken despite the fact that the BPSAAP planners initially considered this project purely as a research exercise, having no direct implication for targeting to particular groups. A careful analysis of the BPSAAP planning process in terms of its constraints and problems, relating particularly to financial management and co-ordination, have all been extremely useful in interpreting the results of the in-depth study, and this has enabled national authorities and World Bank officials to assess more realistically the expected impact of the BPSAAP, particularly for nutrition. Analysis of pertinent issues related to BPSAAP planning operations, such as inadequate co-ordination of BPSAAP components and inadequate financial and manpower resources for the water and land adjudication components dealing with the improvement of health and communication facilities, has contributed to decisions to re-orient BPSAAP without any change in its original objectives.

The experience and skill gained by FNPU is already being applied in two agricultural development projects in Nyanza province: the Ahero Kano irrigation scheme and the Siaya Small Farmers' Group. The staff of FNPU are currently processing and analyzing the survey data on

the Ahero Kano project. FNPU carried out the desk review and initial assessment activities on the Siaya project and participated in the International Fund for Agricultural Development (IFAD) mission in 1983. Data from the Siaya in-depth study were collected by CBS in close collaboration with FNPU. The preliminary analysis of the data, including initial validation, was completed in a record time of two weeks using FNPU and CBS technical staff and supervised closely by the FAO nutrition adviser. Detailed analysis of the data is still in progress.

The adoption of the learning-by-doing food and nutrition planning approach has enabled FNPU to (a) avoid the temptation of collecting massive and, sometimes, irrelevant data; (b) to make maximum and economical use of the resources; (c) to shift the emphasis from survey data collection to policy analysis, evaluation and monitoring and (d) to teach the desirability of analyzing available data as part of the food and nutrition planning process; and to respond to national priorities. For instance, the current Government priority on food security led to the development of a simple, low-cost food security and nutrition monitoring system¹ for the purpose of monitoring, on a seasonal basis, the impact of large-scale rural and agricultural investment projects on food security and nutrition.

1. Kwame M. Kwofie, National Food Security and Nutrition Early Warning and Monitoring System: Methodology, FAO, TCP/KEN/4403(A) Field Document No.7, May 1985.

5. SUMMARY AND CONCLUSIONS

Africa faces a serious food crisis. The number of people at risk of food insecurity, hunger and malnutrition is increasing. Innovative and pragmatic nutrition planning approaches are needed to support the efforts of Governments to guarantee people's access to adequate food and proper nutrition. The current view is that the issue of food security and nutrition must be explicitly incorporated into national development goals and into all relevant development programmes/projects. In sum, nutrition should not be tackled in isolation. Practical methods for integrating food security nutrition objectives into rural and agricultural development projects have been developed by FAO. These methodological procedures have been implemented in Zambia and Kenya. Kenya's innovative approach to food and nutrition planning, and in particular the application of FAO methodology for incorporating nutrition objectives in the Baringo Pilot Semi-Arid Area Project (BPSAAP), has been carefully documented. This paper has described Kenya's food and nutrition planning process. It also demonstrates how the FAO methodology was applied to the Baringo Pilot Semi-Arid Area Project (BPSAAP). Major lessons learned from the Baringo experience include the need to strengthen the capacity of national food and nutrition planning institutions for effective planning.

Kenya's food and nutrition planning experience shows that effectiveness in food and nutrition planning, in general, will much depend on seeing the entire nutrition planning process as an incremental learning process within the context of a country's political institutions and prevailing situational constraints. Nutrition objectives can be successfully integrated into development policies, programmes and projects by all countries where such planning activities as desk review, initial assessment, in-depth study and monitoring, are conceived as incremental learning processes.

The implications of the above lessons and perspectives from Kenya's food and nutrition planning experience may be summarized as follows:

If a nutrition planning institution can set realistic goals within its financial and manpower limitations, it should be possible for it to explicitly integrate food security and nutrition objectives into national development policies, programmes and rural and agricultural development projects. With reference to the specific nutrition planning situation in Africa, this implies that given the limited manpower, financial and administrative capabilities of several African countries, it will not be possible for nutrition planning bodies to undertake a full-blown multisectoral planning. On the basis of the past nutrition planning experience of African countries, food and nutrition planning will be more effective if nutrition planning institutions can (a) use the energies of other sector's on-going programmes as vehicles for integrating food and nutrition concerns into development policies and actions, (b) monitor the nutritional impact of such policies and actions, (c) furnish responsible sectors with relevant information from such nutrition impact monitoring activities, and (d) use the same information as input to future planning activities.

In its more concrete terms, the nutrition planning approach that has been successfully implemented in BPSAAP, implies that nutrition planning institutions in Africa would be effective if they do the following:

- a) advocate the integration of nutrition concerns into Government overall development policies, programmes and projects;
- b) review systematically the food and nutrition situation of the country or section of the country;
- c) strengthen nutrition planning institutions through careful training of professional staff in practical food and nutrition planning approaches;
- d) collaborate closely with other technical planning agencies so that jointly they can do the following things:

- define the problem area(s) with respect to the food, nutrition and health situation of the population;
- identify the socio-economic or occupational groups which face the problem of hunger (undernutrition), illhealth and malnutrition;
- analyze the most significant causal determinants of the health, nutritional and consumption status of the different socio-economic or occupational groups;
- suggest the most pragmatic policy options, and implementable action strategies, that can be formulated and implemented within the financial and manpower constraints of the Government sectors, with a view to alleviating hunger, food insecurity and their related consequences;

assist different ministries or sectors to: (a) analyze the likely impact or implications (both positive and negative) of their development policies, programmes and projects on the malnutrition situation, (b) take the necessary measures to improve the food, nutrition and health situation of the population, particularly those socio-economic groups which are known to suffer chronic forms of socio-economic deprivation;

- assist different ministries or sectors to define performance specifications, especially for area-level development projects, taking into account the food and nutritional needs of the project beneficiaries;
- assist different ministries or sectors in identifying and using practical and sensitive indicators for evaluating and monitoring, on a regular basis, changes in the food and nutritional well-being of at-risk groups both at area and national level; and

liaise with various ministries in organizing workshops aimed at sensitizing decision makers at central and local levels.

Table 4 : Summary Statistics on Selected Variables Associated with the Risk of Malnutrition, Baringo Pilot Semi-Arid Area Project, Kenya

Independent variables	Households*		Chances of household being at risk of mal-nutrition	Correlation ratio (eta)**	Beta***
	No	%			
Dominant household Occupation				0.14	0.001
(i) Pastoralism	396	62	0.27		
(ii) Cultivation	183	29	0.11		
(iii) Others	58	9	0.10		
Household Size				0.25	0.045
(i) Large (over 5 persons)	344	54	0.33		
(ii) Small (up to 5 persons)	293	46	0.06		
Moving to water (dry season)				0.22	0.002
(i) Yes	271	43	0.35		
(ii) No	366	57	0.11		
Distance to market (km)				0.40	0.112
(i) More than 2 km	134	21	0.62		
(ii) 1 - 2 km	207	32	0.16		
(iii) Less than 1 km	296	47	0.06		
Ecological Zone				0.37	0.040
(i) Semi-Arid (UM5)	53	8	0.87		
(ii) Semi-Arid (LM5)	296	46	0.19		
(iii) Arid (LM6)	50	8	0.14		
(iv) Arid (IL6)	188	30	0.12		
(v) Transitional (LM4)	50	8	0.08		

* Total number of surveyed households is 637.

The dependent variable is number of malnourished children in a household.

The multiple correlation ratio (R^2) = 46%.

Overall households at risk of undernutrition (that is, having undernourished children) is 21 out of 100.

** Eta is the measure of association between the dependent variable and the independent variables.

*** $Beta^2$ is a measure of the strength of association between the dependent variable and one independent (categorical) variable with the other independent variables held constant.

For detailed discussion on the interpretation of eta, and beta and related statistics, see Frank M. Andrews, James N. Morgan, John A. Sonquist, Laura Klen, Multiple Classification Analysis, The University of Michigan, Ann Arbor, Michigan.

Discussions on Baringo Project

Maletnlema: What is new in the approach? Are we planning from the top without careful assessment of what went wrong? What is poverty - doesn't this also include malnutrition? Methodology appears expensive.

Mzaale: Is this a workable system?

Kakitahi: Poverty is usually viewed in monetary terms yet there are people who are well fed with little cash. This appears an expensive method we need to examine cheaper methods of collecting data.

Besrat: Usually there is a need to use non-nutritional projects to improve nutrition. But we should ensure a project does not exacerbate nutritional problems. The new methodology is trying to create communication with planners. In the past nutritionists have tended to work in isolation in intervention programmes. The methodology allows working with local people.

Poverty: People who consume little food because they cannot produce it. They have little land and lack employment opportunities.

Expense: In - depth study is usually expensive but the Baringo project is a pilot project. Expense might be justifiable given the extent of Kenya's ASALS.

Kwofie: P 10 & 11 reflect general framework.

Basic system remains but has to be translated into a specific environment. Rearrange the system to take account of environment effects (See Baringo report p2). Data can be selected from other sources.

Formulation: It takes time to start from a scratch but it is now possible to start from Kwofie paper p 10. The Methodology is not new but the approach itself is new.

In the past there was a heavy emphasis on data collection without analysis. We have used the experience to correct the situation. We cannot be effective unless we use the lessons to correct the situation.

We started with a review of national programmes -
Advocacy - Development Plan, Food policies etc.
- Analysis of Agricultural Development project - understand implication for nutrition. Fig p (7), lessons learned
P 14 Process: do not lose sight of the lessons.

Desk review: who are the beneficiaries: pastoralists, cultivators etc.

Little basic data was available. A survey was therefore necessary - this need not be undertaken where information exists.

Initial Assessment. [Need for more data]

- Collect factual data.eg. Broad geographical classification - need for improved nutrition.
- Need to strengthen the food & nutrition planning unit.

In-depth Study (p 22).

Seminar on funding(occasional paper No 1).

Identification of project Target groups

Assessment of expected impacts

Identification of food and nutrition interventions.

- Otieno: Can the Kenyan experience be transferred to other countries, The methodology of reviewing projects differs from the usual social economic review of projects, The review need not start at the project level as seen in the Baringo case.
- Ochetim: Report No.1 p 52 disagrees with definition of malnutrition. Should people grow at the same rate and be of the same weight at the same age ? Results will always be misleading unless we revise the standards. We need for our own standards.
- Wawonga: Nutrition Assessment: Standards were a real issue in a recent workshop. CBS was told to investigate the problem but at a certain stage there is little difference.
- Omore: Within age group 1 to 5 irrespective of genetic make up the standards are the same. A problem arises after 5 years. By using Harvard Standards and with time series data we can come up with comparative data which allows the setting up our own standards.
- Kwofie: Cycles of methodology: as evidence accumulates it will be possible to make definitive statements. Monitoring can be incorporated in on-going projects. It is therefore not an isolated activity.

In a case like Baringo we are concerned with long term as well as short term objectives. This need not be always be the case. In the long term we need to build the capacity of the institution (FNPU). The in depth study involves both long term and short term objectives.

In the case of Siaya, planning information was available and there was no need for a field survey. The CBS data gathering programmes.

- Otieno: The Baringo project is unique we were groping for information. Once the system is in place it will help to keep costs low. Use of local institution, local facilities, data gathering etc.

Bundotich: Use of local resources - consultants are no longer needed.

Kakitahl: Malnutrition is an imbalance. The inadequacy should refer to undernutrition. Malnutrition/undernutrition are not the same all the time. Cycle - for new project - rural development - should start at rural level. I hope it does. Follow through with project. There are problem with external funding. Many pilot projects exist which are not replicated. How can these projects be replicated nationally?

Wagara: I am impressed by the Baringo project. It seems to have gone very smoothly but to what extent have the people been involved say in the definition of problems ?

Maletnema: I am also impressed by methodology. Planners and Nutritionnists need to come together. To what extent are WHO/Nutritionists involved in the FAO Nutrition Project?

Wagara: What is the cost of Baringo project and how does this relate to Kenyan budget,? What are the possibilities that such a project be funded from external sources? How long will this project last ?

Kwofie. The Baringo Project did not originate from FAO but originated from a national programme (ASAL). The FAO input is through the FNPU. The project is a district project and falls under the District Development Committee. FAO came into the picture long after the project had started. There used to be two World Bank Technicians working there. The Local People wanted water. and the findings were discussed with local project personnel.

Bundotich: People have their own projects e.g. small-scale irrigation where they are fully involved. They are also assisted in their crop projects - water harvesting - extension etc.

Besrat The FAO/WHO/UNICEF Speak the same language nutritionally and all belong to same committee (ACN). In the formulation of the FAO manual however, WHO & UNICEF were not involved.

The Baringo case study used Trust funds from Sweden. It is not very cheap. Hence cannot be very easily replicated.

Muthui: What are the impacts of Baringo Project ?

Kwofie: See answers on p 32. It has led to revision of the Asal programme in the whole country to incorporate nutritional concerns. Also there is an increase in the area of coverage in Baringo ASAL.

Alila; What is the relationship between FNPU and Family Planning?

Besrat: How has FNPU been affected by the case study?

Otieno: The FNPU has a small budget: about £20,000 per annum only. The Baringo Project is the big thing for FNPU. The CBS has been very supportive. There is some collaboration with African Studies Centre, University of Leiden, Netherlands. The major problems of FNPU are lack of adequate manpower and facilities.

