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SECOND OVERALL EVALUATION
OF THE
SPECIAL RURAL DEVELOPMENT PROGRAMME

1975

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PREFACE

The days when economic development was viewed simply as a process of establishing industries are gone. Agricultural and rural development are now universally recognised as fundamental requirements of the economic growth process without which the development of other sectors, and of the economy as a whole, are unlikely to be successful.

Despite considerable progress in the urban industrial sectors, Kenya is still an overwhelmingly rural country. The jobs and incomes of the vast majority of Kenya's population are rural and, even though urban populations are growing at a rapid rate, the current low proportion of the total population that is urban and the current high rate of growth of the total population ensure that the absolute numbers of rural people will be expanding inexorably for the foreseeable future. It is unthinkable that this vast rural population should not significantly contribute to the economic growth of the country, or that the benefits of growth should pass them by.

Just as the problems of employment and migration or the problems of welfare and income distribution cannot be solved without significant and sustained progress in the rural areas, neither can the problems of preserving a balance of international payments or, indeed, of sustaining industrial growth. The country's exports and foreign exchange earnings overwhelmingly emanate from the agricultural sector, and Kenya's industries have substantial supply linkages with the agricultural sector. The strengthening of these linkages is a particularly vital aspect of the country's development.

In dealing with what is perhaps the most severe long-term economic problem of all, that of burgeoning population growth, there is now considerable consensus on the evidence that it is particularly hard to reduce birth rates, despite growing pressure on limited resources, without widespread participation in the processes of economic and social development and widely perceived improvements in standards of living. Again, it is crucial that these changes reach the vast mass of rural people.

The paradox is that despite broad recognition of the supreme importance of rural and agricultural development and numerous policy statements according it the highest priority, country after country is facing severe problems with the agricultural and rural sectors. It is

not just Kenya that has difficulty accelerating and maintaining the pace of rural development. Seemingly intractable problems in this area virtually characterise the developing countries of the third world. Formulating and implementing development projects and programmes in the rural sector appear to be uniquely difficult. Ministries of agriculture seem to be chronically incapable of spending the money allocated to them by economic planners and by ministries of finance. There are constant problems with creating and sustaining an administrative structure that is functional at the grass roots level and that relates specific programmes and investments to locally diagnosed development capacity. Severe distributional problems arise such that government efforts are open to the criticism that they not only fail to reach those who need them most, but that the consequences of these efforts are frequently to worsen inequities by subsidising the better off at the expense of the poor. All these problems are easy to recognise, but their recognition does not imply a ready solution. Solutions on paper and in the abstract, furthermore, lack credibility until they have been carried to the point of trial and implementation on the ground.

The fundamental logic of the Special Rural Development Programme (SRDP) is precisely in this area of trying out and testing strategies and programmes that might become the basis for a well conceived development thrust in the rural areas. The logic was not primarily one of pushing the development of the areas that were chosen, it was rather one of experimenting in those areas, so that the entire national effort could proceed on a better footing, with better conceived procedures, strategies and programmes.

To the extent that SRDP is experimental, the most important output of the entire programme is the knowledge gained from it. It is in this context that the current evaluation should be seen. There are numerous ways in which useful knowledge can be gained from such a programme and become incorporated into the institutional memory and the procedures of a government. There is often a process of accumulating project and programme experience within particular agencies, for instance, and individuals can certainly gain expertise from their participation in them. In view of the very broad and rather rushed nature of the current evaluation, we would certainly hope that all the lessons of the SRDP are not contained within these pages. We would, however, assert the importance of the task we have undertaken. An experiment, to repeat, is only as valuable as the knowledge gained from it, but in this most difficult area of development,

an area where enormous investments are anticipated and planned over the next few years, knowledge on the basis of experience and experiment is an extremely valuable commodity.

It is most appropriate that the Institute for Development Studies undertake an evaluation of SRDP. While some of the Institute's activities are strictly academic in nature, its principal mandate as an indigenous social science research organisation is applied and policy oriented research. One of the Institute's foremost research areas over many years, furthermore, has been that of rural development. Because of an acute awareness of the critical role that rural development will play in any solution to the country's overall development problems, and an equal awareness of the limitations of abstract theorising on the topic, the Institute was integrally involved in the initial conception of SRDP. It is these kinds of considerations that once again provide the motivation for the current evaluation.

The Institute is most interested in research and evaluation work when it sheds light on an area that we regard as having major significance for the country's development, but such work is particularly fruitful when it relates in a concrete fashion to specific programmes and policy options of Government. In the case of this evaluation, the request came from Government, there has been close cooperation with Government at every phase of the study, and the seriousness with which Government is treating it is already evidenced in the way in which advanced sections are being used in decision-making with regard to a number of ongoing and pending activities.

The Kenya Government is now initiating a whole new approach to development planning, particularly in the rural areas, that will start at the district level. The rationale is that district plans will be based on local diagnosis and related to local development capacity.

The initiative, in considerable part, grows out of the SRDP experience, and certainly this experience can be fruitfully drawn upon in formulating the procedures and the project components of district plans. The building up of development plans in a decentralised way from the districts is going to involve a great deal of fresh thinking and experimentation if it is to be successful. It is hoped that some of the material in this Report will contribute to this thinking.

This document is the work of a large number of people and is undoubtedly lacking in uniformity of style or evenness of coverage. For each of the authors, the evaluation has been an undertaking in addition to his or her usual work. The result is undoubtedly variable. Some aspects of this study are based on detailed and careful investigation and thought, others will be found to be preliminary impressions. The document is addressed to the Ministry of Finance and Planning in Kenya, and also to those within the operating ministries who have responsibilities for the types of projects that are being evaluated. It is our intention that the evaluation be used to make decisions not merely about the existing SRDP projects, but also about the complete range of projects and development efforts that are related to them.

The way in which this study was conducted was that each member of the evaluation team undertook to work on particular sectoral areas (e.g. crop development, roads, training programmes) in late 1974 and early 1975. Field work was then conducted with teams going out for short periods to the various SRDP areas and complementary discussions held with the relevant Government personnel in Nairobi. Over the next months the analysis and initial write-up of the various sections took place. This resulted in a series of SRDP working papers which were given wide distribution within Government, the University and other agencies. These papers then became the basis for a series of seminars where attempts were made in particular to elicit the views of those with planning and programme responsibilities in the area being discussed. There has been no effort to maintain confidentiality - rather the reverse. It is hoped that the open fashion in which discussions and debates have proceeded have both improved the substantive content of the Report and have increased awareness and understanding of the issues involved. They have also contributed to the intra-Government consideration of these issues prior to the completion of the final Report.

There have been a number of unforeseen delays in finalising the whole Report. Perhaps these delays are inevitable given the large number of people involved. It is hoped that early access by Government to each section as it has been completed has mitigated any problems caused by these delays. The authors of the Report have worked long and hard, and have, in turn, enormously appreciated the research environment provided

by Government for the evaluation. We on our side have learned a great deal from the experience and we hope that this Report will make a contribution to understanding and to accelerating rural development in the country.



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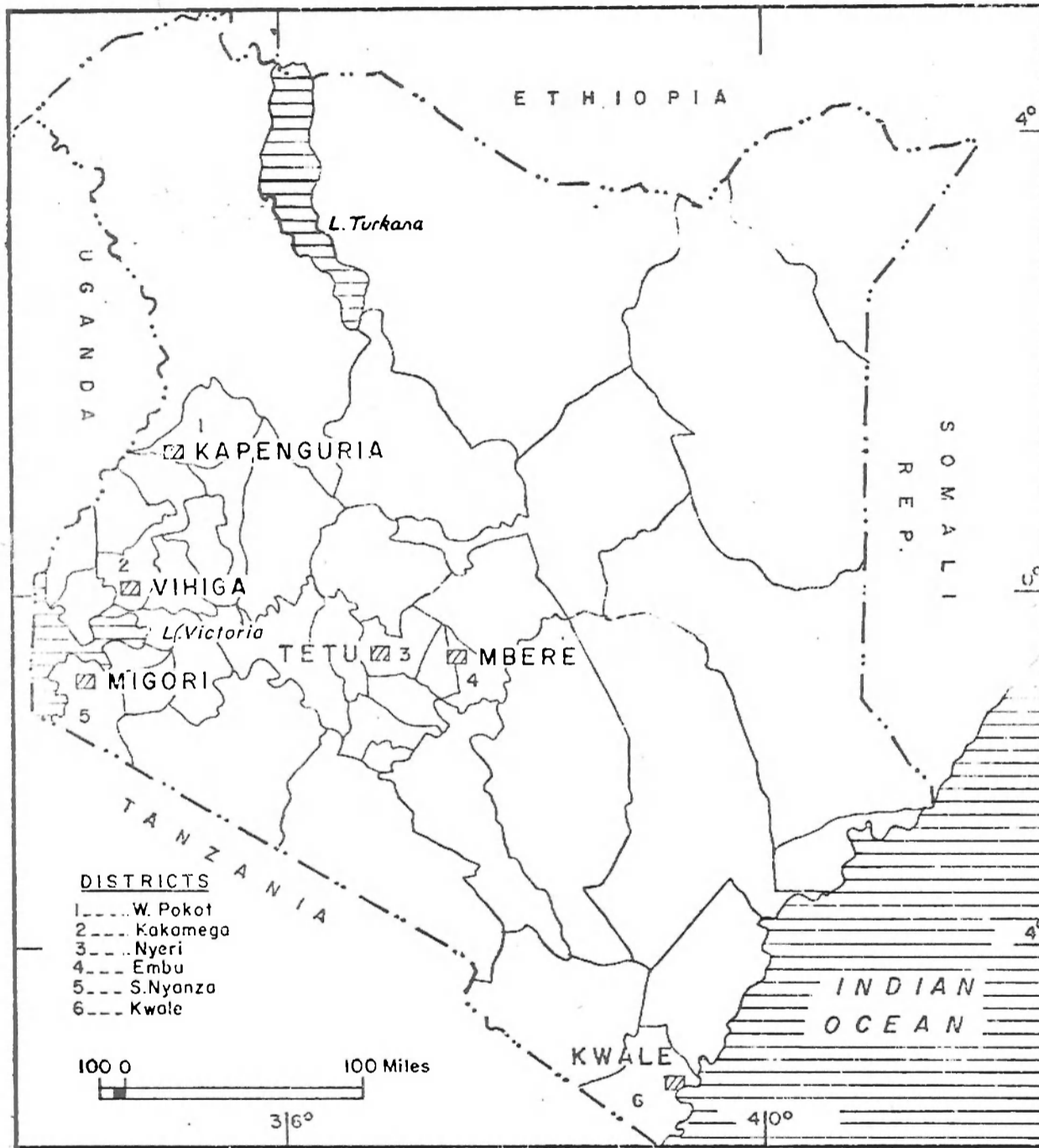
ACKNOWLEDGEMENTS

The hard work and cooperative spirit of a large number of people have gone into the preparation of this Report, and we would like to express our very great appreciation to all of them. In the first place, the information contained in these pages could never have been gathered without the invaluable assistance of the SRDP Area Coordinators and other Government staff in Nairobi and in the field who made themselves accessible to the Evaluation Team and gave freely of their time. The dedication of these officers is mentioned in several places in this Report.

Secondly, we are very grateful for the cooperative spirit shown by the University of Nairobi's Departments of Government, Economics, Agricultural Economics and Geography for allowing members of their staff to participate in the preparation of this Report. It would not have been possible to discuss the number of topics contained here without the participation of these University staff members.

Finally, we wish to acknowledge the tremendous contribution made by members of the Institute for Development Studies. In addition to the authors of individual chapters whose names appear in the List of Contributors at the end, the efforts of many others were indispensable: Dr. George Alibaruho and later Prof. Martin David who coordinated the project, Mrs. Sidney B. Westley who edited the Report, the Institute's typists who typed the preliminary and final drafts, the staff of the I.D.S. machine room who duplicated and collated the Report and all the other supporting personnel who made this effort possible.