6. NUTRITION AND TRAINING

6.1 REGIONAL TRAINING NEEDS IN FOOD AND NUTRITION POLICY AND PLANNING

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1. Introduction:

During the mid 1970s a small group of nutritionists in our region got into the habit of meeting briefly in the course of international meetings of WHO, FAO, and so on. By 1976 we knew each other in Kenya, Ethiopia, Tanzania and Botswana. In 1979 the Commonwealth Health Ministers decided to finance a meeting of regional nutrition specialists to map out the problems of nutrition and recommend ways of tackling the problem. I was asked to call the meeting. At the first meeting, in Gaborone Botswana, seven nutrition specialists from five countries, and one economist from Kenya, sat and produced recommendations which eventually led to the formation of a nutrition unit or institute in all the countries of this region (some countries had no such unit) and which also led to the birth of a new group the Eastern, Central & Southern African Countries Co-operation in Food & Nutrition Activities, briefly, ECSA Co-operation. The group is still in the formative stage, but the Commonwealth Ministers of Health have approved and financed its formation. All heads of national nutrition institutes met in Lilongwe, Malawi, in February 1984 for the 2nd General Meeting, but failed to meet this year. Instead a special executive committee (Zambia, Tanzania, Kenya and Botswana) met in Arusha at the end of August 1985. A 3rd General Meeting is scheduled for Nairobi in February 1986. A sister group of SIDA-supported countries also met in Lusaka, Zambia, in August 1985.

Membership of ECSA includes:

- i) All Commonwealth countries in the region
- ii) All PTA members
- iii) All SADCC members
- iv) Special members not in (i-iii) above

At a very early stage lack of nutrition-trained staff was identified as a major constraint in tackling malnutrition. In fact the problem was even more complex. The specialists realized that due to some fault in the training of many technocrats, leaders and senior decision-makers, nutrition was considered a minor area left to junior nurses and a few worrying-type paediatricians. It was therefore necessary to reverse that trend by devising a special region-tailored training program.

2. Trained-Staff needs

Judging from the number of countries represented here and the number of units working on nutrition in each country, it is obvious that all the countries in the region have given some degree of priority to nutrition. The question is who will do the job and how. You all know of programs like the Baringo Project in Kenya; JNSP in Tanzania, Sudan, Ethiopia; nutrition training programs at national universities, and many other programs and if to this list we add programs on food storage, processing, and so on, we at once realize that well-trained staff are required right now to fill the many vacant positions in ministries and institutions. A very low estimate of senior staff requirements could be put at 2 per one million population. This means a country like Ethiopia with 42 million people, requires at least 84 postgraduate staff in nutrition alone and each of those will require 10-50 middle-cadre staff. Few countries have achieved even a quarter of this low estimate.

3. Nutrition Training in the Region

a. Current training practices

Due to the high investment required for establishing training facilities, most countries in the region have not even thought of such establishments. Most countries include a little nutrition in other courses especially those for health, agriculture, teaching and social welfare, but there are almost no courses for those who want to take nutrition as a career. Zambia has however, for many years conducted a diploma course in its National Resources Development Centre where Form IV leavers undergo a 3-year course. Those who qualify take up middle-level jobs. Kenya and Tanzania are just planning graduate courses, with the Kenya course now almost ready. F.A.O. recently volunteered to support the Zambian course so that it caters for the whole region.

Apart from this tiny course, anyone wanting to specialize in nutrition has to go abroad. The country of choice abroad is usually the former colonial power or other nations with similar values and ideology. Where local training is carried out or planned it is again the expatriate westerners who dominate. I do not know the exact situations in Zambia, Kenya and Tanzania, but the representative participants can tell us. At one time Tanzania sent candidates to a nutrition planning course conducted for one month in USA, but eventually discovered that the course was mainly a tour of the USA, familiarization lectures and fact-finding courses. We thought it better to conduct our own course and we have done so since. This year the course is being extended to other countries in the region. However local training is counter-checked by many other factors. For example, there are hardly any local books and little of the completed research is published in journals, which hardly exist anyway.

b. Outcome of training abroad

In some fields, and certainly in nutrition, it is not enough to learn a technology or profession. It is necessary for the learning process to occur in the proper environment, otherwise one may find it

difficult to apply it in a different situation. By training in an Industrialized country our nutritionists return with:

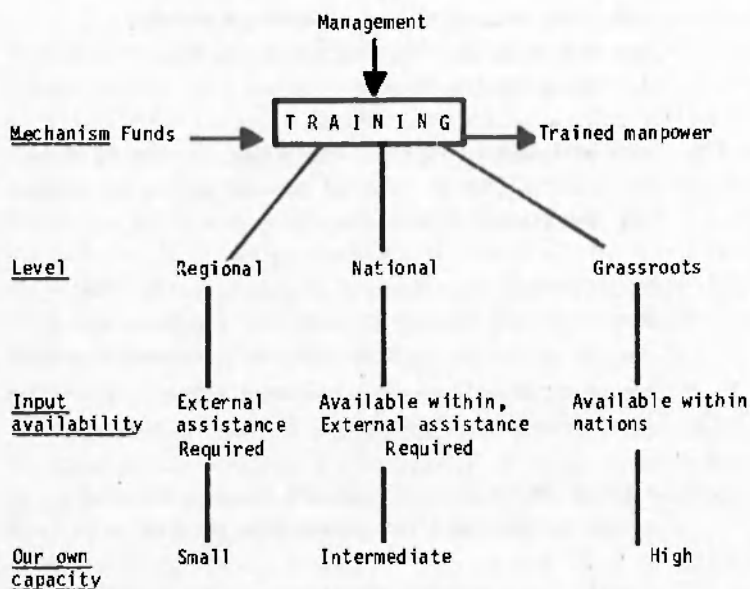
- i) Mal-orientation of development targets - the candidate acquires good nutrition knowledge together with a strong feeling that high technology is the solution to our food production problems.
- ii) Lack of situation analysis - experienced mainly by those who train outside for long periods and eventually forget the realities of life in the villages in Africa.
- iii) Despising one's own customs and practices. This has cost Africa billions in terms of lost training efforts. This is partly how our traditional foods disappeared from our homes, because we were ashamed of eating or presenting them, or we simply disliked the traditional foods.
- iv) Adoption of foreign practices and customs, and often spreading these in Africa by teaching in schools.
- v) Finally the westernized nutritionist finds himself in a situation where he must judge; who is ignorant - the peasant with malnourished children or him the Ph.D holder? The answer is almost always that the peasant is ignorant, although the truth is always the reverse.

A few schools abroad have noticed these defects and are trying hard to avoid complete mal-orientation of foreign candidates by constantly reminding them of the real situations back home.

c. Training Considerations at Regional Level.

In September 1983 a workshop dealing with the problems of executing food and nutrition programmes in East, Central and Southern Africa was conducted in Harare, Zimbabwe, and all the six countries (Zimbabwe, Tanzania, Ethiopia, Uganda, Zambia and Mozambique) mentioned lack of trained manpower as the number one problem in executing nutrition

programs. The workshop was thus forced to discuss training as such, and the following model was used to show the weak points at the national level.



The objective of training should be to produce adequate manpower to conceive, plan, manage, implement and evaluate nutrition programmes. To put up acceptable regional level training, external funding and staff were thought necessary; but most countries could manage grassroots-level training without external assistance. However despite our inability to establish high-level training at the national level we can go a long way by organizing and combining the little available in each country of the region.

A few countries in the region can accommodate training facilities at the university level and many countries can spare staff to teach on a part-time basis in such a school.

In fact after taking stock of the specialists available be found there are only a few areas where African experts are not as yet available. As we train more people and teachers gain experience, countries can eventually become self-sufficient in nutrition manpower and services, although it will always be cheaper to maintain some co-operative services, especially in research.

A final area to consider is who requires nutrition knowledge? The answer is "everyone". It is not enough to train nutritionists and other food specialists. We must also get nutrition into the other sectors, especially agriculture, education, health, social welfare, and economists, planners and administrators. There is also the special group of Government and political party leaders who often take vital decisions on what and how much people should eat, without knowing they have done so.

d. The ECSA Co-operation Regional Program

In the Malawi meeting regional nutrition specialists agreed to work on the following programs in order of priority:

- i) Training
- ii) Communication - newsletter
- iii) Increasing food production
- iv) Reducing diarrhoea
- v) Nutrition component in Primary Health Care
- iv) Local weaning foods
- vii) Goitre (I.D.D.)

The Arusha meeting added one more to the above:

- viii) Afro-foods - developing and using a regional food table.

According to the ECSA set-up each program is to have a Program Committee of Experts who will spearhead the activities, but so far only the Training Committee has been appointed and done some work, which we shall now discuss.

4. Proposals from the Training Committee.

a. Types of training required now.

- i) Workshop for sensitizing high level policy makers on the need for food and nutrition programmes.
- ii) Training in institutional food services (dietetics, catering and cookery).
- iii) Food and Nutrition for middle-level staff working in Health, Agriculture, Education.
- iv) Incorporating nutrition in training projects for health, agriculture, education staff.
- v) Postgraduate diploma course in nutrition.
- vi) Graduate course in nutrition - B Sc (N).
- vii) Postgraduate training in nutrition.

Many efforts have been made to implement these recommendations, and work is vigorously in progress now in Harare, Maseru, Addis Ababa, Lusaka and the administrative offices in Arusha, and our main collaborators in Holland at the International Course in Food Science and Nutrition at the Agriculture University of Holland.

b. Progress on proposals so far.

- i) Workshop for sensitizing policy makers - no action.
- ii) Training in institutional food services was planned in three stages:
 - A survey in all ECSA member countries to find out the current situation and preferences.
 - A workshop to discuss survey findings to agree on future action for training personnel in this field.

- Designing the course details and implementing.

The survey was completed in July 1985 and the workshop is planned for October 1985 in Lesotho. Our consultant for the survey was a Lesotho lady, the former Director of the Food and Nutrition Co-ordinating Office in Lesotho. The project is financed and technically supported by FAO.

- iii) Food and nutrition for middle-level staff:
This course is composed of four short (6-week) theme courses to be conducted at the University of Zimbabwe, Harare. All arrangements are at the ready stage and we are waiting for funding formalities. If things work out as planned the courses may start early next year. The EEC is expected to fund this course.
- iv) Incorporating nutrition in training projects:
This project has just now been taken up by FAO, since, as you can see, it agrees with the FAO program of introducing nutrition in agriculture. The starting point will be the already-existing Natural Resources Development College in Zambia and one teacher-training college will be chosen for introducing nutrition. Again the work is to start later this year followed by an evaluation of the Zambian course.
- v),vi)and vii) These proposals have been put to the Senate of the University of Zimbabwe and are undergoing the usual process for starting new courses at a university.

C. Regional Co-operation and All Africa Activity in Nutrition

I mention these here for information and because they are closely related to our concern in nutrition training. It is important to organize ourselves into groups of national institutes or associations, which then form regional groups, and for reasons we have already discussed Africa, being the greatest sufferer from malnutrition, must speak with authority on what we require to enable us to deal with the problem. To enable Africa to do this we must join hands and identify our common problems

among our many differences. Lack of trained staff and training facilities is one of the most common problems.

Recently our colleagues in West Africa formed a group similar to ECSA and a small group is already working on an All Africa Nutrition Group or Association to be discussed at the 3rd All Africa Food and Nutrition Congress. ECSA has been requested to organize the congress and the next ECSA Nutrition Specialists Committee meeting, to take place in Nairobi, Kenya, on the 26-28th Feb., 1986, subject to Kenya agreeing to host the meeting, will discuss this.

Reading Material

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6.2 INTEGRATION OF NUTRITION IN AGRICULTURAL EDUCATION
AT UNIVERSITY, WITH SPECIAL REFERENCE TO THE FACULTY
OF AGRICULTURE AT THE SOKOINE UNIVERSITY OF AGRICULTURE
IN TANZANIA

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The Bangladesh Rural Advancement Committee (BRAC) in 1979 observed that "One of the many problems of under-development is the inadequacy of knowledge about the social, cultural and institutional strengths and weaknesses of the country, which affect development. In order to plan and implement effective rural development activities, we need to understand the true dimensions of the national problems...." With special reference to Faculties of Agriculture, McClymont (1976) observed that "Agricultural faculties in developing countries occupy a key position in relation to rural and economic development unfortunately agricultural faculties do not see as their first responsibility the training of people who can see agriculture and land use in broad perspective and play a leading role in developing (appropriate) agricultural policy, extension, teaching and research programmes (to improve the quality of human life) but as that of training people with specialized knowledge of aspects of agriculture such as plant science, plant pathology, entomology" On a similar note, Huxley (1976) observed "..... does the long training they (newly trained graduates and diplomates in Agriculture) have just finished provide them with the means whereby they can tackle sensibly the daunting tasks with which they are likely to be confronted?"

In Tanzania, as in many other developing countries, nutrition is an issue of disturbing proportions. It permeates the entire fabric of the rural and urban population. As such, one might ask whether the training in Agriculture includes sensitizing the students who invariably become the architects of agricultural and rural development policies, to appreciate the need and to know the way to integrate nutrition into developmental projects? The need to have agriculturalists with such a capability is noted by Pinstруп-Andersen (1982).

The author observes that a large number of projects and policies do not explicitly aim at the achievement of nutritional goals. The author cited several reasons for such an occurrence. Notable amongst them were that nutrition is assumed to be linked directly to expanded food production; it is believed that increases in income are a good proxy for improved nutrition. Contrary to these assumptions, increased amounts and kinds of foods, or incomes, made available by a project do not necessarily result in corresponding changes in the degree of malnutrition (Pinstrup-Andersen et al. 1976). To realize nutritional goals, nutritional issues must be considered in project and policy design, and in turn the training of designers of policies and projects must take into account nutritional considerations. In the following paragraphs an attempt will be made to appraise the extent to which nutrition is integrated into the curriculum, research and extension aspects of the Faculty of Agriculture of Sokoine University of Agriculture in Tanzania.

According to the Sokoine University of Agriculture prospectus (1985) the courses/options offered in the Faculty of Agriculture are as summarized in the Appendix. From the list it appears that in four courses options the detailed course content might include a coverage of nutritional considerations. These are Development Studies, Agricultural Education and Extension, Food Science and Technology and Human Nutrition. Examination of the detailed course content (see Dar es Salaam University Calendar 1983/84) shows that training in Human Nutrition is offered only during the 20 hour course entitled Human Nutrition. The content of this course is as follows: Digestion; Absorption and role of nutrients in human beings; Balanced diet; Evaluation of local foods and diets; Disorders associated with malnutrition and their cure; Health education. A striking feature of the course is its deficiency in coverage of concepts which are of consequence to policy and project design. Such important considerations as causation in malnutrition, evaluation of nutritional status, national agricultural and nutritional policy, nutritional intervention programmes and nutritional planning and extension, are left untouched. In view of this the usefulness of the course to the individuals as agriculturalists is suspect. At best it equips individuals to deal with their personal and family nutritional needs.

From 1986, the Sokoine University of Agriculture will start a three-year degree programme in Home Economics and Human Nutrition. It is heartening to note that in this programme there will be a more comprehensive coverage of nutritional concepts. Thus in addition to a 30 hour course in Child Nutrition and Home nursing and a 50 hour course on Food and Society. The course on Food and Society will cover the following aspects:

- i) Population characteristics and food supply. Hunger and nutrition, effects on the individual, the family and the community. Malnutrition and national development.
- ii) The etiology, pattern and distribution of malnutrition.
- iii) Underlying causes of malnutrition: ecological, political, socio-economic and domestic factors. Natural disasters, famine.
- iv) Food aid intervention and other nutritional policies. Methods of nutrition education.
- v) National nutrition policy. Nutritional planning, critical evaluation of selected examples of nutrition programmes.

While the new programme will represent a considerable improvement over the existing one in terms of imparting nutritional concepts, it leaves much to be desired as a means of achieving integration of nutrition into agriculture. The target person, the agriculturalist, will remain inadequately initiated. What is required is for all students of agriculture to cover the following:

- i) Basic principles of human nutrition: to include such considerations as nutrients and their requirements; food sources of nutrients; digestion and absorption of nutrients; malnutrition.
- ii) Nutrition in the community: to include such topics as historical perspectives of nutrition in the community; the multi-factorial causation of malnutrition; national nutritional policies; nutritional intervention programmes;

the impact of malnutrition on national development.

- iii) Nutrition planning: to deal with concepts related to project formulation, implementation and evaluation; possibilities, means and limitations for incorporating nutritional considerations into agricultural and rural development projects at various levels, village, district, regional and national.
- iv) Nutrition extension: to look into adoption and infusion of innovations, with special reference to nutrition.

As for the Faculty of Agriculture of the Sokoine University of Agriculture, there are two possible approaches to adopting such a programme of study. The first would be to re-structure the existing course of Human Nutrition by revamping the course content with aspects ii) to (iv), which are currently lacking, and increasing the time allocation. A second alternative would be for the different aspects (i) - (iv) to be covered under different study programmes. Hence aspect (i) could be covered in the existing course on Human Nutrition; aspect (iii) by the Department of Rural Economy under its two courses named "Project Appraisal and Evaluation" and "Economic Planning and Development", aspect (iv) under the Department of Agricultural Education and Extension. Back-up information on the nature, magnitude and location of malnutrition would be provided by graduates in Home Economics & Human Nutrition while graduates in Food Science and Technology would be instrumental in providing the technical knowhow necessary for maximizing utilization of food resources available in a given area.

The above coverage of nutritional concepts would no doubt go a long way towards ensuring that graduates in agriculture are sufficiently versed with nutritional considerations to enable them to have the necessary awareness and skills to make nutritional development part and parcel of the national development process.

In the above considerations attention has been directed to University graduates in agriculture. While these constitute the core manpower in agricultural enterprises, we ought to recall the remark by Cisse (1969) that, "The improvement of nutrition for the populations, as well as the struggle against malnutrition, demands the co-operation of a broad spectrum of expertise and all available goodwill. It cannot consist of purely sectorial operations; it necessitates teamwork and planning at different levels. Therefore it is desirable that the governments treat this problem as an interministerial matter and that it be included in regular meetings where experts from different fields and services would meet to harmonise concepts and operations".

We now turn to research. A document entitled 'Annual Report of Research Vol. 1 (1979)' published by the University of Dar es Salaam contains abstracts of research activities of the Faculty of Agriculture for the period 1969 - 1979. Examination of the research activities reveals a very high degree of diversity. Each researcher seems to have worked on a topic theme independently of the others in the Department, the Faculty or the nation. The diversity of the topics is suggestive of a lack of coherent faculty policy or research. The bulk of the research did not seem to be based on perception of an actual problem observed in the field or some specific area, or to be seeking a solution to any such problem. Such researches, by their very nature, tend to be multidisciplinary. Instead the researchers tended to work on desk-speculated problems or on surveys of the literature. Such researches are not inherently inappropriate, only that experience has it that they have had little if any impact on agricultural and nutritional problems in Tanzania. At best they have served to enrich the profession of teaching and learning.

While traditionally, teaching and learning have governed the nature and magnitude of University research, its role in the national development of Third World countries needs to be re-assessed in the light of the crucial problem of funds and the need for maximum utilization of manpower and intellectual resources. There is a need to develop effective relationships between the government research institutions and the University, through formulation of a series of national,

technically co-ordinated projects designed to solve stated problems on major crops, minor crops, nutrition, and so on. Co-ordination between University and government institutional research services has the added advantage that University students are to be the researchers of the future and the sooner they come to grips with the realities of the national agricultural problem the quicker they are likely to find usable solutions.

As a prelude to co-ordination between University and government institutions, it is important to have co-ordination within faculties and departments. It is heartening to note that between the years 1980 - 1985 at the Faculty of Agriculture of the Sokoine University, there has been a trend in this direction. The Department of Crop Science, in connection with the Department of Rural Economy, has worked on a crop sub-farming system in which they have simultaneously worked on the different constraints to production and marketing of crops in defined rural areas. In a similar venture, the Department of Animal Science, in conjunction with the Department of Rural Economy, are researching into dairy farming systems. Further, the Departments of Food Science and Technology and Agricultural Education and Extension are, in co-operation with government, carrying out a situational analysis of some specified rural areas with a view to indentifying nutritional constraints and possible remedial measures.

The above developments are likely to have an important impact on nutrition. It ought to be mentioned however that these developments have come about largely through the personal initiatives of the researchers or through encouragement by researchers external to the University. It is important that these trends are institutionalized in the University through:

- 1) Sensitization of students to nutritional concepts and to the gravity of the problems of malnutrition in the country, and
- 2) through formulation of a University research policy that takes into account nutritional considerations.

On extension, an insight into actual current research and study can be gained from the Annual Report of the Department of Agricultural Education and Extension for the period July 1984 to June 1985. Under the heading Extension Activities there was the following account: "During the period under review the Department worked very closely with a number of villages to try and assist them in launching their development projects and also in the course of students' practical learning activities. The Department assisted Kitungwa villagers in constructing a foot-bridge across the River Ngerengere to enable them to reach their fields even during the rainy season when the river is usually flooded. Similar efforts are under the way to help villagers at Kipera Village to construct a foot-bridge across Ngerengere to connect two parts of the same village which are separated for part of the year when the river floods. The Department is also involved with the people of Changarawe and has assisted them to secure a grain milling machine which will obviate the necessity of them having to come all the way to town to mill their grain. In all these activities efforts have been made to involve students and staff as part of their regular Departmental duties."

From the account it is evident that the help extended came from resources within the Department. Nothing emanating from the researches in other Departments was extended. A similar situation has obtained during the past years. Possible explanations are:

- i) There are no research findings which are amenable to extension;
- ii) there is no communication between researchers in the various Departments and the extension personnel;
- iii) the Extension Department does not have the resources necessary to introduce new or improved technologies to the rural sector.

Whatever the explanation, or combination of explanations, the fact remains that after 15 years of research on nearly 750 topics few, if any, research findings have been put into Tanzania agricultural practice.

Given that 40,000 children are dying of starvation every day in the Third World (FAO 1985), the urgency to re-examine the curriculum, research, and extension activities at Universities and other institutions, with a view to enhancing their magnitude and rate of impact on the nutritional status and general livelihood of the people, cannot be over-emphasized. It is encouraging to note that the authorities at the Sokoine University of Agriculture are acutely aware of this problem. The curriculum, the research and extension are under serious review. It is suggested that in the course of this exercise, integration of nutrition in its programmes be accorded due consideration.

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Appendix

Course units/options in the Faculty of Agriculture of the Sokoine University of Agriculture.

<u>Year</u>	<u>Courses:</u>
	Botany
	Plant and Animal physiology
	Plant and Animal genetics
	Agrometriology
	Ecology
	Biometry
	Parasitology and Zoology
	Plant and Animal microbiology
	Agricultural Chemistry
	Introduction to soil Science
	Agricultural Engineering
	Economics
	Sociology
	Development studies
II	Principles of Crop and animal production
	Plant and Animal breeding
	Animal and Crop diseases
	Surveying
	Soil Chemistry
	Soil Biology
	Plant Nutrition
	Soil Physics
	Principles of marketing
	Farm management and planning
	Farm structures
	Human nutrition
	Food preservation
* III	Elective courses
	Crop Science
	Soil Science
	Agricultural Engineering
	Agricultural Economics
	Agricultural Education and Extension

Comments on Training Papers

Otieno: The papers are not clear on East African region. Could you explain the role of international agencies.

Also with respect to curriculum within the University you should state what happens at the University.

Wasonga: Training - enlighten us on what kind of training is needed in the region? What are the resource needs for such training and their possible sources? Also discuss the sustainability of training programmes.

Mzaale: Question on curricular: What is the role of the nutritionist? What are the objectives of training? What will be the content of training? Are resources available for such training?

Ochetim: There is a danger of setting post-graduate programmes and degree programmes without diploma programmes. We need to work with the masses.

Instead of lamenting the failure of trainees to return after further training abroad we need to set proper incentives. There is a need to adapt training acquired abroad to local needs. We also need to distinguish between food and agriculture - degree in agriculture or food production? The problem is food. Curriculum in agriculture is ill-suited to handle the needs of food and nutrition.

Musyoki: There is a need for lifelong training in the area of nutrition - at schools, universities, and among the general public where is the placement of graduates who qualify in the area of nutrition?

Amref: Role of NGOs: NGOs train field workers: How can we use feed-back from efforts of NGOs?

Alila: Could Mr. Maletnema tell us whether any substantive training would be possible within a month?

Kwofie: Training for nutrition and nutrition planning. Time is at hand to train our manpower. We should examine local resources. The problem is not necessarily money but one of management e.g. How many nutritionists have we trained? How are they utilized? Examine the capacity of local and regional utilization of trained manpower.

We have not examined critically what the problem is. What do we want to achieve? This will dictate the kind of training needed. Let's use more effectively the existing trained manpower.

Omondi: There is no mention of home-economics in relation to training and nutrition. Home economists exist in Ministries of health and agriculture

Prof. Bwibo: Curriculum: at university formation of curriculum designed to meet country needs. Duration determined by Depts. Content then devised. Job description of the training. If content is not relating to job description then there could be problems. (Failure of Min. to have an input). University does not get clear the number needed (either too many of too few).

Training overseas: parents initiative (jobs may not exist). Threat of higher trained people vis a vis existing bosses.

7. THE INSTITUTIONAL FRAMEWORK

7.1 FOOD AND NUTRITION IN DEVELOPMENT STRATEGY FOR KENYA AND THE INSTITUTIONAL FRAMEWORK FOR POLICY FORMULATION AND CO-ORDINATION

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INTRODUCTION:

Recently a colleague of mine, an eminent economist who has worked as a planner within the government for a long time, made the following remarks to me:

"You see, your Unit (FNPU) is concentrating too much on nutrition and not enough on more important planning matters related to food production and agricultural development generally. Nutrition matters should fall within the welfare and humanitarian aspects of our concerns as planners and decision makers, and therefore your Unit should spend less time on these matters than you are currently doing"

At another international workshop the author attended in Lusaka, Zambia, in July this year, where the subject of the workshop was "The Nature, Prevalance and Control of Nutritional Anaemia", an equally eminent medical researcher opened the presentation of his paper by saying:

"It has been estimated by the World Health Organisation that over 1,000 million people in the world are anaemic. Prevalance is greatest in tropical countries, in rural communities and amongst the impoverished. There are three main groups in whom anaemia is most common and has the most serious consequences; these are i) infants, ii) pre-school children and iii) pregnant women. Although less frequent in adult men and non-pregnant women, anaemia reduces work capacity and has important economic repercussions ... Agriculture, paradoxically, is the underlying factor in worldwide malnutrition and anaemia" (Fleming, 10, 1985).

The statements quoted above clearly reflect very serious misunderstandings amongst planners - mostly economists, and medical and social science researchers - on the importance and the need to incorporate nutrition considerations into national development projects.

On the one hand, my economist friend appears to still subscribe to the conventional wisdom, long dying out among development economists, that the rate of growth of output and GDP are the best measures of the performance of a country, and that so long as per capita incomes are rising over time, improvements in the general welfare of the people, however defined, will also be achieved as a logical consequence.

To this category of economists consideration given to the poor and those nutritionally at risk is of minor importance in the design of development strategies and programmes. They tend to consider the poorest 20-40 per cent in developing countries as an underclass for which efforts to improve their welfare are either too difficult to implement on environmental, social and cultural grounds, or are too prohibitively costly to enable them to raise their incomes and productivity in a self-sustaining way (Lipton, 15, 1983).

On the other hand, the eminent medical researcher quoted above represents a widely-held view among members of that profession and public health officials, who see health and environmental hazards at every turn in agricultural and rural development innovations - because, the argument goes, the introduction of new staples might increase consumption of non-nutritious foods, and in the particular case of irrigated agriculture, the dangers from malaria, schistosomiasis and other water-borne diseases, are overriding because of their high toll on health and nutrition (Fleming 10, 1985). To this category of decision-makers, the gains to be made in terms of increased incomes, employment and food availability can only be realised if and only if, public health services and facilities are in place to begin with.