Peter N. Hopcraft
Acting Director



THE GEOGRAPHICAL LOCATION OF THE SRDP AREAS IN KENYA

CHAPTER ONEINTRODUCTION

From the very beginning of SRDP, the Institute for Development Studies at the University of Nairobi has worked in conjunction with various operating ministries and parastatal agencies in a consultancy and research capacity to help this Programme realise its mission. I.D.S. has, therefore, not only undertaken its own independent research within the SRDP areas, but has also undertaken specifically requested research to enable the Government to evaluate alternative policy measures in the area of rural development. The first overall SRDP evaluation was undertaken by I.D.S. in 1972, two years after the Programme was officially launched. That Report contains a well presented summary of the history of SRDP and its objectives and principles, so that this material need not be repeated here.¹ SRDP was designed to evolve an effective strategy for bringing about rural development in Kenya. In pursuit of this goal, six areas were chosen to represent different yet typical human and environmental characteristics of Kenya. These are South Kwale in Kwale District at the Coast, North Tetu in Nyeri District, Mbere in Embu District, Vihiga in Kakamega District, Kapenguria in West Pokot District and Migori/Kihancha in South Nyanza. A series of pilot projects was selected to comprise an integrated experimental programme which would be subjected to research and evaluation to ascertain its replicability in other parts of the country. The overall objective was to raise the productivity, the incomes and the level of welfare of the rural population. A list of the projects ascribed to the Programme in the six SRDP areas is contained in **an appendix to the final chapter** of this Report.

At the level of Government policy, the results of SRDP experimentation were expected to guide the Ministry of Finance and Planning in formulating district development plans, a major aspect of efforts to decentralise development administration. It is partly in this pursuit and partly because it was originally planned that SRDP would expire at the end of financial year 1975/76, that the Ministry of Finance and Planning requested I.D.S. to carry out a second overall evaluation. The evaluation was carried out along terms of reference mutually agreed upon by I.D.S. and the Ministry of Finance and Planning.

TERMS OF REFERENCE

1. To establish:

1. See An Overall Evaluation of the SRDP, Occasional Paper No. 8, Institute for Development Studies, University of Nairobi, 1972.

- a. What proportion of funds already spent has been on normal day-to-day administration and what proportion on project and programme development;
 - b. What proportion of funds already spent has been allocated to normal (ordinary) on-going projects and programmes;
 - c. What proportion of funds already spent has been allocated to 'special' projects and programmes and what is 'special'; and
 - d. The proportion of funds in stock **currently committed** for future expenditure on SRDP.
2. To examine and establish as far as possible the rationale for the pattern of expenditure described in (1) in the light of SRDP principles and objectives and those recommendations of the 1972 I.D.S. Evaluation which were officially adopted.
 3. To make a brief project and programme appraisal with respect to quantifiable or non-quantifiable:
 - a. Direct or production costs;
 - b. Feed back or consequential costs; and
 - c. Differential benefits (direct and feedback), emphasising personal, sectoral and geographical distribution and testing for inter-area **transferability** of possible net gains.
 4. To assess the usefulness of SRDP in intensifying rural development from the points of view of:
 - a. Experience gained from SRDP experimentation on several problems related to the initial principles and objectives;
 - b. The mobilisation and utilisation of local resources; and
 - c. The feasibility of replicating the experience gained (if any) in the countrywide district planning exercise.
 5. To make as specific as possible a set of recommendations for the progressive integration of SRDP projects and programmes with the normal sector programmes of the operating ministries and with the district plans.

ORGANISATION OF THE EVALUATION

On the basis of the terms of reference, a number of tasks were identified, and nineteen people were invited to participate in the evaluation from the I.D.S. staff and the staff of some of the teaching departments of

the University. Because of the nature of the tasks, the team included economists, agricultural economists, sociologists, social anthropologists, educationists, public administration specialists and geographers. Most had previous familiarity with the SRDP. At several evaluation review sessions, details of the nature of the tasks were worked out and a strategy was drawn up. The structure of the evaluation can be seen from the table of contents of this Report. The evaluation proceeded along functional lines according to the performance of community activities that appear to be included in the process of social and economic development.

STRATEGY

Within the given time limitation, each researcher could not have visited each of the six SRDP areas. Therefore, it was decided that each would visit at least three of the areas to collect the field data needed to supplement information obtained from the central Government ministries, non-governmental agencies and the material on SRDP available at I.D.S. Two groups were formed. Each group included a member to represent the disciplines needed to evaluate each functional aspect upon which the SRDP impinged. One group visited Migori, Kapenguria and Vihiga which were nearer to each other than any other combination of three SRDP areas. The other group visited Kwale, Tetu and Mbere. The field work commenced in the last week of November 1974.

At the request of the Ministry of Finance and Planning, certain areas of the Programme were to be investigated in greater depth than others.

These were:

- functional literacy;
- livestock development and marketing, plus group ranching in Kapenguria;
- crop development, especially tobacco nurseries and the crop production credit scheme in Migori;
- small-scale credit programme, family planning and labour-intensive roads programmes in Vihiga;
- farmer training in Tetu;
- crop development and group ranching in Mbere; and
- tree crops nurseries in Kwale.

SRDP SEMINARS

The final Report is very much a result of teamwork among the evaluators and cooperation between I.D.S. and the various government and donor agencies

associated with SRDP. One form in which the cooperation has been formally effected is the SRDP seminars.

On January 6, 1975, the Ministry of Finance and Planning organised an SRDP review seminar at the Kenya Institute of Administration. I.D.S. was invited to attend, and this provided a chance for the evaluators to exchange ideas with personnel charged with the field implementation of SRDP. Furthermore, a number of seminars were held at I.D.S. to discuss draft versions of the papers that comprise this Report. Personnel from the operating ministries were invited to these seminars, and the draft papers were subjected to rigorous evaluation. Very often these discussions led to further research and substantive revisions. All this is considered to have enhanced the Report, both from the point of view of content and from the point of view of disseminating findings and recommendations to those responsible for the relevant policies and programmes.

ORGANISATION OF THE REPORT

The remaining chapters in this Report are divided into four sections, the first dealing with approaches to increased production, the second with development of productive infrastructure, the third with social development and the last with the framework for development. Chapters Two through Eight in Part I are concerned with the development of crop production in the SRDP areas and with two topics of particular importance in the field of agricultural development. These are rural credit, which is discussed using the example of the Smallholders' Maize Credit Scheme in Vihiga, and agricultural extension and farmer training, which are discussed in a separate chapter. Two chapters follow on livestock development and group and cooperative ranching. Finally, Part I ends with a discussion of rural industrialisation, concentrating mainly on the Rural Industrial Development Programme which covers some of the SRDP areas, and a short appendix on the use of pesticides.

In the second part of the Report, the rural road construction activities which have taken place as a part of SRDP are discussed with emphasis on the development of successful labour-intensive construction methods and the system of grants-in-aid by which the Ministry of Works has financed the construction. This is followed by a short chapter on water development which we hope will stimulate further research on this very important topic. The section ends with a discussion of the process of land adjudication which is going on now in the SRDP areas.

Part III begins with a chapter on the Women's Programme which includes an overall assessment of the contributions and weaknesses of the Programme, and general recommendations and specific suggestions for each SRDP area. Next follows a discussion of the Functional Literacy Programme which includes sections on teaching methods, course content and administration as well as a number of suggestions for improving the Programme. Then there is a discussion of the intensive family planning programme in Vihiga/Hamisi and its implications for the potential success of family planning efforts elsewhere in the country. Finally, there is a chapter on rural cooperatives which represents only a preliminary investigation that we would like to see followed up with substantive research.

The last section includes an analysis of SRDP administration with special emphasis on the experimental aspects, Programming and Implementation Management (PIM) and the Project Committees, the Field Staff Management System (F.S.M.S.), SRDP as a grants-in-aid mechanism and the Linkman system. The implications of past experience for future SRDP administration and for district development planning are also pointed out. Finally, in a short overview chapter, some of the most significant of the findings discussed in this Report are brought together.

The Report ends with a list of contributors.

Considerable attention has been given to the distribution of this Report, particularly since it was discovered that the 1972 Evaluation had not been widely circulated in the field. Since the conclusions and recommendations for each topic covered are included at the end of each chapter, we feel that the chapters can be read separately and individual chapters will appeal to different audiences who may not be as **concerned with the other parts of the Report**. Therefore we have decided that in addition to distributing copies of the full Report, we shall make available copies of individual chapters **which** we hope will be widely circulated among Government officers and others with relevant interests in the field. In this way we hope to disseminate these research findings as widely as possible.

PART I: APPROACHES TO INCREASED PRODUCTION

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CHAPTER TWO

CROP DEVELOPMENT IN THE MIGORI/KIHANCHA SRDP

INTRODUCTION

The three divisions within the Migori/Kihancha SRDP area - Migori, Kihancha and Macalder - present different conditions for crop development. Migori has good soils, adequate rainfall and an agriculturalist population, but crop development in the area was relatively neglected compared with other high potential areas in Kenya before the advent of SRDP. Kihancha has similar natural conditions, but the population (predominantly Kurias) is historically oriented more towards pastoralism. Of the three divisions, agriculture here was least developed before SRDP. The upper region of Macalder division is of medium agricultural potential, and the lower region is marginal. This division is rather thinly populated.

The following crop projects are quoted in the SRDP project list of January 1974: hybrid maize, tobacco, cotton, groundnuts, rice (rain watered), fruit nurseries and beans. In fact, the rice project was never started because no seeds were received, and the nurseries meant for fruit have not received much attention and at present are used mainly as tobacco nurseries. This means that the actual projects are: hybrid maize, tobacco, cotton, groundnuts and beans (soya, Mexican M142 and local varieties), and it is planned to introduce sunflower in 1975.

Another four projects play a supporting role in crop development: the stockist input scheme, the extension service, including the Agricultural Service Centres and extension directed towards groups and Village Committees, the crop production credit scheme and a crop storage project. Finally, the development of rural access roads supports crop production by facilitating communication, input supply and marketing.

HYBRID MAIZE

The promotion of hybrid maize is a Government policy with high priority intended to increase farm food supplies and incomes. Many farmers in the Migori/Kihancha area were also interested in growing hybrid maize before the SRDP project was begun. The agricultural officers felt that local farmers were constrained from growing hybrid maize because seeds and fertilisers had to be purchased in Kisii or Kisumu and very few farmers could do this. Local stockists showed no interest in keeping these inputs in Migori or elsewhere in the SRDP area.

To overcome this perceived problem, a stockist input credit scheme was initiated to provide hybrid maize seed and fertiliser to the area. In 1971/72 five stockists were selected and received shs. 28,000/- credit altogether. The following year, the stockists asked for only shs 17,000/- credit, and after that they asked for even less. There were no defaulters.

The local stockists' provision of inputs increased tremendously, even when their use of the Government credit scheme declined. Evidently they could finance the provision of hybrid maize seed and fertiliser from their own resources, and the reason that they had not done this earlier was probably not lack of finances but rather that they did not recognise the potential market or felt that it was too risky. As soon as it was clear that the provision of these inputs would be good business the stockists were willing to continue on their own.

The stockist input credit scheme combined with a strong extension effort, resulted in a tremendous increase in hybrid maize production, as is shown in Table 1. This **occurred** even though there was practically no credit facilities available to the farmers for the purchase of inputs.

Table 1. Acreage under hybrid maize in Migori District, 1971-1974

Year	Acreage under Hybrid Maize
1971	310
1972	2,361
1973	4,265
1974	7,903

Source: Report of the Assistant Agriculture Officer (A.A.O.) Migori.

The promotion of hybrid maize was even more successful than anticipated in Migori. However, in Kihancha, with equally high potential for maize growing, there was no significant increase in production. This seems to have been mainly due to low motivation. As was pointed out in the introduction, the population of Kihancha is mainly pastoral and any crop development project in this district needs a strong training and demonstration component geared to stimulating production. The group approach which was not used, might be more effective in motivating the **farmers** in this area.

A second constraint which is common throughout Kenya is the very large increase in fertiliser prices. Farmers in Migori now tend to reduce fertiliser for hybrid maize or leave it off completely. However, techniques for enriching the soil with locally available materials, such as manure, green manure or compost, have not been systematically exploited. The general failure to use these materials cannot be fully explained by a lack of means to transport them to the fields where crops are to be grown, but rather must be explained in part by the attitudes of Government extension workers. For example, one visitor to a farm asked the farmer, who owned a number of cattle, why he did not use his manure to increase the fertility of his soil. Before the farmer could respond, the visitor was taken aside by the accompanying extension officer and asked "not to derange the officer's efforts to get the farmers to use fertiliser".

TOBACCO

The development of tobacco production in Migori/Kihancha is dealt with in detail because the Ministry of Finance and Planning asked specifically for an evaluation of the tobacco project.