The case for incorporating health considerations into the design of agricultural and rural development projects cannot be over-emphasized, since these are fundamental in the guarantee of nutrition adequacy and the prevention of nutrition-related ill-health, which is the subject of our concern in this seminar. However, this view when taken too far poses the danger of being branded anti-development and might lead the politicians and economists to reject outright nutrition and public health considerations in project design, even when these are dearly justifiable.

In this paper therefore an attempt will be made to indicate the theoretical justification in the body of economic thought for the fact that nutritional considerations have become the very basis in redistribution and welfare economics which over time have found their practical application in the Basic Needs Approach which the Government of Kenya has adopted in guiding social and economic development in the country. This was stated more explicitly as "alleviation of poverty and provision of basic needs" in the 1979 - 1983 Development Plan and in the current 1984-1988 Development Plan as "mobilising domestic resources for equitable development".

The second part of the paper will provide a description of the institutional framework for policy formulation in the government development planning process and how programmes of different public and private agencies are co-ordinated.

In part three of the paper, an attempt will be made to indicate future perspectives for the FNPU in its co-ordinating role in ensuring that nutritional considerations are firmly incorporated into the planning process, both at national and district levels, in the design and implementation of agricultural and rural development projects in Kenya. As explained in Dr. Kwofie's paper, future perspectives for the FNPU will be largely shaped by the results and experiences gained in the Baringo Project, in which the FAO methodology for incorporating nutrition considerations into agricultural and rural development projects has been practically applied.

1. NUTRITION AS AN ELEMENT IN POVERTY ALLEVIATION AND BASIC NEEDS PROVISION IN KENYA.

Although not specifically indicated in the official documents of the Government of Kenya, in our view the formal developments through which nutrition has become an important element in Kenya's overall economic and social development strategy went through the following stages:

i) Economics of Growth

Until recently, the major concern of development planners has been with the promotion of rapid growth. Since the publication of the "Wealth of Nations" by Adam Smith, in which division of labour was seen as the prime mover in social and economic progress, economists have attempted to give a more scientific and rigorous presentation of the nature and conditions for economic growth. Most of the growth models have emphasized the role of 'capital' in the growth process. Both the classical and neo-classical growth models exemplified by the Harrod-Domar Model and the Cobb-Douglass Production Function have emphasized capital accumulation as central to economic growth. While in the former, growth is determined by the magnitude of the capital coefficient, assumed to be determined by the state of technology, which is given, the latter model introduced the role of labour and technological progress as important contributing factors even though capital accumulation still predominates.

There are many existing growth models that have essentially been refinements of the above which have been applied in many countries for planning purposes. However, practically all the governments in the developing world which have adopted development planning as an instrument of public policy, have employed the Keynesian Models in which the growth process finds explanation in the interrelationships between components of the national income-product such as consumption, saving, investments, exports and imports and the role of government spending. To a large extent development planning in Kenya has followed the Keynesian model in terms of macro-economic modelling and public finance. This type of modelling has also found much favour with major international lending agencies such as the World Bank and the IMF.

In its simplest form the Keynesian model can be stated as:

$$Y = C + I + G + X + Z \dots\dots\dots i)$$

Where Y stands for total national product/income

C stands for consumption expenditures

I stands for investment expenditures

G stands for government expenditures/purchases

X stands for exports of goods and services

Z stands for expenditures on imports of goods and services.

What is distinctive about the Keynesian models is that they are demand driven, in which important concepts include aggregate demand, propensities to consume, save and invest, the rate of taxation in its determination of private disposable incomes, levels of government income and expenditure and the supply of foreign exchange, which is largely determined by $(X - Z)$ - the trade balance, and capital transfers.

It is to be noted that since incomes receipts can be divided between private households and the government sector, the following relationships can be obtained:

$$Y = Y_d + T, \quad \text{and} \quad \dots\dots\dots \text{ii)}$$
$$Y_d = C + S \quad \dots\dots\dots \text{iii)}$$

- Where Y stands for national incomes
- Y_d stands for disposable private incomes
- T stands for taxes
- C stands for private consumption
- S stands for saving.

For purposes of public finance and economic management at macro levels, the understanding and manipulation of the following relationships become critical:

$$I + G + X = S + T + Z \quad \dots\dots\dots \text{iv)}$$

In the final analysis, the growth of the economy will be determined by the 'multiplier effect' (not the money multiplier) written as:

$$Y_t = Y_0 + \frac{i}{1 - b} \quad \dots\dots\dots \text{v)}$$

- Where Y_t stands for income/product in current year
- Y_0 stands for income/product in base year, and
- b stands for marginal propensity to consume derived from the consumption function ($C = bY$) and hence $(1 - b)$ is the marginal propensity to save.

In an open economy like Kenya one finds that total domestic investment (capital formation) is funded from domestic savings from households and enterprises, surplus on Recurrent Exchequer, deficit financing (that is, borrowing from the banking system), and net surplus in the balance of payments accounts, hence:

$$I_t = S_d + T_r \dots\dots\dots vi)$$

Where I_t stands for total investments
 S_d stands for domestic savings, and
 T_r stands for net capital transfers.

In whatever variant the Keynesian system has been expounded, the determinants of growth and employment remain closely tied with the stimulation of aggregate demand, either from increased private consumption or through an increase in government expenditures/purchases acting through the multiplier effect. In addition, it depends on propensities to save, the investment rate and capital coefficient (incremental capital output ratio) and the resources that can become available through international relations such as international trade, capital transfers, both private and official, and through aid.

In recent years, since the oil crisis of 1973, the balance of payments position has become a serious factor in the promotion of growth and development. The foreign exchange gap has not only become critical in this sense, but also in relation to questions of stability. That is for growth, if it is to be promoted, government spending/borrowing levels must find justification if these are to guarantee increased or stable incomes without endangering international economic relations through balance of payments disequilibria. This in itself calls for control of the money supply and inflationary trends through the management of a high-powered money base, foreign exchange rates and deficit financing to close the budgetary gap expressed as:

$$\text{Gap} = (T - G) + (S - I)$$

Where T stands for expected tax collections by the government
G stands for intended state expenditure/purchases
S stands for expected savings, and
I stands for intended investments (Denburg and McDougal, 1976).

In many developing countries the preoccupation of policy makers with growth, and recently with stability, have resulted in economic dualism or a growth without development phenomenon where the results of growth, where this has been recorded, have tended to benefit the urban/modern sectors of the economy at the expense of the poorer members, the majority of whom live in the rural areas.

Even in countries that have recorded high growth rates, as was the case for Kenya in the first decade of her independence, there is now over-whelming evidence that growth by itself has led to worsening conditions for the poor. In this respect, the impact of the whole range of policy instruments recommended by international agencies as the World Bank and the IMF for the promotion of growth and stability can - unless purposely modified to this effect - have serious negative consequences on the poorer members of society. The most likely impact of some of these policy instruments upon various sections of the communities can be summarized in Table 1.

In the Kenya Government adoption of the philosophy of "alleviation of poverty and provision of basic needs" in the preparation of the 1979-1983 Development Plan, due recognition was given to the fact that growth for its sake does not result in the changes required by the overall social and economic development philosophy enunciated in the Sessional Paper No. 5 of 1965 on "African Socialism and Its Application to Development Planning in Kenya". As we shall show in subsequent paragraphs, this marks the point where the planning process has come to terms with poverty, which in the ultimate analysis can only be stated explicitly in terms of nutritional well-being.

Table 1 - QUALITATIVE IMPACT OF SELECTED POLICY INSTRUMENTS

	Foreign Exchange Quantity	Interest Rates & Money Supply	Wages	Prices	Subsidies	Rural Works	Emergency Relief	Land Reform	Budget & Health & Education Water & Services	Import Subst. Industrial policy	Credit & Input Supplies to Agriculture
Instrument (changes in)											
Target											
National Income	PP	PP	P	P	N	P	N	P	P	PP	P
Capital Formation	PP	PP	PN	P	N	PP	N	P	PP	PN	PP
Agricultural Output	P	P	PN	PP	PO	PP	O	PP	P	PN	PP
Income of Upper 10%	PP	PP	O	O	O	O	O	N	O	PP	PO
Income of Lower 60%	PO	PN	PP	PN	PP	PP	O	PP	PP	O	PP
Rural Food Intake	O	O	P	P	P	P	PP	P	P	O	PO
Urban Poor Food Intake	O	NO	P	N	P	O	PP	O	P	O	O
Rural Nutrition & Health	O	O	P	P	P	P	P	P	PP	O	P

P = Positive

pp = Strongly Positive
 PN = Positive and Negative

N = Negative

O = Neutral

PO = Positive & Neutral

NO = Negative & Neutral

ti) Redistribution Economics

The growing discomfort with the traditional growth theories has led many economists to realize the folly of believing that growth, measured by GNP growth rates, is the criteria for measuring improvements in welfare, in the face of overwhelming contrary evidence on increasing poverty, poor nutritional status and ill-health on a world scale.

Paradoxically, it has been the World Bank, despite its traditional image as the foremost propagator of growth-first, which was one of the leading international institutions that initiated major inquiries into the impact of growth on poverty and malnutrition (Chenery, *et al.*). The fact that these major efforts are now being made to at least achieve redistribution with growth does not mean it is the first time economists and social scientists have battled with questions of welfare in national development.

In our view, the foundations for current redistribution concerns in public policy date back to Pareto. The Pareto welfare axiom in its simplistic form states that:

'Any change (economic or social) which harms no-one and which makes some people better off must be considered optimal' (Baumol, 2, 1961).

Although a revolutionary concept in its time, the Pareto rule suffers from difficulties in interpersonal comparisons. Who judges whether one's welfare status has improved or not? Secondly, the mere fact that growth has made some people better off and has had a neutral effect on others, does not tell much about the original conditions of the underprivileged - they could have been at starvation levels all this time. Apart from the fact that there is no scientific method of measurement of Pareto optimality, available evidence in growth performance among developing countries, Kenya included, points to the fact that it is no longer a question of some people getting better off without making others worse off, but that growth in itself has gone hand in hand with some people getting very much better off while others have been getting very much worse off; that is, growth has been identified with growing poverty in many of the developing countries.

iii) Measurements of Poverty

The physical evidence of poverty is easy to identify, but the question is - how do you measure it for purposes of public policy? Earlier attempts to define the extent of poverty considered it in terms of levels of per capita income; that is, that anybody earning say X per year or below would be considered poor. The problem with this measurement is that per capita data are but averages and can hide very wide variations. In addition to this, it runs against the question of who judges whether X should be the cut-off point.

Some authors have attempted to define poverty in terms of inequality; that is, in terms of relative and absolute poverty where relative poverty is concerned with comparisons in income levels between groups and countries, and absolute poverty measured in terms of "minimum standards of living" somehow defined. (Cheneray, et al. 5, Chapter 1, 1974).

The measurements of absolute poverty mentioned above have close resemblance to the Physical Quality of Life (PQOL) which has been used by some economists and international agencies as a measure of poverty. In PQOL is included minimal nutritional requirements in terms of calories, proteins and trace elements, shelter, clothing, sanitation, education, health, clean water and other public services.

The problem however with these measurements of poverty is that they are closely related to the growth issue. While it is clear that general programmes for social and economic development can have positive effects on the conditions of those identified as poor, these take long to achieve the required impact. This becomes a serious problem because of resource constraints facing many of the developing countries, where it is not even possible to provide PQOL elements at required levels. (Berg. 4, 1983)

Aside from the problem of data and statistical acquisition which is critical to identification of the poor, the indicator now best preferred is a nutritional one - minimum calorie intake. For a clear statement on public policy in the fight against poverty, the minimum calorie intake can be translated as Food Adequacy Standard - FAS (Lipton, 15, 1983). The FAS is measure of absolute household poverty given the normal spending patterns of target communities and "their capacity of afford enough calories to maintain health and performance". The FAS measure of poverty is also convenient in the identification of those that are moderately poor for which the Basic Needs approach might deal with their food and nutritional needs, and the ultra-poor for whom, in addition, special intervention programmes are required. It helps also in the identification of those at risk of malnutrition and hunger.

In summarizing this section, it should be clear that strategies for dealing with the problem of poverty must aim at improvements in the nutrition status of people perpetually faced with hunger and ill health and those at greatest risk as the targets. These two groups happen to constitute a very large percentage of the population in tropical African countries. While most of the usual development programmes in agriculture and rural development eventually have an impact on nutrition, malnutrition is no longer to be treated as a special case in poverty alleviation, but as the very core of it.

Since it is easy to demonstrate, as we have attempted in the above paragraphs, that there is theoretical justification in the main body of economic thought and in welfare economics in particular, for nutrition considerations, it is my recommendation to serious economists/planners and other decision makers that they resist vigorously the temptation to regard nutrition as a palliative rather than as a solution to basic needs - a repugnant form of government charity, or a political act to allay social and political unrest.

We should also resist the temptation among some decision makers to regard nutrition as a public health issue, or that general agricultural and rural development programmes will in themselves address the problem of nutrition. Nutrition objectives need to be explicitly stated if poverty alleviation and basic needs are to be met, particularly for the poorer sections of the communities.

2. POVERTY ALLEVIATION AND PROVISION OF BASIC NEEDS IN KENYA

i) Poverty - The Evidence

By the time the 1979-1983 Development Plan was being prepared, the Government of Kenya had already taken a serious view of growing inequality and poverty despite of the high rates of economic growth recorded in the first decade of the country's independence. This was partly, but not wholly, the result of the survey carried out by the ILO in 1972 on Inequality in Kenya. From this, serious public concern emerged about the condition of those who seemed to have been left by the wayside in the rapid strides of economic development. The Development Plan therefore adopted the theme of "alleviation of poverty and provision of basic needs". The Plan identified the poor as (i) the pastoralists, (ii) the urban poor, (iii) small-scale rural farmers, (iv) the landless rural workers, and (v) the physically handicapped. With much better data derived from various surveys of the Central Bureau of Statistics becoming available, the numbers involved have been identified, as shown in Table 2 below.