Background

Implementation of the tobacco project began in 1971/72, carried out by a private firm, the British American Tobacco Co. (B.A.T.), jointly with the Kenya Ministry of Agriculture, using partly SRDP funds. B.A.T. carried out a feasibility survey in South Nyanza in 1967/68, and the high potential portions of the Migori/Kihancha SRDP area were considered suitable for growing certain varieties of tobacco in terms of soil and climatic conditions.¹ The subsequent development of tobacco production can be

1. The area designated by B.A.T. extends along the main road from Migori towards Kisumu up to West Kitutu Location in Kisii.

considered an experimental project.

B.A.T. set up a small farm and an office with its own staff at Oyani in the SRDP area, which has been directed for about one year by an expatriate leaf development manager. Initially, implementation of the project suffered serious setbacks. The original farmers who had adopted tobacco were about 200, but their number had dropped to 46 by early 1974. However, new, more successful arrangements were made for extension, marketing and payment to farmers in 1974, and the number of farmers growing tobacco jumped to over 400.

Objectives

The Ministry of Agriculture stated that its basic objectives for this experimental tobacco project are:

1. To improve the farmers' incomes; and
2. To reduce tobacco imports by substituting local production.

B.A.T., as a private multinational corporation, probably aims to find new, reliable markets and to obtain raw materials as cheaply as possible.³

The objective of raising farmers' incomes must be considered primary, because if the farmers do not see their incomes improving they will not grow tobacco and none of the other objectives will be met. The opportunities for income generation through tobacco growing in Migori/Kihancha must be analysed in comparison with opportunities presented by alternative crops which could be grown in the same area.

Profitability of Tobacco Growing

It has not been possible to compare income from tobacco growing with all the other income generating opportunities available to farmers in Migori/Kihancha. Rather, income from tobacco is compared with that gained

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2. See the chapter on "Agricultural Extension and Farmer Training".
 3. New activities in Kenya most likely represent a transfer of interests from other countries such as Uganda, Tanzania and Rhodesia.

from cultivation of the other major crops recommended by the Ministry of Agriculture for the areas designated as suitable for tobacco growing by B.A.T. The gross margins per hectare of the various crops are compared in Table 2, given average production levels. Then the labour inputs are compared in Table 3, and finally the gross margins per manday in Table 4.⁴

Table 2. Gross margins per hectare for recommended crops in Migori/Kihancha (shs.).

Tobacco	
fire cured	1,685/-
flue cured	2,285/-
Hybrid maize	1,315/-
Groundnuts	1,420/-
Soya beans	969/-
Local beans	586/-
Sunflower	780/-

Table 3. Labour input per hectare for recommended crops (man-days).

Tobacco	
fire cured	446
flue cured	482
Hybrid maize	108
Groundnuts	215
Soya beans	83
Local beans	83
Sunflower	93

Table 4. Gross margins per manday for recommended crops (shs.).

Tobacco	
fire cured	3/78
flue cured	4/75
Hybrid maize	12/20
Groundnuts	6/60
Soya beans	11/70
Local beans	7/10
Sunflower	8/40

The labour input for tobacco is high, as shown in Table 3, and Table 4 reveals that the labour productivity for tobacco growing is very low compared with other recommended crops. During peak seasons the cost of hired labour is shs 6/- per manday, so that a farmer growing and curing tobacco at average production levels using labour hired at this rate would lose money. Tobacco growing is not as unprofitable as all this, however, because much of the work, such as barn construction and curing, can be done outside the seasonal periods of peak demand for labour.

4. For more detailed information and comparisons of the economics of the various crops, see the tables at the end of this chapter.

Finally, the hidden costs of tobacco growing must be taken into account. Tobacco is a very heavy feeder which uses up the nutrients in the soil. Because of this, land used for tobacco growing must be allowed to rest some seasons by using it for pasture or for light feeding crops. Also, for hygienic reasons, some crops cannot be grown on the same land before or after tobacco, or even on land near where tobacco is grown. Another hidden cost is that of risk. Tobacco suffers heavily during the hail storms which sometimes occur in Migori/Kihancha. According to the agricultural officers interviewed, every third or fourth crop may be damaged by hail storms. These factors add considerably to the cost of tobacco growing.

One might well ask, given the low level of profitability, why farmers are interested in growing tobacco in Migori/Kihancha. One important explanation is that at present tobacco is the only crop in the area for which all inputs are provided on credit. Another explanation is that yields vary by a wide margin above the average if several favourable factors coincide. Out of about forty growers, one or two have achieved extraordinarily high yields, giving the impression that tobacco is extremely profitable.

Conclusions Concerning the Profitability of Tobacco Growing

1. Tobacco is a crop with relatively low labour productivity, although some of the labour requirements can be filled during seasonal periods of low opportunity costs for labour. If tobacco were to be grown by most farmers in the area it would mean a concentration of the labour force on a crop with low labour productivity compared with other recommended crops.
2. Tobacco growing might be recommended only to those households which have a large family labour force and a limited amount of land.
3. Tobacco cannot be grown as profitably as other crops if labour has to be hired during the seasonal peaks of labour demand.
4. Since tobacco is a very heavy feeder, it either depletes the soil or needs large quantities of fertiliser. If chemical fertilisers are used, this reduces the import-substituting effect of tobacco growing.
5. Besides requiring specific crop rotation patterns, tobacco production requires fire wood for curing the leaves at a rate of one hectare trees to four hectares tobacco. This means that if a large number of farmers

grow tobacco a major part of the agricultural economy would have to centre around tobacco growing, which is clearly not justified given the relative profitability of different crops.

6. However, since tobacco seems to grow well in the selected areas of Migori/Kihancha and farmers are ready to adopt it, its limited potential for income generation could be improved by an appropriate price policy which would involve raising the prices offered to farmers by B.A.T.

Tobacco Nurseries

Originally a nursery was established in the SRDP area by the Ministry of Agriculture in order to supply farmers with seedlings, and a separate nursery was established by B.A.T. at Oyani. The Ministry of Agriculture's nursery was temporarily discontinued due to administrative problems. The Crops Officer (Homa Bay) wrote the responsible AAC that there were no funds to pay the nursery labourers so they had to be released, and though this explanation was incorrect, by the time the matter was sorted out the nursery was spoiled. Later the nursery was started again with financing from SRDP crop development and demonstration votes. To stimulate adoption, the seedlings produced were given to farmers free.

More recently, the extension programme has been reorganised (See the chapter on "Agricultural Extension and Farmer Training"), and the new farmers groups have each selected a central location for their own nurseries. The SRDP financed Ministry of Agriculture nursery is only being kept temporarily to supply farmers with seedlings until their own nurseries are adequately developed. Once farmers are producing their own seedlings rather than having them supplied free by the Ministry of Agriculture, the tobacco project will be established on a more realistic and self-generating basis.

Curing

The present policy of B.A.T. in South Nyanza and Kisii is that farmers cure the leaves themselves. In an initial stage, farmers use the fire curing method, which requires a curing barn that costs about shs. 2,000/- and which produces low quality tobacco. In a later stage, the "better farmers" (according to B.A.T.) should change to fire curing, which requires a barn that costs about shs 4,000/- but produces high quality tobacco.

B.A.T. gives credit for all the materials needed to construct the barns, and it seems that farmers would not be willing to construct the barns if they had to provide the materials themselves. However, in Migori Division extension was reorganised and the Ministry of Agriculture staff succeeded in constructing about 400 barns between December 1974 and February 1975. This was achieved through an excellent extension organisation which is unique to the Migori SRDP area.

In addition to curing barns, farmers also require wood fuel for the curing process. In an excellent example of co-ordinated planning between the Ministry of Agriculture and the Ministry of Natural Resources, the afforestation project in the Migori Kinancha SRDP area has been planned to provide wood fuel for the tobacco project. However, the heavy long-term Government investment in the afforestation project is one more factor which lowers the actual profitability of tobacco growing in the area compared to that of other crops which do not require wood fuel, and this additional cost is one more argument in favour of raising the price offered to farmers for tobacco.

Co-operatives

Originally, co-operatives were formed to supply credit and market the tobacco crop, but all local informants seem in agreement that the performance of the co-operatives was very poor. The repayment rate for credit extended was low, and payment for the delivered crop was very late. For these reasons, the majority of the farmers who had adopted tobacco had stopped growing it. Coinciding with the re-organisation of the extension service, B.A.T. took over the provision of credit and the marketing of the tobacco crop. Farmers are paid for their crops on the day of delivery, with repayment for credit deducted. The farmers, Ministry of Agriculture and SRDP staff agreed that these arrangements are satisfactory. There was a general consensus that in this case a private firm with an interest in the tobacco crop could organise credit provision, marketing and payment to farmers more efficiently than a co-operative. However, certain difficulties remain if the responsibility for development of a crop is transferred to a private firm, and these difficulties will be discussed in the following section.

Co-ordination between the Ministry of Agriculture and B.A.T.

Although both the Ministry of Agriculture and B.A.T. wish to promote the production of tobacco, their interests do not necessarily coincide. The private firm is only interested in tobacco production. The firm will recognise the importance of food crops since farmers are generally only willing to grow a cash crop such as tobacco when their basic food needs are met. Several important conflicts of interest between B.A.T. and the Ministry of Agriculture could emerge in the case of competing cash crops. Important questions arise from the differences of opinion expressed by the Ministry of Agriculture and the B.A.T. personnel who were interviewed: Should the crop rotation patterns for the area be directed primarily towards tobacco? Should B.A.T. select the areas where tobacco is grown? Should the extension staff give priority attention to tobacco? Should B.A.T. select the farmers (or give criteria for selection) who are to grow tobacco? Should B.A.T. devise the extension strategies for tobacco diffusion?

These questions can be answered clearly: Tobacco does not show sufficient advantages in the Migor 'Kihancha area compared with other recommended crops to justify priority treatment. Specialisation in tobacco growing in the long run would bring the disadvantages of high risks from crop failure, increased susceptibility to disease and over-dependency on foreign purchasing firms and markets.

It is not sufficient to leave the decision entirely up to the farmers themselves, since one crop can be promoted very effectively even if a number of better alternatives exist. In this case for example, there is better extension machinery for tobacco since B.A.T. has put highly qualified and experienced expatriate experts in charge of their own private extension activities. Providing the farmers with all cash inputs on credit is a further strong incentive for adopting a crop, and B.A.T. is doing just this. Guaranteed marketing and payment on delivery is still another motivating factor for adoption of a crop, and B.A.T. is doing this too.

Tobacco cultivation will contribute to the diversification of the economy and will improve the incomes of those households which have abundant family labour and limited land. To guarantee this limited, but useful role for tobacco cultivation, it is extremely important that the overall agricultural development strategy remain fully under the control of the Government. B.A.T. seems to be able to provide credit, marketing

and payment services efficiently, but farmer recruiting criteria, extension methods, allocation of extension staff and setting of crop priorities are the sole responsibility of the Kenya Government.

Recommendations

1. The development of tobacco production should be continued subject to the limitations and conditions set out below.
2. The prices for flue and fire cured tobacco should be raised substantially to increase the productivity of labour required for tobacco production.
3. Tobacco development should be carefully integrated into the crop diversification programme of the Ministry of Agriculture. It should not have priority over other recommended crops since the productivity of labour required for tobacco production is low at present.
4. Seedlings grown as part of SRDP projects should be given to farmers on credit, not free.
5. Encouraging groups of farmers to start their own nurseries should have priority over continuing SRDP nurseries.
6. B.A.T. should continue to provide credit, marketing and payment to farmers.
7. The co-ordination of fuel wood production under the Forest Department with the expansion of tobacco production must be guaranteed after the termination of SRDP.
8. The Ministry of Agriculture must have exclusive responsibility for decisions concerning crop rotation patterns, allocation of extension staff, selection criteria for farmers to grow tobacco and areas in which it should be grown, and extension strategies.

COTTON

Cotton was grown in the area before the advent of SRDP, but in 1973/74 an SRDP project called the 'Crop Production Credit Scheme' was initiated to encourage cotton production. The objectives of this project are

to generate income among farmers in the lower, drier sections of the SRDP area, mainly in Macalder Division, and to increase production of a raw material important to the Kenyan economy.

Farmers are encouraged to grow cotton by means of demonstration plots and loans which are administered through a cooperative. The cooperative pays directly for fertiliser, labour for weeding and other inputs up to the total amount allowed each farmer. Then the farmer is obliged to market his output through the cooperative and the loan is recovered from sales.