Table 2: Poverty in Kenya - 1974 (No. of People)

	Below Poverty Line	Above	Total	Poverty Line (s.p/a)
•Pure Pastoralists	615,000	110,000	725,000	4,285
•Pastoralists who farm	25,000	50,000	75,000	2,700
•Migrant workers	110,000	90,000	200,000	2,000
•Landless poor without occupation	-	245,000	245,000	-
•Small holders	2,990,000	7,350,000	10,340,000	2,000
•Nairobi Pop.	20,000	680,000	700,000	1,150
•Other Urban Pop.	40,000	660,000	700,000	2,150
•Large farm squatters	200,000	400,000	600,000	2,000
•Gap farms	-	270,000	270,000	-
•Large farms	-	20,000	20,000	-
	4,210,000	10,085,000	14,295,000	

s.p.a. shillings per annum.

SOURCE: Collier and Lal - Poverty and Growth in Kenya, 1980.

From the above table one can see that absolute poverty (defined more or less in line with the FAS concept indicated above) affected over 4 million or about 30 per cent of Kenya's total population of 14.3 million by 1974. The underlying causes of poverty are clear - they are roughly implicit in the very classification.

In view of the recent droughts and the economic problems the country has faced since 1980, it is predicted that the groups affected by absolute poverty have increased. Data on this will soon become available from the NASSÉP's Rural and Urban Household Expenditure Surveys now being analysed at CBS. The extent of inequality implied from Table 2 data could also be presented in a Lorenz Curve shown in Figure 1.

From this figure, one can identify the fact that approximately 40 per cent of the lowest income groups receive only 10 per cent of total national income while the middle 40 per cent receives 22 per cent and the top 20 per cent receives some 68 per cent of national income. This degree of inequality is rated one of the highest in the developing world (see Chenery et al. - Table 1.1).

ii) Poverty - Alleviation

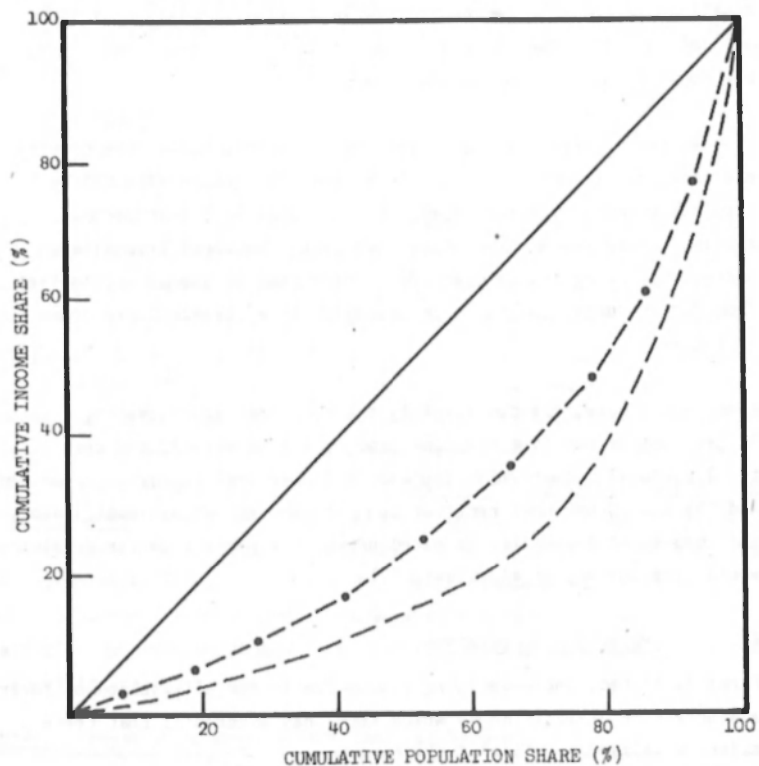
Formally stated, the underlying assumption in the alleviation of poverty and provision of basic needs which Kenya has adopted is that there exists a welfare function of the form:

$$G = W_i g_i + \dots \dots \dots W_n g_n$$

Where $g_i \dots \dots \dots g_n$ are the groups indentified for policy targeting and action.

$W_i \dots \dots \dots W_n$ are the weights attached to these groups in terms of the magnitude to these groups in the re-allocation of income and public services.

Figure 1: INCOME/DISTRIBUTION IN KENYA



- - - - - 1976 situation
 - - ● - - ● - - Redistribution of 20% of income of upper 10% to lower 60%

SOURCE: McCarthy, F.D. and Mwangi, W.M. Kenyan Agriculture Towards 2000 IISSA Luxembourg, 1982 p.67

As has been indicated earlier, development projects have different impacts on income distribution and consumption, defined as private household consumption (including food intake) and consumption of public services. The role of planners is, in the first place, to be well-informed about the conditions of the groups, to explicitly define the policy targets affecting them and to select the policy instruments that are appropriate to achieve those targets.

At macro levels, planners in Kenya have employed the Lorenz Curve analysis shown in Figure 1 for the determination of the direction of desired changes in income distribution for poverty alleviation and in the provision of basic needs. This has found a rigorous treatment in the work of McCarthy and Mwangi, for example, in the interpretation of Plan strategies and their possible effects on nutritional adequacy among those at risk by the year 2000 (McCarthy and Mwangi - Kenyan Agriculture Toward 2000, IISA, 1982).

The general framework within which the FNPU has attempted to formulate nutrition policies is shown in Figure 2. The elaboration of this framework is to be found in Mr. Wasonga's paper presented at this workshop (Wasonga, 25, 1985). From the Baringo Project experience the FNPU now has the capacity to state in more explicit terms the nutrition targets at community and household levels.

In conclusion, we would like to point out that in moving towards incorporation of nutrition considerations into national development strategies, one does not have to ignore growth requirements. What is important from a public policy point of view is for planners to carefully chart out the path that growth should follow which meets both the short, immediate, and long term basic needs and nutrition targets. This choice can be presented graphically as shown in Figure 3.

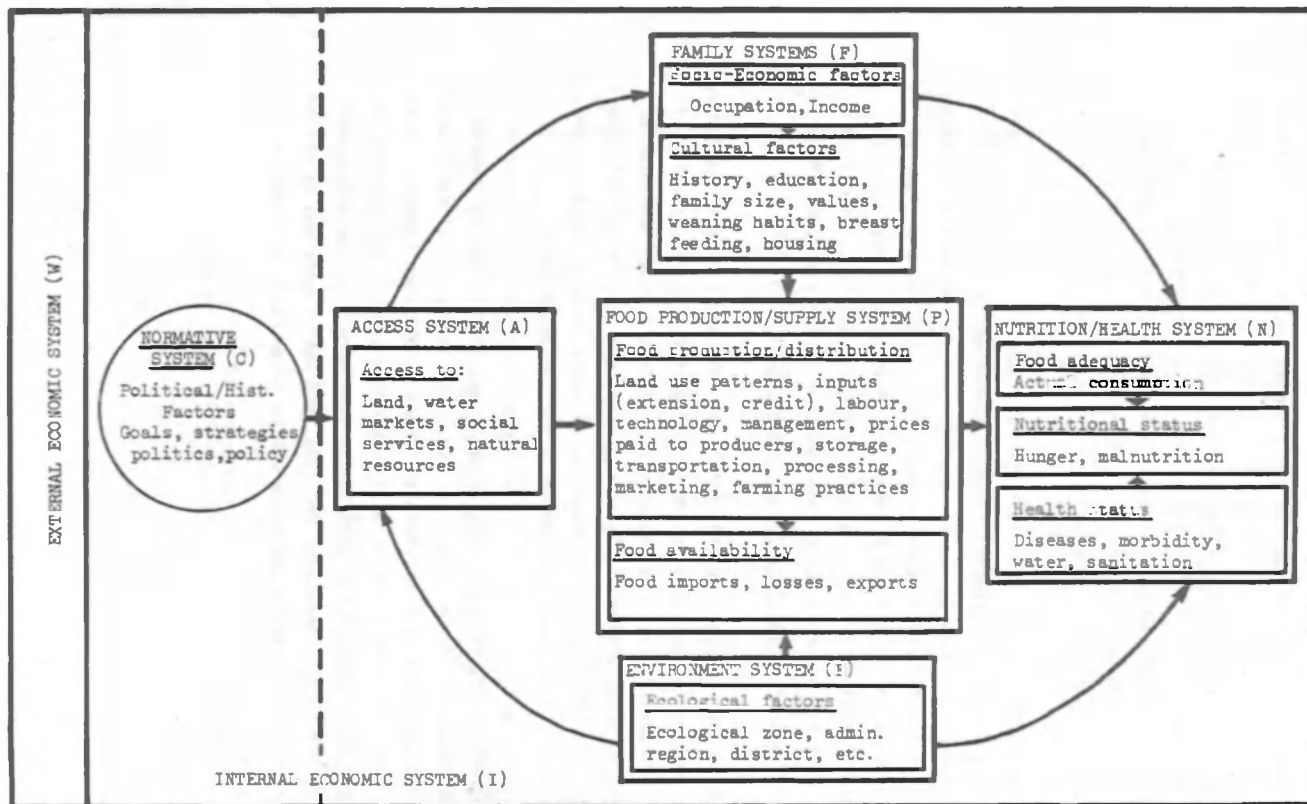
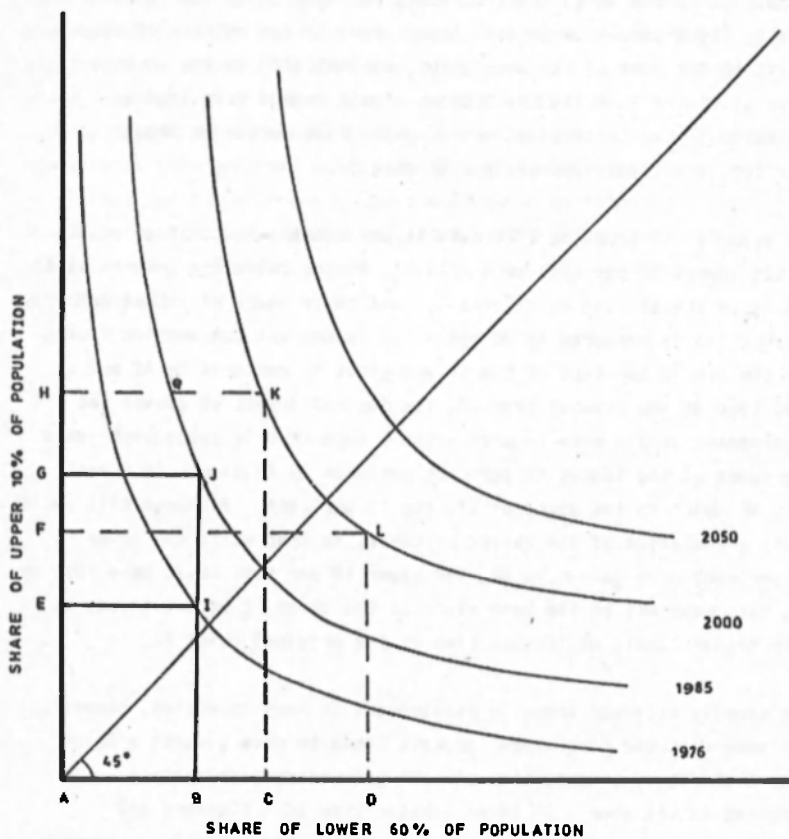


Figure 2:

FRAMEWORK FOR ANALYSIS OF POVERTY, MALNUTRITION AND SICKNESS

FIGURE 3 — INCOME CONSUMPTION CURVES



An illustration of what is required - and this is the underlying assumption in the basic needs strategy for Kenya - is that with growth, there should be general improvement in the welfare of the lowest 60 per cent of the population, as indicated in the Lorenzo Curve of Figure 1, while the economy should expand over time as indicated by the successive income/consumption curves we should plan for, anticipate and monitor (Figure 3).

For example, if from the 1976 data it was established that at point I, the lowest 60 per cent were actually living below the poverty line and hence are at risk nutritionally, and their share of income and consumption is measured by AB while the income and consumption levels for the top 10 per cent of the income group is measured by AE and at that time AE was greater than AB, the desired impact of growth and development should move towards point L such that in subsequent years the share of the lowest 60 per cent measured by AD should be greater than AF which is the share of the top 10 per cent. Although this would imply a violation of the Pareto criteria, in that while the lower 60 per cent have gained by BD, the upper 10 per cent would have lost by FG, this need not be the case since at the point FL we are anyway at much higher levels of incomes than at the original point EI.

The usually observed trend in development in many countries, however, has been that the development process tends to move towards a point like K where, as always, the well-off gain disproportionately compared to the poor - GH being greater than BC. Planners and decision makers should find ways of avoiding this situation. However, the direction that should be avoided at all times is where development moves towards point Q, since this represents retrogression, the result of which is that the condition of the poorest will tend to deteriorate because, with reduction in their share of national incomes and the tendency for their number to increase faster, malnutrition and ill-health would be widespread and the state will be forced to spend more on health services and emergency intervention programmes which are costly in terms of resources that could have otherwise been spent elsewhere in productive activities.

In our view therefore, the methodology proposed by FAO for incorporating nutrition considerations in agricultural and rural development projects can help in determining where the poorest groups are in relation to the privileged, and help in monitoring where these groups are likely to be in the future. From the experiences gained in the Baringo Project, the FNPU now appreciates the fact that to do all this, a good system of data collection and a monitoring system should be established such that any deviations from the stated objectives could be brought to the attention of the decision makers, and the necessary corrective action taken.

3. INSTITUTIONAL FRAMEWORK FOR POLICY FORMULATION AND CO-ORDINATION.

f) Overall Development Planning Process in Kenya

In giving consideration to the integration of food and nutrition considerations into the development planning process in Kenya, and the role the Food and Nutrition Planning Unit (FNPU) plays in this process, an introduction to the planning process itself is required. The various levels in the planning process can be summarized as follows:

Level 1 - The National Five Year Development Plan

Like many developing countries, Kenya opted for the preparation of five year Development Plans as a guide to national social and economic development. The Plans usually provide a theme for development for the next five years and also give priorities in policies and targets to be achieved. They also give some estimate of financial and manpower resources required for the action programmes. The current Plan covering the period 1984-1988 is the fifth in the series since independence. The theme of the current Plan is "mobilization of domestic resources for equitable development".

Level 2 - The Preparation of the District Development Plans

Because of the fact that the majority of Kenyans live in the rural areas, priority attention has been given to this sector. The district, as the basic administrative unit, provides a good base for project implementation at the grassroot levels.

The District Plans attempt to disaggregate the national programmes by sector, ministry and departments. District Plans also cover a five year time span as is the case with the National Development Plans.

Level 3 - Parliamentary Sessional Papers

In addition to the plans mentioned above, sessional papers are usually prepared on specific issues of national importance and are approved by the National Assembly. One such sessional paper is the Sessional Paper No.4 on National Food Policy of 1981, which is a refinement of policies on food and nutrition covered more generally in the five Year Development Plans. In all cases the preparation of the Sessional Papers are closely supervised by the Ministry of Planning and National Development. They do not cover any specific time period.

Level 4 - Economic Review and the Annual Budget

The preparations and the discussions for the annual budget of the government is perhaps one of the most important planning tools. They are more or less the yearly versions of the National Plans, except that greater attention is given to immediate and short-term issues affecting the economy. More particularly they provide a review of the performance of the ministries and departments in the implementation of projects and programmes. They provide for resources to be made available for the following year in the implementation of the development policies and programmes within the general framework of the National Plans.

There are two important committees to which members of the FNPU make important contributions in the planning and budgeting process. These are (i) The Sectoral Planning Groups - chaired by a senior officer in the ministry's Planning Department and comprising of representatives of the Ministry/Department in question and at which a senior officer of the Budgetary Department of the Ministry of Finance is the Secretary. Such Committees examine the annual budgetary proposals of the Ministries to see that they are in line with government policies in the National Plan. (ii) The Estimates Working Group - chaired by the Senior Officer in the Budgetary Department of the Ministry of Finance, at which the officer from the Planning Ministry acts as the Secretary. These working groups are the ones which undertake the actual allocation of funds to various ministerial departmental activities for the coming financial year.

Level 5 - Occasional Policy Papers

At times Ministries and Departments publish Occasional Policy Papers on areas of interest to them, and to clarify certain programme areas which Plan statements did not adequately cover due to lack of information. Some of these are prepared by independent consultants on behalf of the ministries/department in question. In the preparation of these papers the views and opinions of the planning ministry are not only actively sought, but are also very influential.

In planning and policy formulation as outlined above, nutrition considerations were treated as part of ministerial/departmental programmes prior to the establishment of the FNPU in 1979. Since then attempts have been made, as will be shown later, to scrutinize these programmes for their implications in terms of nutrition in the context of Development Plan objectives. The scrutiny is applied to the preparation of Sessional Papers, Occasional Papers, and the annual budget preparation in the Estimates Working Groups for Programme Review and Forward Budget.

ii) Food and Nutrition Planning Unit in the Decision-Making Process

From the time Kenya achieved her independence in 1963, to 1979, priority attention among planners and decision-makers was geared towards the attainment of rapid growth of the economy and its Africanization. It is therefore not surprising that the first three Development Plans ignored nutrition as a specific area of concern. But, as I have said earlier, the increasing concern with the problems of poverty, dating back to 1972/73, eventually brought the nutrition dimension into focus.

The then existing intervention programmes in family planning and nutrition education, listed in Appendix 1, had been going on for years with no framework for co-ordination. Hence a duplication of efforts, poor area coverage and chronic understaffing rendered these programmes ineffective in dealing with the root causes of poverty and poor nutrition among large sections of rural communities.

Following intensive deliberations within the government, it was decided that the 1979 to 1983 National Development Plan should not only make clear statements about food and nutrition policies as guides for future action, but also that proper institutional arrangements be put in place for policy formulation and programme co-ordination.

The 1979 to 1983 Development Plan therefore achieved two historical goals in the process of integration of food and nutrition considerations in the development planning process. First, in Chapter 5, devoted to Basic Needs Strategies, food and nutrition policies and targets constituted a major portion of the programmes for poverty alleviation and provision of basic needs. Secondly, it provided for the establishment of the Food and Nutrition Planning Unit within the Ministry of Planning and Development (now National Development) as the focal point in policy formulation and programme co-ordination.

The decision to establish the FNPU in the Planning Ministry was a deliberate one. Prior to the establishment of the FNPU there were two alternative proposals. One was that the co-ordinating body on food and nutrition matters should be in the form of a separate statutory body such as the National Food and Nutrition Commission. This had considerable appeal because a few of the countries in the region had established such bodies; for example the Tanzanian Food and Nutrition Centre, the Zambian National Food and Nutrition Commission and the Ethiopian Nutrition Institute.

All of these came under the Ministries of Health in the respective countries. The second alternative was to set up a unit within an operational ministry such as Health or Agriculture. The argument in support of this proposal was that these are directly involved in food and nutrition matters in terms of food production, nutrition and health intervention programmes.

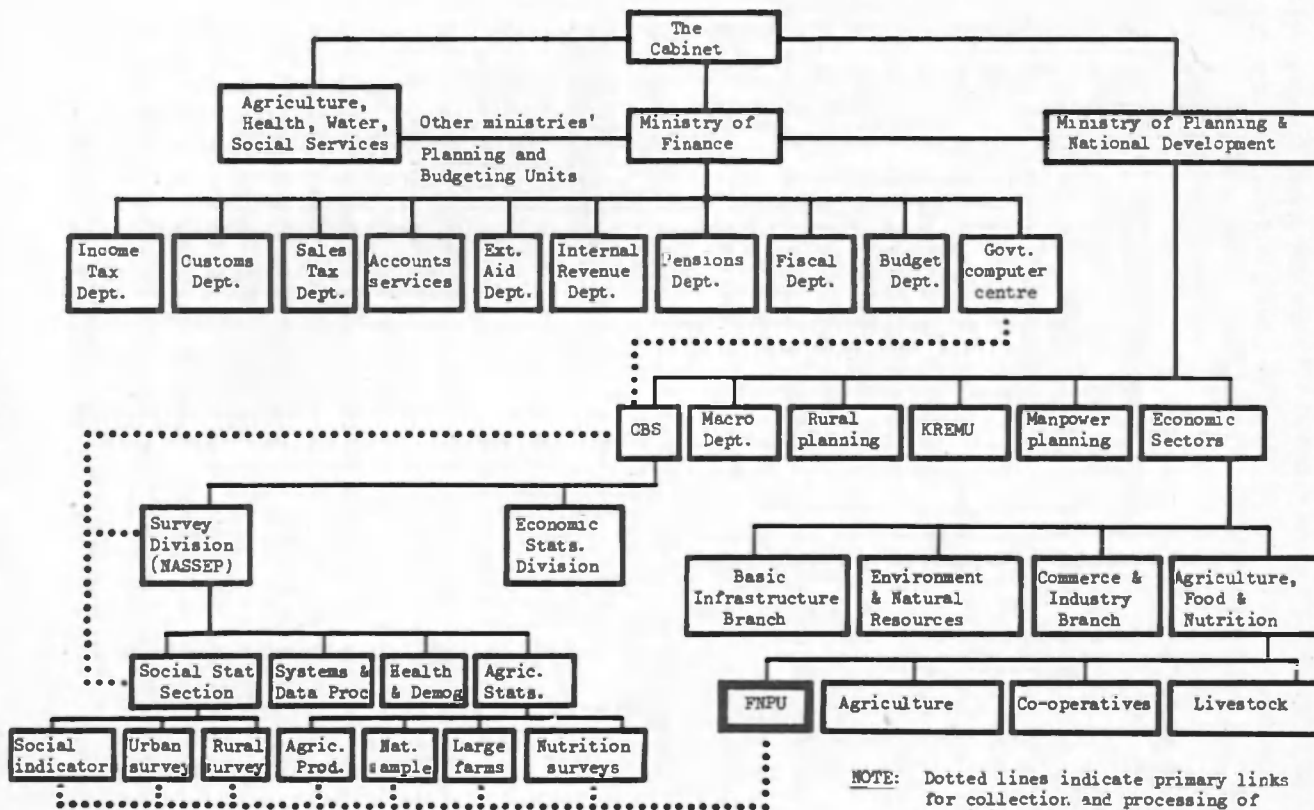
In considering these alternatives, it was felt that the setting up of a statutory body was not in keeping with government policy concerning such bodies. At that time, a review of the performance of statutory bodies was universally disappointing. They tended to grow bigger and bigger, and more inefficient, in terms of utilization of national resources.

Such organizations, if attached to operating ministries such as Health and Agriculture, find themselves unable to operate effectively because, naturally, they tend to be identified with the activities of that ministry alone, thus leading to only a partial treatment of nutrition matters in public policy formulation. On the other hand, if a unit, instead of a parastatal body, was set up in an operating ministry, the chances of food and nutrition considerations penetrating into the planning and decision making process are slim. Hence the Government of Kenya decided that the FNPU should be in the Ministry in charge of co-ordination of planning and policy formulation.

As can be seen in Figure 4, the FNPU is very well placed in the overall government planning and budgeting process. Its location in the Ministry of Planning and National Development has several advantages. First, the Ministry itself is charged with the co-ordination of development planning and policy formulation for the nation as a whole. In this respect, therefore, it is easy for the ministry to incorporate new policies and strategies that are considered a priority for economic and social development of the country. These changes and their prioritization are eventually reflected in the important government policy documents mentioned in the foregoing sections. Secondly, in the context of the ministry, the changes may have considerable weight in determining budgetary allocations for various programmes and projects of the various ministries and departments. The traditional close links between the Ministry of Planning and the Ministry of Finance helps ensure that policies on food and nutrition proposed by FNPU reach the highest level in the decision-making process.

The second positive aspects of the location of the FNPU in the Ministry of Planning and Development, is that food and nutrition considerations can be looked at from a broader multi-sectoral perspective. From this standpoint, it is therefore easier to influence decision making in the desired directions. This arrangement, however, does have its weaknesses, as will be indicated later. Nevertheless, from our experience, it appears to have worked well despite the constraints already identified.

Figure 4: The FNFU in Government Structure



NOTE: Dotted lines indicate primary links for collection and processing of nutrition-related data.

111) Mandate of the Food and Nutrition Planning Unit

In the 1979 to 1983 Development Plan, the mandate of FNPU was stated generally as "responsibility for overall co-ordination of food and nutrition related matters within all ministries of the Government and non-governmental organisations and to assist in strengthening development planning units within the ministries and departments for analysis and integration of food and nutrition considerations in project and programme design" (Development Plan, 1979 to 1983, page 150). In doing this it was to be assisted by an Inter-ministerial Co-ordination Committee (the ICC) consisting of representatives of the relevant ministries and departments, research institutions, non-governmental organizations and UN agencies. The membership of ICC is presented in Table 3 below.

Table 3 - Membership of the ICC:

<u>Government</u>	Number of Representatives
1. Office of the President	1
2. Ministry of Agriculture	3
3. Ministry of Co-operative Development	1
4. Ministry of Health (ICC Secretary)	2
5. Ministry of Water Development	1
6. Ministry of Culture & Social Services	2
7. Ministry of Education, Science & Technology	
8. Kenya National Council for Science & Technology	1
9. Department of Fisheries	1
10. Central Bureau of Statistics	2*
11. Kenyan Industrial Research Institute (Kirdi)	1
12. Kenya Medical Research Institute (Kemri)	
13. Ministry of Planning & National Development (ICC Chairman)	6*
<u>Non-Governmental Agencies.</u>	
14. University of Nairobi (IDS, etc)	3
15. National Christian Council of Kenya	1
16. Catholic Relief Services	1
17. Kenya Freedom From Hunger Council	1
18. African Medical Research Foundation (Amref)	1

UN Agencies

- | | |
|---|----|
| 19. Food and Agriculture organization (FAO) | 1* |
| 20. United Nations Children Fund (Unicef) | - |

- * Membership from these institutions is variable depending on the agenda - membership of the UN agencies is not permanent.

iv) Linkages in Policy Formulation and Programme Co-ordination

Although the FNPU is very favourably located in terms of policy formulation and decision making as indicated above, the actual co-ordination activities require a clearly-established framework. This is accomplished through the Inter-ministerial Committee and its sub-committees. The co-ordination system itself is presented in Figure 5.

Apart from the linkages in policy formulation indicated in Figure 4 above, the FNPU has been able to establish other important linkages external to the ministry that are critical to co-ordination of programmes at national level. First, in most of the relevant ministries and parastatal bodies the government has taken steps to establish planning units which are linked directly with similar units within the Ministry of Planning and National Development. These linkages ensure that there is agreement on policy and programme proposals of the ministries and departments at planning and programme design levels before these are presented for final approval at top decision-making level, involving the permanent secretaries and ministers. The FNPU has been able to utilize these linkages to influence policy formulation and programme design, implementation and evaluation of programmes at ministerial and department levels.