This scheme had not been sufficiently implemented in 1974 to permit an evaluation, because the Authorisation to Incur Expenditure (A.I.E.) necessary to disburse funds for the project was only issued in July. By that time, much of the land and labour meant to be used for cotton production had been devoted to subsistence crops. The 1974 target had been 600 hectares of cotton, but only 225 were planted. SRDP had allocated shs. 30,000 to the project, but because of the delayed A.I.E. only shs. 5,000 had been disbursed by the cooperative. About shs. 10,000 were still in the bank, and shs. 15,000 had been diverted to the purchase of new nets for the local fishermen's cooperative.⁵

For 1975, shs. 60,000 were requested and again the aim was to plant 600 hectares. Since the limited expansion in 1974 was due to the inability to disburse most of the funds earmarked for the project, we recommend that the cotton production scheme be continued long enough to receive a fair trial. Its potential value is particularly great since there are few alternatives for agricultural development in the dry marginal areas. We further recommend that the name be changed from 'Crop Production Credit Scheme' to 'Cotton Production Credit Scheme'.

GROUNDNUTS

Groundnuts have been grown in the area for some time, but an SRDP project to encourage their cultivation was begun in 1973. The objectives were to provide a cash and food crop to farmers and to increase

5. It may well be justifiable to divert funds which cannot be used to other productive projects rather than just leaving them in the bank.

the inadequate national production of oil crops.

Diffusion of groundnut cultivation was considered rather slow because of the high cost of certified seed, about shs 80/- per acre. For this reason, seed was purchased out of SRDP funds from the Maize and Produce Board godown at Hema Bay and given to farmers.

It was not possible to ascertain exactly how much seed was purchased, but according to the AAO's files about 620 acres of groundnuts were planted in 1973, presumably about half with seed from SRDP and about half with seed purchased by farmers in the local markets. None of the SRDP seed purchased from the Maize and Produce Board grew, probably because it was too old. The seed purchased locally was fine.

After this setback the project was informally dropped. The AAO explained that he had no reliable seed source and the farmers preferred to purchase seed locally. The extension service is carrying out its normal activities with reference to groundnuts, but in general groundnut production is considered self-generating. According to the AAO's report for Migori and Macalder Divisions, about 1,200 acres were under groundnuts in 1974, as compared to 620 acres in 1973.

SOYA AND OTHER BEANS

Bean production played a very minor role during the early years of the SRDP, but in 1974 a major effort was made to encourage farmers to grow Mexican 142 and some local varieties, especially Red Haricot. During the short rains of 1974 about 100 new farmers adopted Mexican 142 and about 25 grew local varieties as a cash crop.

A soya bean project was started in Migori and in Kisii in 1974. To our knowledge soya beans are not grown commercially anywhere else in Kenya. (In 1973 the Maize and Produce Board marketed only ~~thirteen~~ bags.) Soya bean production has been encouraged in order to provide farmers with a cash crop which will raise their incomes, to increase the national supply of oilseed and to provide an inexpensive source of protein. Experimentation has been carried out with soya beans at the Nyanza Agricultural Research Station in Kisii for some time, and the representative of the Station considers this a high potential crop for lower Kisii and many parts of South Nyanza. The Station has developed a special variety for

this area, 'Belgian Congo', but unfortunately it is not available at present, though it is being bulked by some Kisumu farmers. Another variety, 'Hill', produced by the Ahero Irrigation Research Station, is being used.

I.D.S. researchers introduced soya bean extension methods to agricultural and SRDP officers in Migori and these went on to implement a successful project among farmers. Yields were considered good at three to six bags per acre, rather evenly distributed.

Table 5. Soya bean dissemination in Migori Division.

	Farmers	Estimated Acreage	Estimated Yields in Bags
Long Rains 1974	22	5	30
Short Rains 1974	310	102	400
Long Rains 1975 (target)	2000	--	--

Source: AAO Migori and authors' survey.

Output was excellent during the short rains of 1974, when maize and some local bean varieties suffered from insufficient rain. Farmers consider soya beans a profitable crop because labour input is low and maturing time is only three months. However, yields could probably be improved considerably, by up to 500 per cent, if 'Belgian Congo' seed were available. There are also indications that soya beans could be grown successfully in the lower and dryer areas of Macalder Division during the long rains.

We recommend that this project be continued and that seed bulking be carried out in Migori under the supervision of the AAO.

SUPPORTING PROGRAMMES FOR CROP DEVELOPMENT

One project planned to support crop production is the Agricultural Service Centres which will be set up as part of the extension service in 1975. Various field officers will be stationed in the Centres and agricultural inputs such as spray and spraying materials will be stored there for distribution.

We recommend that the Centres be set up as part of a group or Agricultural Village Committee extension system so that they are likely to be used by large numbers of farmers rather than only a few of the most

advanced. In this way farmers can come to the Centres when they particularly need inputs or services, rather than waiting for an extension officer to come to them at a time when their needs might not be as great.

A project involving crop storage demonstrations was begun in 1974. Grain stores were constructed, partly financed by SRDP, but construction costs were high, particularly for the corrugated iron roofs. The aim of this project is to show farmers how they can store large amounts of grain with reduced losses to sell at a time when seasonal prices are high. Since it appears that the grain stores which have been constructed may be too expensive to be widely replicated, we recommend a small project to develop a more appropriate grain storage prototype.

Among other projects which support crop production but are discussed elsewhere in this Report, the stockist input credit scheme is described in connection with hybrid maize development in Migori. The important role of the extension service is analysed in the section: 'Agricultural Extension and Farmers Training'. The Crop Production Credit Scheme is mentioned as part of cotton development in Migori, and rural access roads, which have facilitated better communications, access to inputs and marketing, are discussed in a separate chapter.

COMPOSITION OF CROPS

In Migori Division four important crops are being promoted by SRDP: hybrid maize, tobacco, soya beans and groundnuts. The best choice of which crops to grow depends on the circumstances of each particular farmer, especially on the relative magnitude of his cash, labour and land constraints. In the Migori/Kihancha area at the present time land is usually not a limiting factor, so the two factors which must be considered are labour and cash. When labour is scarce, it might be more profitable to produce a crop which requires little labour than another which has a higher gross profit margin but which requires more labour. For example, the average gross profit margin of groundnuts is shs. 1,420 per hectare and for soya beans it is shs. 969. However, if a farmer has only 100 mandays to devote to a crop, he could cultivate two and a half acres of soya beans, giving him an income of shs. 970, while with the same number of mandays he could cultivate only one acre of groundnuts, giving him an income of shs. 570.

If cash, rather than labour, is the constraining factor different choices would be made. For example, if a farmer has only shs. 150 for cash inputs, he could afford to grow one half hectare of hybrid maize, giving him an income of about shs. 660, or three acres of local maize, giving him an income of about shs. 1,380.

In the following tables we identify two groups of farmers, those who primarily grow hybrid maize and those who primarily grow tobacco. In considering what to cultivate as a second crop each farmer will consider whether his cash and labour constraints are high or low. Appropriate choices are indicated in the tables.

Table 6. Second crops for farmers whose major crop is hybrid maize.

	High Labour Constraint	Low Labour Constraint
High Cash Constraint	soya or other beans	groundnuts
Low Cash Constraint	more hybrid maize	tobacco

Table 7. Second crops for farmers whose major crop is tobacco.

	High Labour Constraint	Low Labour Constraint
High Cash Constraint	Soya or other beans, local maize	groundnuts
Low Cash Constraint	hybrid maize	more tobacco

TECHNOLOGY ALTERNATIVES TO EASE LABOUR CONSTRAINTS

The agricultural officers and farmers who were interviewed generally agreed that labour is the major constraint on crop production in the high potential areas of Migori, especially for the preparation of land and weeding. Labour could be made more productive by the use of ox-drawn equipment or tractors.

Local draught animals and ox-drawn equipment could be use more fully, and new ox-drawn equipment, such as interrow cultivators, could be introduced. Farmers are reluctant to acquire more oxen because of the danger of cattle theft, but this should not be a constraint on improved cultivation because the draught animals they already own could be utilised much more fully than they are at present.

The value of using tractors to ease labour bottlenecks is more questionable. Tractors, spare parts and petroleum must all be imported, and tractor hire services are too expensive for many small farmers. In addition, tractors can be used for soil preparation but not for weeding. Yet in Migori there are a number of farmers with medium-size holdings of 40 to 100 acres who consider tractors economic and would purchase tractors if there were a service and repair facility in Migori town. At present tractors must be taken about 65 kilometers to Kisii or 190 kilometers to Kisumu even for minor repairs. SRDP personnel might investigate whether existing repair shops in Migori could be upgraded by provision of training and credit to serve as tractor repair stations. However, the encouragement of tractor cultivation should receive much less emphasis than the use of ox-drawn equipment.

GENERAL RECOMMENDATIONS

1. As shown by the very rapid expansion of hybrid maize production, effective extension and adequate seed supply, provision of inputs and suitable marketing arrangements can increase crop production and make it self-sustaining, in many cases without the provision of credit. If these requirements can be met through private firms, the risk of failure due to administrative difficulties is reduced and limited government financial and manpower resources can be released early from one project and used for others.
2. Since labour seems to be the major constraint on further crop expansion, we recommend the dissemination of ox-drawn cultivation techniques using the oxen already available in the area, especially for soil preparation and weeding. Possibilities for using animal draught power for transport should also be explored.
3. To reduce dependence on costly imported synthetic fertilisers, the use of locally available materials to enrich the soil, such as composts, green manure and cattle manure, should be encouraged.
4. The extension approach used in Migori and Macalder Divisions was found to be extremely successful, and should be considered a prototype for replication. Details on this approach are given in the section of this Report, "Agricultural Extension and Farmers Training."

RECOMMENDATIONS FOR SPECIFIC CROPS

1. The development of hybrid maize production has been highly successful. This project is now self-generating and needs no further special attention from SRDP.
2. Tobacco production is progressing efficiently with credit, marketing and repayment organised by B.A.T. However, the Ministry of Agriculture must control the development of this crop carefully so that it fits in with the optimal overall crop diversification pattern for the area. Tobacco can be important but it should not be a dominant crop.

The present B.A.T. policy of financing all cash inputs on credit makes this crop more attractive than others, even when in many cases other crops should be preferred.

At present the prices offered by B.A.T. for fire cured and flue cured tobacco are too low to justify wide expansion of production.

3. Soya beans, which are particularly attractive as an oil crop and a cheap source of protein, have been grown successfully in Migori and Kihancha Divisions during the short rains. They should also be tried during the long rains, especially in the lower, drier parts of Macalder Division. In general this crop seems to merit further expansion.

A five-acre plot at Migori, owned by the Ministry of Agriculture and not in use at present, should be used for bulking seeds of the 'Belgian Congo' variety. The hired labour, tractor ploughing and fertiliser necessary for this project could be financed for £320 a year.

TABLES ON THE ECONOMICS OF VARIOUS CROPS

The information given in most of the tables which follow was obtained from the Ministry of Agriculture. The data represent national averages rather than averages for Migori, and in general yields and profits in Migori are a bit higher than the national averages. All calculations are for one crop and one hectare, but not necessarily on an annual basis. These data are only rough indicators, and minor statistical differences among various crops are not necessarily significant.

Table 8. Economics of hybrid maize production.

	Production level		
	low	average	high
1. yield in 90 Kg bags/hectare	15	25	45
2. output @ 65/- per bag	975/-	1,625/-	2,925/-
<hr/>			
3. seed	60/-	60/-	60/-
4. fertiliser	80/-	180/-	620/-
5. sprays and dusts	-	30/-	60/-
6. other costs (including transport)	20/-	40/-	50/-
<hr/>			
7. total variable costs (3 to 6)	160/-	310/-	810/-
<hr/>			
8. gross margin per hectare (2 minus 7)	315/-	1,315/-	2,115/-
<hr/>			
9. labour mandays/hectare (average)			
seed bed preparation	35		
planting	8		
weeding	30		
harvesting	35		
<hr/>			
total mandays	108		
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10. gross margin per manday (8:9) (average)	12/20		

Remark: Hybrid maize can be grown during the long and short rains, with lower yields during the short rains and some overlapping between crops of the two seasons. Maize is a heavy feeder: if it is not fertilised and properly cultivated the soils will be exhausted quickly.

Table 9. Economics of local maize production.