Secondly, the FNPU has established permanent representation in important committees dealing with food. These include the Food Security Committee of the Office of the President, the Crop Forecasting Committee of the CBS, the Food Policy Committee of the

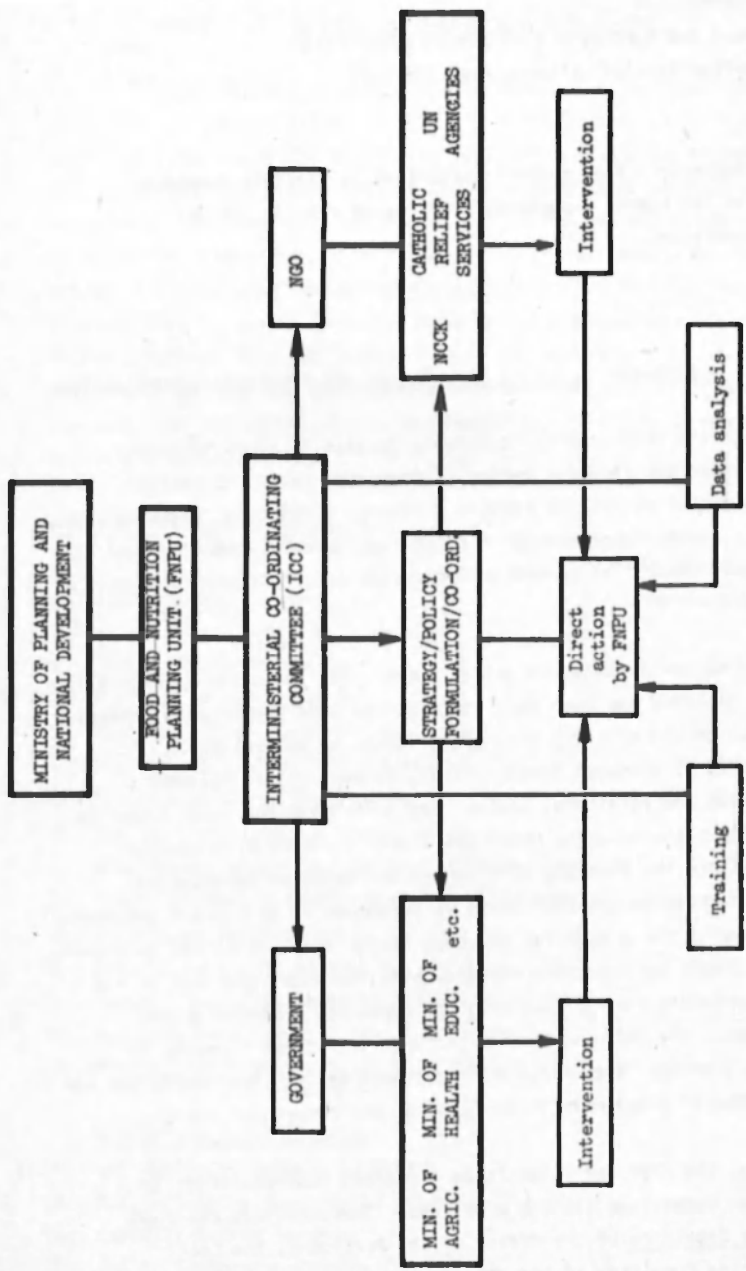


Figure 5: FOOD AND NUTRITION PLANNING/CO-ORDINATION SYSTEM

Ministry of Agriculture and Livestock Development set up by the Sessional Paper on National Food Policy of 1981 and the Steering Committee of the National Primary School Milk Programme.

Thirdly, the FNPU has established close links with management committees of the major non-governmental organizations such as the Maendeleo ya Wanawake, National Christian Council of Kenya Child Welfare Society of Kenya, Kenya National Freedom from Hunger Council, African Medical Research Foundation (AMREF) and the Medical Research Foundation.

Since its establishment in 1979, the FNPU has gone about achieving co-ordination in its own unique way. Having no formal authority in terms of Parliamentary enactments, it does not have enforcement capabilities on any issue, and therefore the FNPU officers, through the ICC have adopted a strategy of persuasion and influence through 'participatory dialogue' to achieve FNPU objectives.

4. ACHIEVEMENTS AND FUTURE PROSPECTS

Since its establishment, the activities of the FNPU have had considerable influence in shaping current policies on food and nutrition. These have also had an influence in incorporation of food and nutrition considerations into project design and analysis in many of the rural and agricultural development projects that have been implemented in the last five years. In particular, the following activities have had considerable FNPU inputs and influence.

i) Inputs at National Planning Levels

As a start, the FNPU participated in the preparation of the policy statements on food and nutrition in the 1979 to 1983 Development Plan in which, for the first time, these objectives were specifically stated. Inputs and advice from the FNPU were taken into account in the preparation of the Sessional Paper No. 4 of 1981 on National Food Policy, where a member of the FNPU was involved in the drafting and editing of the paper on a more or less permanent basis.

In addition, the FNPU has played an important part in the review of the annual government budget related to the Ministries of Health, Agriculture and Livestock Development, Co-operative Development, Water Development and Culture and Social Services, to ensure support for food and nutrition activities in these ministries' programmes, in the context of the Sectoral Planning Groups and Estimates Working Groups already mentioned above.

ii) FNPU Inputs in Integrated Area Development Projects

The FNPU in collaboration with other officers from the Economic Sectors Planning Division and Rural Sectors Planning Division within the Ministry of Planning and National Development, the Ministries of Agriculture and Livestock Development and the Office of the President, have been active in the monitoring of the integrated area development projects in the Machakos Integrated Development Programme (MIDP) funded by the EEC, the Baringo Pilot Semi-Arid Area Project (BPSAAP) funded by the World Bank and the Turkana District ASAL Programme funded by the Government of Norway. The FNPU provided the lead in the preparation of the integrated area development projects for Siaya District Farmers Groups Project funded by IFAD and the Kwale/Kilifi Integrated Development Project also funded by IFAD. In the review and preparation of these area-based projects the FNPU tried as far as possible to employ the methodology proposed by the FAO for incorporation of food and nutrition considerations into agricultural and rural development Projects - with particular reference to Desk Review and Initial Assessment (FAO, 9, 1982).

iii) Nutrition Surveys

Until last financial year (1984/85), the FNPU did not have separate budgetary allocations to support its activities, because it was mainly involved in the strengthening of the co-ordination role, except for a small nutrition baseline survey carried out in 1980 in the Magarini Settlement Scheme in Malindi district. Though limited in scope, the findings and recommendations were used during a project review of 1981 to introduce nutrition considerations in project re-design.

However, the largest single activity in nutrition studies is the Baringo In-depth Survey under project GCP/KEN/050/SME supported by FAO, the experiences from which are being reported in this seminar by Dr. Kwofie (Kwofie, 15,1985). Currently, the FNPU, in collaboration with the CBS, is in the process of completing the desk review and initial assessment for the Slaya Project and the results of the in-depth study will be coming out shortly. This will be used for the selection of the farmers groups involved in the project.

iv) Collaborative Activities

One of the most important aspects of FNPU activities as far as co-ordination is concerned is collaboration in the food and nutrition fields with various agencies within the country and outside it. This has been achieved largely through the meetings of the ICC where programmes and activities of the collaborating agencies are reported and the mode of collaboration between the FNPU and such agencies have been discussed and agreed upon. These include:

- a. Collaboration with the CBS in the analysis and processing of data from past and current surveys, included in the NASSEP surveys programme. The FNPU's inputs in these programmes have been in the form of data analysis using the ARIEL software package provided to FNPU by FAO.
- b. Collaboration between the African Studies Centre of Leiden, Netherlands, under a Special Memorandum of Understanding signed between ASC and the Ministry of Planning and National Development, under which the FNPU and ASC would carry out various studies on food and nutrition in selected areas of the country. Apart from several desk studies, this collaboration has completed a full food and nutrition survey in Kano West rice growing areas, a report of which is to be tabled in this seminar. Currently, work is going on in the Kwale/Kilifi area in support of the Kwale/Kilifi Area Development Project, funded by IFAO.

- c. The third collaborative activity has involved the exchange of information, through the publication of a newsletter, and exchange visits between officials of the food and nutrition institutions in Kenya, Zambia, Tanzania, Zimbabwe and Ethiopia. This programme is supported by the Swedish International Development Agency. Since its establishment in 1982, the Ethiopian Nutrition Institute has been the co-ordinator, and following the consultative meeting in Harare early this year, it was decided that the FNPU will act as co-ordinator for the next two years. FNPU has made contributions in the form of articles carried in the newsletter as well as organizing study visits within Kenya for officials of collaborating institutions in these countries to come and see food and nutrition activities here.
- d. Internally, within the Ministry, FNPU has given advice and support to the FAO/SIDA-supported Community Action for Disadvantaged Rural Women in Arid and Semi-Arid Lands of Kenya (CADRW) - GCP/KEN/047/SWE, which is being run by the Rural Planning Department. Most of the activities in the project pertaining to food and nutrition have been designed with the advice and approval of the ICC of the FNPU. In collaboration between the Ministries of Agriculture, Health and the RSCTU of the Ministry of Planning and National Development, the FNPU has helped in the preparation and finalization of a manual of Materials on Food and Nutrition for Field Workers. Early this year, the FNPU conducted an in-service course for personnel within government departments on data processing, using the ARIEL computer software package with the help of an FAO consultant. The result of this in-service course is already having far-reaching consequences in processing and analysis of data at the Government Computer Centre and the CBS.
- e. Finally, the FNPU has organised two important workshops in which middle level personnel from government departments selected non-governmental organizations and the University of Nairobi have been sensitized and exposed to the need for incorporating nutrition considerations into their activities.

Discussions: Otieno's paper

Maletalema: The structure of FNPU implies that projects have to go through many channels before it reaches the very top. The Interministerial co-ordinating committee also appears too large. How effective is it?

Kidane: What models are used to handle nutrition?

Otieno: FNPU is not set by an act of parliament. It deals with people who tackle problems on day to day. There is access to Permanent Secretary (PS) and so on. It continues operating with other agencies without setting huge budgets for FNPU. District plans - when started were up-down not the other way round. There were no people on the ground to generate necessary information for planning. We are in 3rd round of district planning. The presidential working party recommended allocation of funds by districts (e.g. old plans rural access roads without specifying region or district). Funding for what people have pointed out as a priority

Currently food is a major issue in Africa. Growth oriented economists take a wrong stand (cultural, environmental problems etc. not easily changed). In considering growth interrelations we also need equity orientation.

Modelling: Extraction of how nutrition gets in and its implications for planning. Food is treated as a basic need.

Implied model - the economic macromodel of Kenya (World Bank) exists for evaluating the impacts of various policies and programmes. Some of the issues are not explicit.

DISCUSSION GROUPS / TOPICS

Group I: Institutional Framework and Training Needs for Introducing Nutritional Considerations into Agri- cultural and Rural Development

1. Mr. Yemane Kidane
2. Mr. John Chikumbu
3. Mr. Mohamed Ali
4. Dr. N.T.A. Bangu
5. Mr. J.O. Otieno
6. Ms. Priscilla N. Naiterra
7. Dr. Hakan Sandbladh
8. Dr. George Ruigu

Group II: Food and Nutrition Planning

1. Ahamed Said Omar
2. Mr. C. Chikamba
3. Dr. Vincent Mrisho
4. Mr. L. Wasonga
5. Mr. Paul Muthui
6. Dr. Patrick Alila
7. Dr. Rachel Musyoki
8. Mr. Gilbert Omondi
9. Dr. Kwame Kwofie

Group III: Institutional Framework and Training Needs for Introducing Nutritional Considerations into Agri- cultural and Rural Development

1. Mr. Innocent Makwiramiti
2. Ms. Zeinab Mohamed Ali
3. Dr. John Kakitahi
4. Dr. Silvest Ochetim
5. Dr. T.N. Maletnlema
6. Mr. Festus Omoro
7. Prof. N.O. Bwibo
9. Dr. Kabiru Kinyanjui
10. Dr. Jan Hoorweg

Group IV: Food and Nutrition Planning

1. Mr. Abebe Teferi
2. Dr. Abdulgani A. Suleiman
3. Dr. Patrick Muzaale
4. Ms. Aziza Babikir
5. Mr. A Wagara
6. Mr. Sam Bundotich
7. Mrs. Julia Mulaha
8. Mr Nick Mwangi
9. Dr. A. Besrat
10. Mr. Ted Kliest

SUGGESTED TOPICS FOR GROUP DISCUSSIONS

Groups 1 & 3

1. Food and nutrition situation in the region:
 - Status of food production and availability
 - Adequacy, in terms of nutrients, by FAO/WHO standards
 - Role of food aid.

2. Strategies for agricultural and rural development:
 - Do these give adequate attention to food and nutrition?

3. The role of planning.

Groups 2 & 4

1. Identification of target groups:
 - Who is at risk?
 - What is poverty?

2. Institutional framework for co-ordinating food and nutrition activities:
 - Does this require a special unit?
 - Where should it be placed in the government structure?

3. Training needs for:
 - Nutritionists
 - Public health staff
 - Extension staff
 - Planners
 - Curriculum development and research goals.

Both groups

4. The Baringo experience:
 - What can we learn from the Baringo Project in relation to the FAO methodology?

5. Data requirements for planning and monitoring food security and nutrition status.

6. Recommendations and follow-up action.

GROUP DISCUSSIONS

GROUPS 1 and 3 - DISCUSSION AND RECOMMENDATIONS

Topic 1

Food and nutrition status in the region: production and availability; nutritional adequacy; food aid.

a) Production and availability

Most countries in the region are not self-sufficient in food, and distribution problems are experienced by all countries. There is also a lack of purchasing power among the lower income groups. In importing food, nutritional aspects are usually not considered. A number of causes may be identified for the general decline in food production, namely - population growth, corruption, lack of government commitment, misused food aid, underutilization of land, emphasis on cash-cropping, inappropriate education, and so on. Despite these problems, there appears to be no data on the following issues:

- i) How much food each country could, and actually does, produce;
- ii) how much is required to meet national needs;
- iii) the types and amount of imported foods;
- iv) the extent of suffering caused by poor distribution, and by lack of purchasing power.