		Production Level	
		average	high
1. yields in 90 kg. bags/hectare	5	15	25
2. output @ 65/- per bag	325/-	975/-	1,625/-
3. seed	15/-	15/-	15/-
4. fertiliser	-	-	-
5. sprays and dusts	-	-	-
6. other costs	20/-	40/-	50/-
7. total variable costs (3 to 6)	30/-	55/-	65/-
8. gross margin per hectare (2 minus 7)	295/-	920/-	1,560/-
9. labor manday/hectare (average)			
seed bed preparation	35		
planting	8		
weeding	30		
harvesting	20		
total mandays	93		
10. gross margin per manday (8.9) 9/90			
<u>Remark:</u> See remark for hybrid maize.			

Table 10. Economics of groundnuts production.

	Production level		
	low	average	high
1. yield in 80 kg. bags/hectare	8	9	15
2. output @ 180/- per bag ¹	1,080/-	1,620/-	2,700/-
3. seed 80 kg./hectare ²	180/-	180/-	180/-
4. fertiliser	-	-	-
5. sprays and dusts	-	-	-
6. other costs (including transport)	10/-	20/-	30/-
7. total variable costs (3 to 6)	199/-	200/-	210/-
8. gross margin per hectare (2 minus 7)	890/-	1,420/-	2,490/-
9. labour mandays/hectare (average production level)			
seed bed preparation	35		
planting	30		
weeding	90		
harvesting	60		
total mandays	215		
10. gross margin per manday (8:9) (average)	6/60		

Remark: Groundnuts can be grown during long and short rain seasons without overlapping. Groundnuts are light feeders and leguminous.

1. Produce price to the farmer as quoted in Maize and Produce Board price list for 17th August, 1974.
2. Not certified seeds, taken from farmer's own crop.

that number of cattle which is consistent with the long run carrying capacity of the land, the distribution of water so that the range can be evenly utilised without excessive **walking** and without pulverising the areas around the water points, and the strict enforcement of rotational grazing so that each piece of land is given adequate time to regenerate prior to being used again. Without the establishment of organisational mechanisms which can achieve and enforce controlled and rotational grazing, the provision of infrastructural investments in water points (especially isolated water points) and even disease control could merely worsen overstocking rather than yielding economic returns. If this is the result, far from these investments improving the productivity of the range areas, they would accelerate the process of their destruction.

FINDINGS AND RECOMMENDATIONSWest Pokot District

1. Some progress has been made in the Kongelai Group Ranch in enforcing respect for external ranch boundaries and acceptance of a two-paddock rotational grazing system.
2. A two-paddock system is probably inadequate. At best it should be regarded as an interim measure in the transition towards a four-paddock system.
3. A systematic attempt should be made to monitor long-term trends in the condition of grazing in this and other pastoral areas.
4. No evidence of a general increase in 'commercial attitudes' towards cattle was found among the pastoral Pokot.
5. A very solid wall of opposition to the idea of destocking was encountered. The reasons were partly economic (divergence between private and social interest) and partly social or cultural. Accordingly Government **plans for a conversion to commercialised ranching and well managed** range resources are highly optimistic.
6. There was no apparent support for the imposition of a ceiling against excessive individual holdings of cattle on communally owned land.
7. There was equal resistance to destocking of the sheep and goat population.
8. The effects on conservation of the practice of leaving goats behind in the reserved paddock should be investigated by the District Range Officer.
9. A close re-examination of group ranch boundaries, in relation to the distribution of hill slopes and customary cattle movements, and to the distribution of cultivated areas, is called for.
10. More direct intervention to provide marketing outlets should be attempted in order to maximise the offtake of cattle as well as to increase cash earnings in the area. The L.M.D. should work in much closer cooperation with the D.R.O. in support of the destocking efforts of the latter. Either the L.M.D. should act as a far more aggressive buying and marketing agency, particularly in the more remote pastoral areas such as West Pokot, or a specialist agency for this purpose should be considered.

11. The suggestion that the Kenya Meat Commission expand its meat canning component utilising the lean meat of traditional cattle from pastoral areas might be taken up.
12. The proposals for expanding agricultural production and modern beekeeping in the area are highly optimistic. They represent theoretical possibilities rather than anything like actual probable achievement.
13. The financial proposals for the Kongelai Group Ranch are based on completely unrealistic expectations of rates of offtake.
14. Change in the area will not come quickly, and attempts to improve the quality of life in the area should not await progression to commercialised ranching. The SRDP has so far had little impact on the welfare of the people in the area.

Kwale District

15. Further investigation should be made in Mwereni to find out whether partial reduction of the bush could reduce tse-tse to a tolerable level. Bush clearance in a range area is problematic, and generally a losing battle.
16. Alternatively the possibility of concentrating the scheme within more manageable areas might be investigated.
17. The problem of tse-tse control and treatment should be evaluated in economic as well as physical terms.
18. There appear to be serious organisational and legal problems associated with the group ranch plus central herd model. Land ownership needs to be separated from herd ownership if confusion is to be avoided. In the Mwereni case a switch to cooperative society ownership of the herd should be made even at this late stage.
19. The central herd proposal is seen by officials especially as a tax or revenue-raising device to provide the funds required for water and other investments. There are problems in securing motivation for the efficient maintenance of the enterprise if revenues derived do not, over and above this, provide adequate incentives in the form of dividends to participants.
20. Exactly who will benefit from water investments made at Mwereni and the related equity aspects need to be examined.

21. The rates of return posited for the project appear again to be theoretical calculations with little relation to probable realities.
22. The possibilities for expanding milk production in the eastern areas need more careful investigation in view of the coastal market for milk.

Mbere District

23. The group ranching programme in Mbere was effectively nullified when the area was adjudicated on an individual basis during 1970-73, in view of the R.M.D. policy of operating only on the basis of group titles.
24. The present programme has been effectively transformed into a goat ranching programme located in the perimeter areas, with problems of poor pasture, lack of water, tse-tse fly infestation and predators.
25. The Ena River piped water scheme stops well short of the new ranching areas.
26. Project proposals need to be spelled out in some detail if potential members are to be attracted to them. This is frequently not done, as in the case of Muchonoke Group Ranch. Closer consultations with the potential members are needed from the beginning. The current perimeter area proposals need more specification and required investments need to be costed.
27. The R.M.D. approach of offering only two alternative models, group and cooperative ranching, is excessively restrictive and unsuited to intermediate areas such as Mbere. Intermediate models, designed to make the most of potential economies of scale and advantages of cooperation which exist in a particular area should be tried out on an experimental basis. In Mbere the focus of attention should revert to the better endowed, populated area, exploring the possibilities of implementing such intermediate solutions.
28. The one operative ranching scheme in the area, Ngaru Mihiriga Ranch, though having many positive aspects, has recently run into serious managerial and organisational problems.

General Findings and Recommendations

29. The quality of project formulation and preparation within the ranching sector requires considerable improvement. The R.M.D. as a whole should consider how to provide an input of economic analysis into its project appraisal and ranching schemes. The Agricultural Planning Division in Nairobi must be capable of operating in the field and should be able to send project teams combining a cross-section of relevant experience to field locations to discuss projects with local officers and investigate local opinion at an early stage. Project reports should be written up in a systematic way from the outset to pinpoint relevant aspects and key issues and should be maintained up-to-date as each project evolves.
30. More careful evaluation of costs and benefits from water investments must be made. Planning procedures for livestock schemes need to be reversed, with water issues in general coming first rather than last.
31. In the absence of adequate organisation and working arrangements for a group ranch, infrastructural investments in water and disease control may accelerate deterioration of the grazing resource and thus yield no lasting benefit. Effective grazing controls must accompany these investments. Water points should be distributed so that grazing resources are utilised as evenly as possible.
32. Given the extent of the overstocking problem, an attempt should be made to monitor changes in the balance of livestock to resources within the pastoral subsistence areas and the long-term trend in the state of grazing. This trend has become a matter of extreme urgency and is being given inadequate attention in the livestock development programme as a whole.
33. The group ranches, based on individual ownership of livestock, but group ownership of land, incorporate a basic conflict between the private stock owner's interest in maximising the number of cattle he owns and the group interest, which is to restrict the numbers of cattle in a way that will maximise the productivity of the land unit over time. There is little evidence as yet that the internal mechanisms of the group ranches can impose the group over the individual interest. Until this situation is reversed, there is little prospect that group ranching can solve the problems of overstocking and range degradation.

34. There is a tendency by the R.M.D. to assume the existence of economies of scale and thus to attempt to establish the largest possible size of group or cooperative ranch. In many cases, however, divisibility in water supply, rotational possibilities and the like clearly exist, and smaller units are feasible. In contrast, the R.M.D. has paid little attention to diseconomies of scale, in the form of managerial and organisational problems associated with large size.
35. The experience with enclosure in South Baringo merits close examination with a view to possible replication in other suitable areas, and as part of a more flexible approach to the promotion of ranching.
36. A realistic evaluation of the benefits arising out of the substantial disbursements of public funds for infrastructural investment, for all types of ranches, whether group, cooperative or company, should be closely scrutinised.

CHAPTER ELEVENRURAL INDUSTRYBACKGROUND TO THE R.I.D.P.

The expansion of small-scale and rural industry is a major element in Kenya's current Development Plan. (4) The Kenya Government's resolve in this regard has no doubt been strengthened by the stress laid on rural industry in the I.L.O. Mission Report which put forward a 'new' industrial strategy composed of two main elements, the export of processed agricultural products, and the development of small-scale and rural industry of which the former also largely implies rural-located industry. (3)

The two vehicles for the promotion of small-scale industry in Kenya (apart from loans schemes) are the industrial estates programme under Kenya Industrial Estates Limited (K.I.E.) itself a subsidiary of I.C.D.C.; and the Rural Industrial Development Programme (R.I.D.P.), which is managed by K.I.E., but operate outside the main towns.

The industrial estates programme was started in 1966. The present contents of the programme are given in the Plan:-

Initially the programme envisaged five industrial estates to be located at Nairobi, Nakuru, Kisumu, Mombasa and Eldoret. However, only two, Nairobi and Nakuru, have so far been completed. The other three will be put into operation in this Plan period. In addition two more estates will be established at Nyeri and Kakamega Industrial estates in growth-potential towns such as Kisii, Kericho and Embu will be considered for the next phase. (4, p.295)

The R.I.D.P. had its origins, like the Special Rural Development Programme, in the 1966 Kericho Conference. However the Ministry of Commerce and Industry did not join with the other Ministries in promoting the integrated programme, and the R.I.D.P. was removed and reformulated as a sectoral programme to be administered by Kenya Industrial Estates, already charged with the urban programme for industrial estates promoting small-scale industry. The R.I.D.P. was launched in late 1971, and might be said to have been operational from January 1973. During this time it has been run on similar principles to the SRDP of experimentation, research and evaluation, and the objective of replicability. The programme has benefited principally from Danish technical and financial assistance (with Norwegian financing in Embu) under a Government agreement between the Kenyan and Danish Governments for 1972-77. In Vihiga-Hamisi Divisions of Kakamega District, one of the six SRDP areas, a largely separate experimental programme for the promotion of rural business has been run by an American organisation, Partners for Productivity (P.F.R.) as part of the SRDP effort in the area.

The Development Plan outlines its proposals for the R.I.D.P. as follows:-

Under this programme centres will be established throughout the country at district headquarters. Fourteen such centres have had preliminary surveys. Four have already been established; at Nyeri, Kakamega, Machakos and Embu, and are already operational. It is planned to have 23 such centres established by 1978 Each centre will cost approximately Kf90,000. Facilities will include an administrative block, classrooms for training courses, and repair workshops. (4, p.297)

This paper presents an analysis of rural industry in general, and specifically of the detailed activities of three out of the four existing centres. It is argued that they are not an appropriate form as they stand for the promotion of craft industry, with which they largely deal, or somewhat larger 'moderate-sized' rural industry. Accordingly their duplication in so many centres - arrangements for setting up identical centres at Voi and Malindi are far advanced - would be unwise, without a major change in their structure. The investment involved is substantial, as can be seen from Table 1 giving the detailed Development Plan proposal.

Table 1. Proposed R.I.D.P. development expenditures, 1974-78 (Kf'000).

Centres	1973-4	1974-5	1975-6	1976-7	1977-8	Total
Capital expenditures						
1. Kisii, Malindi, Voi	170	100	-	-	-	270
2. Meru, Siaya, Kericho, Murang'a	-	200	160	-	-	360
3. Naivasha, Busia, Bungoma, Kitui	-	-	200	160	-	360
4. Homa Bay, Kwale, Kapsabet, Garissa	-	-	-	200	160	360
5. Kabarnet, Nyahururu, Kerugoya, Kajiado	-	-	-	-	300	300
Sub-total, Capital Expenditures	170	300	360	360	460	1650
Operating Expenditures	30	60	70	90	100	350
Total Expenditure	200	360	430	450	560	2000

Source: Development Plan, Table 12-6, p.298.

It can now be seen that there are potential areas of overlap in the future between the two programmes. There are proposals for future K.I.E. estates at Nyeri, Kakamega and Embu, three of the existing R.I.D.P. centres.

As we shall see presently, the latter centres **have** been forced to occupy themselves with craft industry, and have been extremely unsuccessful so far in promoting or establishing 'modern' small-scale industries of a moderate size. The same would surely hold for Kisii and Kericho. If this is so, the prospects for the more ambitious industrial estate cannot be good. In any case it will be argued that the estate form is desirable for craft industry but unsuitable for the moderate-sized industry presently forthcoming, and that the development of 'growth poles' in major townships outside Nairobi and Mombasa will not happen without a positive policy of direction of industrial location which is at the moment absent.

The R.I.D.P. Evaluation Reports

Two conferences have been held since the beginning of the R.I.D.P. to evaluate the results of this experimental programme. The two conference reports afford a fairly comprehensive account of the experience of the programme and of the thinking and ideas this has generated among the various agencies involved. (8 and 9) Although thinking has evolved further since April 1974, the reports provide a useful starting point for discussion of the programme.

The reports appear to suffer however, from two related deficiencies: (a) nowhere is there a very clear statement of which product lines have been successfully developed and which products and activities appear likely to be capable of promotion in the future (**though** some of these products may be deduced from the reports); and (b) nowhere is a clear distinction made between what has been described variously as 'household industry', 'dwarf industry' or 'craft industry', on the one hand, and 'modern small industry' on the other. The standard work on the subject **defines** small industry as all **establishments** employing less than 100 workers, and cottage industry as establishments employing less than 10 workers. (13) The lack of clarity on these two points is of some importance, because it necessarily affects the promotional strategy to be adopted, as we shall indicate.

The Importance of Craft Industry in the Rural Economy

The 1970 Report by the K.I.E. on the Rural Industries Development Programme did specify three likely categories of industry for the rural areas: first, agro-related industries such as processing, second, ancillary **and** feeder industries developed in relation to a particular large-scale industry which happens to be situated in the area, and thirdly, industries and services based on the consumption pattern in the areas. (5) When we come to look at

this consumption pattern, we are led directly to various types of craft industry.

Other research on consumption patterns and needs of households in rural areas in East Africa has underlined the low purchasing power of rural residents. The most striking finding of a household survey of consumer durables, carried out throughout the rural areas of Tanzania (and some parts of Kenya), was the extreme paucity of the goods possessed. A large proportion of households lacked a bed, table or chairs, and owned perhaps one or two stools. (10) There were very great differences between districts, due to differences in the development of cash crops and the level of purchasing power, and even in the rich areas there were great inter-household variations. While the position in Kenya may be better on the whole, the quantity and quality of possessions in a large proportion of households is probably much poorer than is generally acknowledged.

These results serve to underline the low purchasing power in the rural areas, and the sorts of commodities likely to be in demand at these income levels. Secondly, they underline what the needs are: increasing the availability and reducing the price of such mass consumption goods may increase welfare more than the factory production of sophisticated consumer goods produced for an urban elite, even if ordinary cost-benefit calculations suggest higher profitability for the latter.

An inventory of goods in common usage in the rural areas suggests as craft industries masonry and brick/cement block production for the rural house itself; doors, steel windows, furniture; various metal goods such as charcoal-burners, lamps, basins and containers; mats and other very simple household equipment; and clothing and footwear for members of the household. The craft industries supplying these would be masonry, carpentry, metal-working, tailoring and shoe-making. In addition there would be the production and repair of agricultural tools, and repairwork of other types, most importantly motor and bicycle repair.

While these trades do not give the impression of modern economic development, they are in fact of extreme importance in the rural economy and in the lives of the great mass of Kenyans, as the I.L.O. Mission to Kenya recently pointed out in emphasising the importance of Kenya's 'informal sector'. The 1972 SIDA Report estimated the number of informal sector small-scale 'industrialists' in Kenya at 20,000 to 25,000, and the numbers engaged in the sector as 60,000 to 70,000. (14) While this sector may not

be the most dynamic in terms of innovativeness, or constructive in terms of long-term economic transformation, it is possible to say without attempting a sophisticated rate of return analysis that the benefits should be very substantial if a significant improvement in the effectiveness of the sector can be obtained without very large costs. It is worth underlining the fact that most industry at present in the rural areas is of this very simple type by referring to a rough survey of local industry carried out by the Embu R.I.D.C. soon after its establishment. The survey is summarised in Table 2. This survey is certainly incomplete, but probably gives a fair picture of the current activities which it is the task of the R.I.D.Cs to develop, whether in a township such as Embu or minor centre such as Runyenjes. The simplicity of the existing rural industries is further emphasised by the kind of products made by the 29 sheetmetal workers covered by the survey: water tanks and containers (by 23 workers), charcoal braziers (21 workers), wash basins (12), buckets (11), bicycle repair (9), steel windows (7), watering cans (2), dustbins (2), water heaters (1), panel beating (1), brooders (1), ox-carts (1), pipe-chairs (1) and gates (1).

Table 2. Local manufacturing and repair activities in the Embu area, number of establishments. (Establishments are listed twice if two activities are undertaken)

	Embu Town	Shauriyako (near town)	Manyatta	Runyenjes	Other	Total
Sawmilling	3	0	1	0	1	5
Woodworking	21	2	3	8	15	49
Sheet metal working	10	11	2	3	8	34
Bicycle repair	2	0	1	4	2	9
Panel beating	1	0	0	1	0	2
Garages	11	0	1	2	1	15
Leather work (shoes and bags)	6	0	4	2	4	16
Posho mills	0	0	1	2	6	9
Tailoring	1	0	0	1	0	2
Dry cleaning	1	0	0	1	0	2
Mattress making	1	0	0	0	0	1
Masonry	0	0	0	0	0	2
Concrete blocks	1	0	0	0	0	1
Total	58	13	13	24	39	147

Much of the R.I.D.P. in Kenya so far has in fact been concerned with just this kind of small-scale craft industry. Table 3 shows that in three of the Rural Industrial Development Centres reporting in September 1973,

only 36 out of 206 clients providing information, that is 17.5 per cent, employed 10 or more persons, while about 66 per cent employed less than six. (8) The most common (modal) number of employees was three to five persons. Thus the bulk of the businesses dealt with were in fact what have been called 'dwarf' industries. Table 4 confirms that most business lines at R.I.D.C.s in 1973 were 'craft' industries - artisan industries based on particular crafts or trades - principally furniture-making, metal-working (especially sheet-metal work) and motor repair. These accounted in 1973 for about 63 per cent of the total number of clients on which information was available, but since many in the unknown category are likely to be in the same trades, the total may well be as high as 80 per cent. (9, Table 3.22)

Table 3. Number of intensive and extensive clients at three R.I.D.C.s, by number of employees, September 1973.

Centre	Number of employees						Total reporting	Firms not reporting
	None	1	2	3-5	6-9	10+		
Kakamega	0	0	7	34	16	16	73	0
Nyeri	12	4	18	33	12	19	98	71
Machakos	3	10	5	9	7	1	45	28
Total	15	14	30	76	35	36	206	99

Source: (8).

Table 4. Clients distributed by business line, 1973.

Business line	Embu		Kak.		Mach.		Nyeri		Total	
	no.	%	no.	%	no.	%	no.	%	no.	%
Furniture	20	20	33	39	37	44	56	26	146	30
Sheet-metal work	22	21	3	4	3	4	25	12	53	11
Other metal working	2	2	4	5	11	13	5	2	22	5
Auto/bicycle mechanic	21	20	16	19	15	18	29	14	81	17
Tools and machines	0	0	3	4	2	2	0	0	5	1
Sawmill	6	6	3	4	1	1	31	14	41	8
Posho mill	8	8	1	1	1	1	18	8	28	6
Other + unknown	24	23	20	24	14	17	51	24	109	22
Total	103	100	83	100	84	100	215	100	485	100

Source: (9), Table 3.22.

We may conclude: (1) that the large mass of rural entrepreneurs (outside agriculture and commerce) already in existence in the rural areas, and likely to be looking for assistance, will be in these craft industries;

(2) that the rural areas probably have a comparative advantage in these lines, catering for local consumption, based on a 'dispersed market pull' and that these lines can probably be pushed successfully right across the rural areas; (3) that the problem of establishing modern small industry, i.e. small factory industry, in rural areas is likely to be more difficult since the entrepreneurs will be less easy to find, and the business lines will be more difficult to identify; and (4) that the best approach for the promotion of craft industry and of small factory industry may not be the same, and might be quite different.

It seems essential, therefore, to keep a firm distinction between the two categories, even if there is, of course, some mobility between the two. It is also important to guard against 'grandiose' ideas regarding the type of rural industry with which the agencies involved will for the most part be dealing; and to avoid minimising the importance in terms of both income and employment of the informal sector, something which has in recent years been recognised in Kenya as being very substantial. Most of this evaluation will concentrate on craft industry, without implying in any way that its long-run significance will match factory production.

The Estate Approach versus the Extension Approach

The distinction made above is very relevant when we come to consider one of the main issues raised in the two conference reports, whether to concentrate on an estate approach, patterned along the lines of the urban industrial estates, or an extension approach. Up until now R.I.D.P. personnel have consistently favoured an extension service, where assistance is **given** to the entrepreneur in his own workshop. This is essentially a mobile form of assistance. The K.I.E., under whose umbrella R.I.D.P. in fact falls, clearly favours something more along the lines of its traditional estate policy, and there are signs of some mild friction between the two.

We shall argue that both approaches, pursued in their pure form, can be shown to be unrewarding and that a system of workshop clusters, combining elements of estate and extension, should be adopted.

PERFORMANCE OF THE RURAL INDUSTRIAL DEVELOPMENT CENTRES

In order to evaluate the performance of the existing R.I.D.C.s we can split up their potential contribution to rural enterprise as follows: (1) servicing of local craft and small industries through the provision of special machinery; (2) provision of local repair facilities; (3) training and

skill improvement; (4) provision of capital through common facilities or cash loans; (5) supply of materials under bulk purchase; (6) bookkeeping and management advice; and (7) product development. Some of these services have been available at the Centres' workshops only, some at the clients' workshops as part of a more explicit extension approach, and some both at the Centres and away from them.

Both in respect to activities at the Centres and to extension activities, criticism may be made regarding the excessive costliness of the Centres, particularly in relation to employment created. The total cost per Centre has been estimated as 1.1 million shillings. Clearly this would require a substantial flow of output, on a factory scale, to justify itself. Taking the Programme as a whole, extension service as well as centre workshops, 61 R.I.D.P. employees (only two of which were in the head office) served 205 clients in 1973. The cost per job created has been estimated at Shs 7,450/-. To warrant such overheads and reduce the cost per job created, the clients served would either need to be substantial businessmen, and the effect of the service on their business substantial, or the numbers of small enterprises served would need to be very large. As we shall see presently, the number of moderate-sized businesses served by the estates has been very small, and there are good reasons why this might have been expected. The initial investment in the centres thus probably represented a euphemistic view of the sort of industry which the centres would find themselves serving.

The Provision of Machinery Services

Apart from overheads associated with buildings and personnel, the purchase of machinery and equipment has contributed greatly to the high cost of the R.I.D.C.s, and there is evidence that some of this equipment has been greatly underutilised. For example, out of the 17 machines at the Embu Centre listed in Table 5, only a few were used very much: the welding equipment (91 out of 153 jobs in the metal workshop), the multi-roller swaging machine (16 jobs), the universal centre lathe (33 jobs) and the hand power tools. Most of the clients' jobs involved only small, very cheap equipment, especially welding equipment and power tools. Much expensive machinery lay idle. Four machines which cost Shs 41,824/- when purchased (present values are much higher) were used twelve times in ten months. These figures partly reflect the particular requirements of the clients using the Centre most regularly and are not therefore an accurate guide to demands of all **potential** craft-industry users, or to requirements if the nature of Centre activities were to be altered.