RECOMMENDED

Further data must be collected, at both national and regional levels.

b) Nutritional adequacy

Owing to lack of data this is a difficult issue to address. Most arguments are based only on estimated figures, although some countries are attempting to collect better data in this field.

RECOMMENDED

Only information not already available should be collected.

An institutional framework must be set up to co-ordinate this data collection.

Each country should try to set up its own nutrition standards, although

FAO/WHO guidelines could be used in their absence.

c) Food aid

This comes in many forms, but emergency food aid can often be prolonged excessively. This can affect national food production in that a ready supply of cheap food is a disincentive to work. On a governmental level, even state policies may be affected by the availability of food aid, despite the fact that such aid is often unreliable.

RECOMMENDED

Supplementary food should be stopped as soon as possible and alternatives sought.

Donor agencies should take a role in advocating suitable government policies, for example promotion of traditional grain production.

Topic 2

Agricultural and rural development strategies: Attention given to nutrition

There are few countries in the region with defined strategies, and where they do exist nutrition is given little attention. Small-scale producers are not given the consideration they merit as important food-producers; rather industrialization is emphasized.

RECOMMENDED

Small-scale farmers should be given greater consideration.

Strategies should be developed, based on improved food production data, for increased production of crops suited to particular agricultural zones.

Topic 3

The role of planning

One of the most important aspects of planning for better nutrition is co-ordination of the activities of the various agencies, including NGOs, in the field. It is also important that assistance be given to planners in setting nutrition priorities and in budgeting for them.

RECOMMENDED

Consideration in planning should be given to promoting food production in rural areas.

There should be a co-ordinating body embracing all the relevant agencies. There should be a bottom-up approach to planning, taking note of the participation of those at grass-roots level.

Planners should be more closely associated with implementors; planning and implementation form a continuous spectrum of activity.

Topic 4

What can we learn from the Baringo experience?

This has succeeded mainly because it was a government idea. The FAO methodology was modified in line with the situation on the ground - FAO actually could learn something from BPSAAP

Topic 5

Data requirements for planning and monitoring food security and nutrition status

RECOMMENDATION

Only data useful to project or programme implementors should be collected.

Topic 6

Recommendations and follow-up action

RECOMMENDED

Since this type of forum is very important, such visits should be rotated. Some countries are overused as venues.

Host countries should have observers present, for example working nutritionists, and so on.

At such forums, project beneficiaries should meet with participants to give their own views on the projects which affect them so much.

GROUP 2 - DISCUSSION AND RECOMMENDATIONS

The group dealt with Topics 2 and 6 from those suggested for discussion.

Topic 2

An institutional framework for co-ordinating food and nutrition activities.

The group agreed that food and nutrition planning should be looked on as a continuous process, rather than a one-time activity. It made the following recommendations with this in mind:

RECOMMENDED

A specific institution (or Unit) should be established and be fully responsible for matters pertaining to food and nutrition in national development strategies and programmes.

RECOMMENDED

What the Food and Nutrition Body should be responsible for, and how these responsibilities could be carried out, are as follows:

a) Advocacy

The Body should define and publicize the importance of nutrition in national development, and impress on decision makers the necessity of including it in development plans. Seminars, workshops, newsletters, annual reports and the mass media should all be utilized for this purpose.

b) Data collection, collation and selection

The Nutrition Body should establish a general conceptual framework for the selection, analysis and utilization of data from a variety of relevant sources or sectors. The Body should also consider when and how it might collect its own data if necessary.

c) Monitoring

The nutritional aspects of the national development plans should be monitored to ascertain what is actually happening in this regard. Early warning systems for food supply and any ongoing evaluation

exercises will be of value here. Monitoring will need to be undertaken in close association with project planners to assist them in incorporating simple nutrition indicators in their work. The Body should also give continuing assistance in analyzing nutrition-related data from development programmes and make periodic assessments of specific nutrition interventions.

d) Technical integration

Institutions directly or indirectly concerned with food and nutrition should be represented on the Nutrition Body. Integration should be further strengthened by the formation of sectoral working groups, task forces or committees.

e) Dissemination of information

The Nutrition Body should take responsibility for providing information to policy and decision makers and devise methods of following up the utilization of this information. Seminars, workshops, and periodic papers in a style of presentation relevant to policy and decision makers should be undertaken.

f) Policy analysis

The Food and Nutrition Body should undertake consideration of the consequences and impacts of relevant sector policies, and propose necessary modifications. For this purpose operational integration with relevant sector organizations or ministries would be necessary.

g) Staff training

The Nutrition Body would require the building up of a staff with the skills and capacity to handle the above responsibilities.

h) Advice and advocacy in training

An important aspect of the work of any Nutrition Body would be to strongly advocate the inclusion of nutrition in the training of rural extension staff, and to provide advice on such training.

RECOMMENDED

In order for the Food and Nutrition Planning Body/Unit to undertake the above functions effectively, it should be located within a central ministry responsible for overall national development, where planning guidelines and priorities are established.

Topic 6

Recommendations and follow-up action

RECOMMENDED

A group of multidisciplinary experts from the region should prepare a manual of basic food and nutrition concepts relevant to the region. This could be done by grouping existing Food and Nutrition Units to undertake the work.

RECOMMENDED

Those Food and Nutrition Planning Institutions which are currently set up outside central planning ministries should take steps to strengthen their mandate, to set realistic goals for their activities, and to send delegates to, or collaborate with, other government institutions engaged in activities related to food and nutrition planning.

GROUP 4 - DISCUSSION AND RECOMMENDATION

Group 4 chose the topic Nutrition Planning and discussed this from various angles.

1. Cash crops vs Food crops

In the past governments have taken measures to ensure the quality and quantity of cash crops, ignoring food crops.

RECOMMENDED

A balance in the emphasis on food and cash crops must be promoted by:

- a) Increasing food production by means of improved seeds and animals; introduction of irrigation schemes; mixed farming, to include livestock; horticultural cropping in irrigation schemes.
- b) Ensuring appropriate marketing, pricing and distribution policies, especially in favour of the vulnerable groups.

2. Promotion of traditional crops

Such crops, adapted as they are to local conditions, and well-understood by local farmers, have a major role to play in improving nutrition. Since local storage methods have already been developed for such crops they can be used to provide household-level food security, and since they are generally controlled by women, their misappropriation at this level is less likely.

RECOMMENDED

Research should be undertaken into traditional food crops, with the emphasis on rural agricultural projects, processing and storage.

3. The causes and magnitude of malnutrition

It is clear that malnutrition is a multidimensional problem, arising from factors as diverse as food supply and production, the environment, and family and access systems. Such factors vary in nature and degree from country to country.

RECOMMENDED

- a) Detailed identification of the actual problem is needed, and resources prepared to deal with it.
- b) Concepts must be developed which will facilitate an estimation of the problem's magnitude.
- c) National planners and project planners should establish the relationships between systems which affect nutrition, within their own environments.
- d) Categories of malnutrition, and the types of intervention required, need to be established.
- e) Solutions to problems of malnutrition should be sought at all levels - national, district, community, and so on.

4. Monitoring rural development projects, and data collection

RECOMMENDED

- a) Baseline data must be obtained before the implementation of any development project.
- b) The impact of the project must be monitored on a continuous basis with respect to: income levels, access to basic facilities, calorie and protein intake, food production and family food distribution, employment, child morbidity, nutritional status of project beneficiaries.
- c) Only the most necessary data on risk groups should be collected.

5. Food aid

The majority of the countries represented at the seminar have at one time or another been the recipients of food aid, and although this has saved lives, it also has long-term implications which have not yet been adequately assessed. These include changed consumption habits affecting the use of traditional food crops, a dampening of initiative to produce food, and a possible weakening of governmental resolve to implement viable food policies.

RECOMMENDED

- a) Systematic country studies should be undertaken to assess the impacts of food aid on the entire food supply system of the recipient countries.
- b) Governments should establish early warning systems and back-up food supplies, to minimize disruption to traditional patterns of life.

- c) Food aid should be given free only in desperate cases, and on a food-for-work basis as soon as possible.

6. Food security

RECOMMENDED

- a) National strategic reserves should be able to cover food needs until the next expected harvest.
- b) Food reserves should be decentralized down to community, and even farm, level.
- c) Traditional methods of storage should be improved on, rather than abandoned.
- d) Policies should be devised to stabilize food prices, bearing in mind the incentives needed by farmers and the capability to pay of the consumers.
- e) Household food security should be monitored on a continuous basis.

7. Training needs

RECOMMENDED

- a) Each country should draw up its own training needs priorities, based on the needs themselves and the available resources.
- b) A regional programme, combining the resources of a number of countries, should be established to provide training in nutrition.
- c) Training programmes should be devised for extension staff and enumerators, on the concepts of nutrition.
- d) Nutrition education should be integrated into the entire education system.

OVERALL RECOMMENDATIONS

1. Food and cash crops

There is a need for balance in emphasis on both food and cash crops in the direction of:

- a) Promoting more food production by:
 - i) introducing improved seeds and better livestock breeds;
 - ii) establishing irrigation schemes;
 - iii) mixed farming;
 - iv) horticultural crops.
- b) Ensuring appropriate processing, marketing, distribution and pricing policies, with particular attention to vulnerable groups.

2. Traditional food crops

There should be more research designed to improve the traditional food crops such as sorghum, millet, cassava, and so on. In addition, promotion of these crops should be undertaken by providing better incentives and production support services.

3. Information base

A better information base should be established in order to assist in the identification of the extent and causes of malnutrition, and in designing strategies for its alleviation.

4. Monitoring and evaluation

Food and nutrition institutions should establish data compilation, analysis and interpretation capabilities:

- a) to define food and nutrition problems more precisely;
- b) to assess food security problems (down to the level of individual households);
- c) to facilitate the food and nutrition planning process, and the design of improved strategies for intervention.

5. Food aid

Systematic country studies on the impacts of food aid should be undertaken. Efforts should be made to avoid the disincentives associated with food aid, and to avoid undesirable changes in food preferences.

6. Food security

- a) Each country should set up a national strategic reserve to cover the food deficit from one year to the next.
- b) The strategic reserves should be decentralized to the community level.
- c) Individual households at farm level should be encouraged to store food. One-farm storage should, therefore, be improved, and better methods should be designed for the control of storage pests.
- d) Food pricing policies should take into account the poorer members of society.

7. Training and research

- a) Each country should evaluate its training needs on the basis of its national requirements and available resources.
- b) Regional training programmes should be established, to ensure more effective use of training resources.
- c) Nutrition education should embrace both the formal and non-formal education systems.
- d) Curricula in agriculture and related fields at university and other higher institutions should be broad-based and include nutritional considerations.
- e) Research at universities and other institutions should place greater emphasis on relevance to national agricultural problems and rural farming systems.

8. The Baringo experience

- a) The methodology of the Baringo experience should be adapted to suit the specific needs of different countries.
- b) Other methods for integrating nutrition concerns into rural and agricultural development projects should be developed to increase alternatives for planners, and these alternatives should address the problems of groups which are disadvantaged or at risk.

9. Food and nutrition planning institutions

- a) A Food and Nutrition Planning Unit should be set up in each country where none exists at present.
- b) Such a body should fall under the ministry which is responsible for national planning.
- c) The institution should:
 - (i) Play an advocacy role in food and nutrition planning;
 - (ii) establish a capability for generating data and information on nutrition, and a framework for analyzing information on nutrition in other sectors;
 - iii) have a multi-disciplinary staff;
 - iv) organize seminars and workshops for policy-makers, technical staff, and others involved in food and nutrition;
 - v) disseminate information on food and nutrition through newsletters, reports, and so on;
 - iv) establish monitoring and early warning systems for food availability;
 - vii) prepare information for planners and policy-makers on how to incorporate nutrition into development programmes.

10. Food and nutrition strategies

Each country should establish food and nutrition strategies. Nutrition should be given adequate attention. Efforts need to be made to improve agricultural production, to reduce wastage, avoid famine, and to feed the nation.

11. Follow-up

- a) Country and inter-country seminars and workshops should be organized to facilitate the exchange of ideas and experiences.
- b) Associations of professionals involved in food and nutrition issues should be established, and these associations should be used to foster regional co-operation.

Participants depart

Sunday Monday Tuesday Wednesday Thursday Friday Saturday

7.00 a.m.

9.00 a.m.

11.00 a.m.

2.00 p.m.

4.00 p.m.

8.00 p.m.

Arrival of participants - departure for Baringo
 Visit to Baringo District - departure for Eldoret

<u>Introduction:</u> J Oieno K Kinyanjui A Besrat	<u>Kenya:</u> J Otieno L M Masonga Tanzania: Dr V M'isho A Magara	<u>F.A.O.:</u> Dr A Besrat Dr K Kwofie	<u>Tanzania:</u> Dr T Maletnema Tanzania: Dr T Bangu
<u>Official Opening</u> Hon P Odupoy	<u>Kenya:</u> Dr M Mwangi Dr G Mwaibu	<u>Kenya/FAO:</u> Dr K Kwofie Dr A Besrat Dr J Hoorweg	Group discussions
<u>Ethiopia:</u> Yenane Kidane Dr D G Miciael	<u>Uganda:</u> Dr J Kakitahi	<u>Discussions on the Baringo experience</u>	<u>Discussions recommendations and policy issues</u>
<u>Sudan:</u> Mohamed A Ali Ms A Babikir	<u>Zimbabwe:</u> Ms J Tagwireyi	<u>Discussions on the Baringo experience</u>	
<u>Uganda:</u> Prof. diban-gambah Dr P Muzaale	<u>Somalia:</u> Osman Omar Ms Zetnao Ali	<u>Kenya:</u> Dr G Ruigu Dr N Ng'ethe	<u>Recommendations and policy issues</u>
	<u>Zambia:</u> A Mwaibu	<u>Zambia:</u> S Ochet im	<u>Official closing</u>
Free	Group discussions	Free	

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