Table 5. Intensity of the use of metalworking machines at Embu R.I.D.C.

Metal workshop	Historical cost (shs)	No. of times used (over 10 months)	Main Common Facilities Workshop	No. of times used (over 12 months)
Electric welder	n.a.	72	Universal centre lathe	3
Handpower tools	n.a.	21	Universal grinding machine	10
Gas welding machine	1,683/-	19	Hacksaw	6
Multi-roller swaging machine	4,085/-	16	Drilling machine	3
Handlever shear	n.a.	11	Handlever shear	1
Corrugated roller machine	12,350/-	5	Corrugated roller machine	10
Bending roller*	19,950/--	4	Total	53
Pedal guillotine	9,524/--	3		
Sheetmetal folder	n.a.	2		
Universal pipe bender	n.a.	0		
Notching machine	n.a.	0		
Total		153		

* A 2" bending roller had to be bought in addition, as the large model /identical to that at Nyeri/ was found to be no use for the type of jobs common at the Centre.

They do, however, suggest a degree of misapprehension as to the kind of enterprises that would be catered for, and the type of machinery which their requirements could sustain.

By and large the woodworking machines were much more intensively used, partly because the number of clients is much greater, this itself reflecting the much greater importance of the furniture trade in catering for local consumption expenditure. The equipment, however, is less expensive and more divisible and in general more 'appropriate'.

As already noted, the high overhead costs of staff, buildings and machinery could only be justified by servicing a substantial clientele and output. Table 6 shows the number of clients using the metal and wood workshops at Nyeri R.I.D.C. In metalworking just three clients accounted for 179 out of 222 jobs (tasks for which a separate job card was issued), 80 per cent of the total. These were essentially 'resident' clients. Since it is not the purpose of the Centres to provide expensive facilities for such clients, we can ignore these particular jobs. Secondly, it is likely that clients using the machines only once or twice in ten months would either be using the machines

for a repair job or for an odd job, rather than using the facilities to assist their regular business. This covers another 15 clients, leaving at most five clients, perhaps only two, whose regular business outside the Centre can be said to have been assisted by the Centre facilities. In wood-working three out of twenty clients using the centre over a six-month period appeared to have been residential or semi-residential, and another eight used the centre for odd jobs: a maximum of nine clients appeared to have been serviced according to the goals set for the facilities.

Table 7 gives data for the Embu Centre which show that the situation in the metalworking shop there was similar. Only 20 clients used the workshop at all over a 15-16 month period and out of these, 5 clients, all of whom stayed for some months at the centre itself, account for three-quarters of jobs (91 out of 124). The position at Machakos R.I.D.C. was similar: in metalworking, 4 out of 16 clients (covering all clients since inception of the Centre) accounted for 63 per cent of jobs; in woodworking 5 out of 30 clients accounted also for 63 per cent of jobs.

An interesting exception to the pattern is shown in Table 7 for the woodworking shop at Embu. Excluding the resident or semi-resident clients, and those who used the facilities very rarely (less than 5 times in 15.5 months), 19 clients used the facilities 228 times, an average of 12 times each, compared with 5 clients at Nyeri with 35 jobs. Since market demand and the number of interested artisans is most likely much greater in Nyeri, this result probably reflects the unfortunate location of the Nyeri Centre at some considerable distance from the town. The location decision at Nyeri does not reflect much understanding of the businesses being served, particularly the fact that the workshops largely retail their own products and require proximity to potential customers. In this regard the Machakos R.I.D.C. is also poorly located, despite the wide choice of suitable sites available nearer to the town centre.

We can say, therefore, that the existing R.I.D.C.s have failed to provide the use of machinery and equipment to a large number of rural craft industries. Given this failure, two alternatives suggest themselves. One is the extension approach of taking service facilities to the client: an approach most strongly pursued and well-documented at Machakos. The other is to bring the clients to the Centres in much larger numbers, something which would require redesign and reorganisation of the Centres. This second approach is the basis of the system of workshop clusters recommended in this Evaluation Report.

Table 6. Number of clients using metal and woodworking machines at Nyeri R.I.D.C.

No. of clients using workshop	Metalworking*		Woodworking**			
	No. of clients nos.	%	No. of clients using workshop nos.	%	No. of clients nos.	%
40 or more times	3	13	179	81		
30 and under 40 times	0	0	0	0		
20 and under 30 times	0	0	0	0	15 or more times	3 15 74 56
10 and under 20 times	0	0	0	0	10 and under 15 times	0 0 0 0
5 and under 10 times	2	9	14	6	5 and under 10 times	5 25 35 27
3 or 4 times	3	13	10	4	3 or 4 times	4 20 14 11
1 or 2 times	15	65	19	9	1 or 2 times	8 40 9 7
TOTAL	23	100	22	100	TOTAL	20 100 132 100

* Data cover a 22-month period from March 1973 to January 1975.

** Data cover an 18-month period from July 1973 to January 1975.

Table 7. Number of clients using metal and woodworking machines at Embu R.I.D.C.

Metalworking*				Woodworking**			
No. of clients using workshop	No. of clients nos.	%	No. of jobs nos.	No. of clients using workshop	No. of clients nos.	%	No. of jobs nos.
20 and under 30 times	2	10	50	75 or more times	2	4	237
10 " " 20 " "	3	15	41	50 and under 75 times	2	4	108
5 " " 10 " "	2	10	11	20 " " 50 " "	2	4	61
3 or 4 times	3	15	10	10 " " 20 " "	9	19	121
1 or 2 times	10	50	12	5 " " 10 " "	8	17	46
TOTAL	20	100	124	3 or 4 times	3	6	10
				1 or 2 times	22	46	24
				TOTAL	48	100	607

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* Data cover a 15-16 month period from October 1973 to January 1975.

** Data cover a 15-16 month period from September 1973 to December 1974.

Provision of Local Repair Facilities

Even if the Centre were not servicing local industry through regular use of its machinery and equipment, it might be important in providing facilities for occasional repairs which, though occasional, might be crucial to the businesses concerned. In rural areas very far from the manufacturing centre in Nairobi, breakdowns may cause very great inconvenience and cost, so that the provision of this service might be of significance. The Nyeri Centre keeps a separate repair shop, the largest, housing the most substantial equipment, and keeps a separate record. Table 8 shows the number of clients using the machinery for repair jobs over a 19-month period.

Clearly the number of jobs carried out is extremely low. The repair facility might be valuable even if used only once by a client; but, given that alternative private commercial repair facilities exist in Nyeri, most of the one or two-time users could not be considered as finding the repair facility particularly useful. In general we can say that only four or five clients

Table 8. Number of clients using the repair workshop at Nyeri R.I.D.C.

No. of clients using workshop*	No. of clients
10 and under 20 times	4
5 " " 10 "	1**
3 or 4 times	5
1 or 2 times	37
TOTAL	47

* Data cover nineteen-month period from June 1973 to December 1974.

** This was a secondary school.

over the nineteen-month period have found the R.I.D.C. especially useful as a repair facility serving their businesses on a regular basis (one of these is a resident client). Even if regular, the service may not be a major one or, for the Centre, remunerative: one client was mainly re-welding broken hacksaw blades. If there is scope for some kind of machinery repair (service or maintenance) in the rural areas, and there may well be, the proper approach would appear to be extension, offering repair or service of machines on the site rather than at the Centre; but this has not been an element in the extension approach used, and this potential need has not been investigated.

Training and Skill Improvement

All the Centres have classrooms and are thus well equipped to organise courses. On the whole these do not appear to have been much used, though this is not true at Embu where about nine courses were held during 1974 (often for just one or two days) in woodworking especially, welding, use of spraying equipment and bookkeeping. This itself suggests that scope exists for this service. The variable level of craftsmanship and product quality in woodworking especially, which is a major difficulty for example in securing contracts from Government and other institutions, also indicates the need. At Machakos only two courses were held in 1974, with only 16 students in all, this reflecting to some extent the emphasis on the field extension approach at the Centre. Although skill-improvement has not been an explicit ingredient of this approach, nevertheless quite a lot of on-site training has been done. Some economists have argued that, within the field of education, the highest economic returns are likely to be in adult education, particularly within peasant agriculture. (See 2, p.101) This would certainly indicate that the returns to further education and training of people engaged in rural non-farming activities might be worth investigating. Whether this is best carried out at rural enterprise premises or at the R.I.D.C. is uncertain, given the costs of travelling.

The Provision of Capital

Since lack of capital appears to be an important constraint on the development of craft enterprises as well as medium enterprises, it is worth looking at the role played by the R.I.D.C.s in extending credit. In particular it will be useful to examine how loans have been distributed as between craft and medium industry, and secondly how loans to craft industry have been allocated.

Table 9 shows the loans which have been distributed by Machakos R.I.D.C., excluding materials given on credit. The most obvious comment is how small the number of loans is: thirteen in all, and only eight excluding tool and material loans. Thus only a small fraction of Centre clients obtained loans (a few others obtained loans from other sources), and a negligible number in relation to the number of entrepreneurs in the area. Thus, the R.I.D.C. was not able to make any significant impact on the problem of lack of capital experienced by most craft-entrepreneurs in the area. The question of equity may also be raised: while the mean value of machinery and equipment possessed by the clients serviced was about Shs 3,000/-, which is certainly

Table 9. Loans made by the Machakos R.I.D.C.

Client	Type of enterprise	(a) Value of own capital in machinery and equipment (Kshs)	(b) Amount of loan excluding generator (Kshs)	(c) Total amount of loan (Kshs)	(b/a) (%)	(c/a) (%)
1	Sawmilling	10,500	16,000	45,000	150	429
2	Ox-carts	2,500	7,000	27,000	280	1080
3	Woodworking	1,900	12,000	30,000		
4	Bicycle repair	3,700	7,000	25,000		
5	Woodworking	1,000	16,500	29,500	1650	2950
6	Ox-carts	1,000	5,000	18,000	500	1800
7	Metalworking	3,910	21,000	21,000		
8	Wood and metalworking	9,600	19,040	19,040		
<u>Tool Loans</u>						
9	Woodworking	Nil (using Centre)	2,355	2,355	∞	∞
10	"	1,000	750	750		
11	"	1,400	790	790		
12	Leather products	Nil (new business)	3,000	3,000	∞	∞
<u>Raw material loan</u>						
13	Woodworking	-	3,000	3,000	-	-
TOTAL		36,510	113,435	225,435	-	-
Average Loan		17,340	Average, excl. tool loans	26,820		

larger than for a great many entrepreneurs in the area, the average value of the loans given, excluding tool loans, was Shs 27,000, ranging up to 3,000 per cent of that of the client's own equipment. If the same funds had been used for tool loans of Shs 1,000 each, 225 clients could have been assisted rather than 13. Though the Machakos Centre has given only four tool loans, it is considered by the other Centres to be leading the way in this regard, so that it may be assumed that the position elsewhere is no better. It may be noticed also that no loans were granted for the improvement of premises, though many entrepreneurs lack these altogether. Furthermore, about 50 per cent of the total lent was for 6 generators to provide power, 5 of the 6 in rural areas; it is difficult to say whether the adverse distributional effects on other rural entrepreneurs caused by the increased competitiveness of these 'power-driven' craft-businesses will be outweighed by the long-run advantage given to rural production over urban. This should clearly be seen as an experiment, and the results monitored. As a final observation, note that in Machakos loans have been aimed at upgrading craft-entrepreneurs, particularly in woodworking, rather than assisting varied medium-scale enterprises.

R.I.D.C. loans must be repaid over six years, except for tool loans, but only interest need be paid during the first year. Tool loans must be repaid directly. Because of the one-year moratorium on ordinary loans, it is too soon to assess whether there will be repayment problems. On the other hand if there is a failure at this stage to pay interest, it might be presumed that there will be even greater difficulty in obtaining repayment of the capital. Table 10 gives some indication of the portent in the case of Machakos. Though the sample is small, and the scheme in its initial stage, a repayment rate of, say, 50 per cent is indicated for large loans, which is not particularly good. The rate for small (tool) loans does not appear much worse. It would appear that loan repayment might develop into a problem. If, as suggested presently, a mini-estate approach can help to reduce this, it would be something in its favour.

Table 11 shows the size distribution of loans given through the Nyeri R.I.D.C. Although the opportunities for granting loans are considerably greater than at Machakos, the number of loans made is still quite small. The mean value of loans given was Shs 30,000/-, approximately, and the mode Shs 25,000/-. No tool loans were given at all. Similarly the Embu R.I.D.C. had granted only seven loans, of which two were tool loans, by January 31, 1975, the total amount granted being Shs 160,000/-.

Table 10. Loans made by Machakos R.I.D.C.: Amount unpaid as percentage of that due up to December 1974.

Large loans (interest only due)			Small loans (interest and loan repayment due)		
Loan	1	100	Loan	1	100
	2	83		2	83
	3	50		3	50
	4	0		4	20
				5	0

Table 11. Loans distributed through the Nyeri R.I.D.C., May 1973 to December 1974.

Amount of loan (Kshs)	No. of loans
0 and under 5000	0
5000 and under 10,000	2
10,000 " " 20,000	4
20,000 " " 30,000	12
30,000 " " 40,000	2
40,000 " " 50,000	5
50,000 " " 60,000	3
60,000 " " 70,000	1
Total value of loans = 870,920/-	29

Supply of Materials under Bulk Purchase

The main material stocked and distributed by the Centres is wood. The Centres have a revolving fund for the purchase of wood which is, however, quite small. The primary objective of the service is to provide for the proper seasoning of the wood. Wood is not delivered to clients except at Embu in town, so that the biggest users, at Nyeri especially, are resident clients whom the Centres were not designed to serve. For non-residents the supply of Nyeri R.I.D.C. can scarcely be a convenience, given the possibility of buying closer at hand in Nyeri town. At Machakos the supply of wood at the Centre has been much more heavily utilised by local artisans, partly because short-term credit has been extended for its purchase.

Very little material for metalworking has been stocked, although the distribution of iron bars for making steel windows and of metal drums for making water containers has been significant at Embu. Out of 77 sales at Nyeri, 50 were only for solder and half the remainder for hacksaw blades.

The system of providing materials purchased in bulk has not been very heavily used so far, but in spite of this, bulk purchase of materials was rated as one of the most important forms of assistance offered by the R.I.D.C.s in the 1974 evaluation report. In fact, the Centres lack the capacity to deliver materials to extension clients residing outside the townships, except for very small items such as solder. If the artisans were more closely concentrated around the Centres, advantages of convenience would be gained and a higher level of sales could generate economies of scale which would give the Centres a price advantage over local suppliers. Further, the enthusiasm for short-term credit among the clients at Machakos no doubt reflects their shortage of capital, including working capital, and indicates the scope for expanding the bulk purchase scheme if credit can be provided.

Bookkeeping and Management Advice

Advice on management and bookkeeping has generally been given as part of an extension approach, visiting clients at their places of business. This approach has been followed most extensively at the Machakos R.I.D.C. where the experience has been well documented and evaluated.

Of about 100 clients in Machakos, some 12 received fairly intensive assistance, amounting to 20 to 30 hours, in bookkeeping and price calculation. These efforts were clearly unsuccessful in five cases, and no results were reported in another three; partial results appear to have been obtained in no more than three or four cases out of twelve. This should not be surprising since evidence elsewhere has pointed to a very low success rate in converting craft industrialists to bookkeeping.

Management advice offered in the form of extension assistance may be inappropriate for craft industry as compared to somewhat larger enterprises for which more sophisticated project planning is needed. The offering of advice on lay-out of the workshop, for instance, and similar 'professional' advice is certainly more appropriate to factory lay-outs than to rural artisan establishments employing three or four people.

More generally, the technical and economic advice which in practise the R.I.D.C.s are likely to be able to dispense as part of an extension service is probably quite limited, given the heterogeneous nature of the craft enterprises themselves and the limited expertise likely to be available to the R.I.D.C.s.

The failure of this form of assistance was acknowledged at the 1974 RIDP evaluation conference.

Assistance with Product Development

Another important aspect of the extension approach at the Machakos R.I.D.C. has been the attempt to introduce clients to profitable new product lines. This was done as a matter of routine at Machakos, in accordance with a 'standard working plan' (SWP), under which at least two new products had to be introduced to all 'intensive' clients. In addition, specimens of the clients' two main products were supposed to be made under technical supervision in order to improve quality and at least one jig or tool was to be introduced.

Together with bookkeeping, the element of the working plan which appears to have been taken most seriously by the extension officers in Machakos appears to have been the 'pushing' of the two new products. Unfortunately product development had not reached a stage, apparently, where clients could be introduced to profitable new lines. The products proposed to clients, with the number of clients recommended the product, have been as follows:

Wood Products: maize sheller (18 clients), wheelbarrow (15), folding chair (7), folding table (4), African chair (4), water cart (2), deck chair (2), plough rims (1), safari chair (1), hand planter (1), toy trains (1), concrete box (1)

Metal Products: coin box (1)

Other Products: soil cement and sand blocks (1)

The reason for the reluctance of clients to accept these products, except in order to please centre officials, is clear: they could not sell them. The files indicate that the following clients appeared to be successful in finding market outlets:

Wheelbarrow (1), folding chair (1), folding table (1).

In addition some clients produced samples for the R.I.D.C. itself: water cart (2), folding chair (2), deck chair (1). What is peculiar is why the centre should have persisted in its efforts to convert more and more clients to the maize sheller and wheelbarrow, particularly the former, when there were no sales. This could hardly have impressed clients with the financial know-how of the Centre.

LIMITATIONS OF THE EXTENSION APPROACH

The main emphasis in the Rural Industrial Development Programme so far has been on extension with the hope that in this way it would be possible to reach a large number of entrepreneurs and thus spread the benefits of the Programme more widely and equitably. All the Centres have followed this approach, but it has been taken furthest at Machakos. Here, a particularly great effort was made to reach clients in small centres, located very far from the main township, so that of 33 'intensive' clients mentioned in one report, 16 were located more than 40 kilometres from Machakos, and 3 were more than 140 kilometres away.

A major problem associated with this approach is transport costs. Mileage costs raise the cost of one hour of technician/client contact to extremely high levels,¹ which may not be justifiable when dealing with very small-scale craft enterprises unless the advice and assistance communicated results in much more fundamental changes than has been the case so far. In addition, there is always a danger that vehicles will be misused, raising costs further.

The transport factor affects the main purpose of the extension approach, to reach large numbers of clients. The 1973 R.I.D.C. evaluation report says "that a really systematic planning of the extension services has not been possible due to lack of transport facilities, especially transport of small machines, tools and materials".

R.I.D.P. clients are divided into 'intensive and 'extensive' clients, the former being eligible for more contact hours and much closer support. For intensive clients a standard working plan is prepared, including as routine some proposals for product development and/or skill improvement, and instruction in bookkeeping and management. However it can be seen from the preceding tables that the number of intensive clients is quite small. This is not offset by assistance more widely distributed to extensive clients: up to April 1974, progress with the extensive clients had in general not gone beyond their registration. It is doubtful, therefore, whether the extension approach is effective in practice in reaching a large number of clients.

Even with regard to the intensive clients, the extension approach is now generally regarded as a failure by R.I.D.P. staff. As of February 1974, 131 out of 205 clients, or 64 per cent, were considered to have made no

1. P. Kongstad estimates these at about Shs 150 to 200 per hour in a recent detailed analysis of the impact of transport costs on the cost of the extension service.

progress as a result of extension. The Machakos Centre staff have produced a comprehensive evaluation of their extension experience which concludes:

...It must be considered a reality that R.I.D.P. is not able to raise the general level of the entrepreneurs and their employees.... It is difficult to measure any improvement of the employment situation etc. over a relatively short period when work is done with already established entrepreneurs.... They are satisfied with their present situation, are too old to be receptive, etc.

... Any advanced (established) client considers the presence of the technician as a disturbance.... (1)

However, it is not clear that the failure of the extension approach was due to lack of responsiveness among clients so much as the lack of concrete advantages being offered. Up until the 1974 conference at any rate, it was not clear precisely what the extension consisted of, or should consist of. We have already seen that advice on product development was not very sound, while that on bookkeeping could excusably be viewed as superfluous. We have seen that bulk purchase supply of materials appears to fulfil a felt need. The viability of this for a scattered client extension system is, however, dubious, and it is rather curious that the 1974 R.I.D.P. conference report puts this at the top (as "undoubtedly feasible") among forms of extension assistance. The Centres lacked the capacity to deliver materials to clients residing outside the townships, except for small items such as solder.

There is evidence of some uncertainty among R.I.D.P. officers about which forms of assistance to emphasise. In Nyeri it was reported for the last quarter of 1973 that it had been possible to carry out less than 15 per cent of the assistance planned and specified in the clients' SWPs. The fact that, whereas all Centres obtained Volkswagen vans in September - October 1973, these "had not started operations after six months", also suggests uncertainty regarding the assistance to be offered.

Probably the main reason for the lack of receptiveness to extension is that it fails to recognise the most important need of the artisans: capital. This need is readily apparent from a scrutiny of clients' files which indicate that their main interest is usually for financial assistance. Moreover a check of clients using the Machakos Centre showed a considerable proportion lacked proper premises and were working under 'shades' as protection against sun and rain: in these circumstances other forms of assistance appear secondary. Lack of sufficient tools is a general problem, however low the cost of these. Access to power, related to the problem of premises, is a crucial constraint. The

extension approach has done little or nothing regarding this capital constraint and indeed its costliness has absorbed funds that might otherwise have been available.

THE WORKSHOP CLUSTER APPROACH: A PROPOSAL

Up until now, the strategy of the R.I.D.P. has been to establish local Centres, comprising relatively expensive buildings and central workshops, to act as 'bases' for extension efforts to scattered local artisans. This extension programme has however proved to have only a minimal impact and to be excessively costly. At the same time the Centres themselves have not been geared to servicing many clients on their premises or functioning adequately as industrial estates. To varying extents they have been taken over by three or four clients who have enjoyed relatively lavish facilities at subsidised rates.

What seems to be required is an intermediate solution somewhere between the estate approach and the extension approach. This would provide very simple workshops at central sites for large numbers of artisans who would have use of specialised machinery and equipment as common facilities. These would in effect be 'workshop clusters' rather than industrial estates. Unlike the latter which cater for any number of heterogeneous activities conducted independently, they would concentrate on a limited range of craft industries in which the artisans receive considerable assistance and supervision through the Centre.

In addition, unlike industrial estates which concentrate manufacturing in major townships, the proposal would be for a system of major and minor workshop clusters which would be based on the existing and potential distribution of craft industrial activity in Kenya and would encourage the dispersal of rural industry. Major clusters in townships might comprise 30 or 40 workshop units and minor clusters in rural centres only 5 or 10 units. The primary ingredient would be the provision of lockable premises. Some, but not all, minor clusters would have a generator.

Craft industries in Kenya are concentrated in the townships and minor centres, but are also more widely distributed within the rural areas themselves. An indication of how this would affect a system of workshop clusters is given in Table 12, taken from the Kenya Development Plan, specifying potential urban and rural growth centres in the Districts in which the R.I.D.P. "is already" active. This demonstrates that the proposal would afford a quite widely-spread network of facilities and not an over-centralised system.

Table 12. Potential growth centres in the four Districts with R.I.D.C.s.

District	Number of urban centres	Number of rural centres	Total
Kakamega	2	9	11
Nyeri	2	5	7
Embu	1	3	4
Machakos	2	9	11
Total	7	26	33

The so-called 'Kisumu Model' of development which has been widely discussed in K.I.E. and R.I.D.P. is for a regional system comprising a nucleus estate plus satellite R.I.D. Centres operating as a decentralised organisation. This could be modified to make the nucleus industrial estate a regional centre at which would be based a more diversified staff (still small) of advisors who would oversee not only major/minor cluster operations but consult on medium-scale industry possibilities in the region. The R.I.D.C.s would not be single centres but the suggested network of major workshop clusters, under local managers, and minor clusters. A bulk-purchase system might be operated on a regional basis with a main store at the nucleus estate and sub-stores at mini-estates (major clusters) with a view to economising storage and raw material transportation costs. The system should operate to minimise staff overheads. This assistance, and the extension service generally would thus be administered through the system of scattered major and minor clusters, hopefully in a much more fruitful and economical manner than hitherto.

It is important to underline that the workshop-clusters would cater for craft industry of different types and not act as industrial estates of moderate-sized establishments. Provision for expansion of craft enterprises could be made by the allocation of two or three of the adjacent standard-sized units. This will also permit the offer of larger premises to more established businesses or larger cooperative groups. The quality of the facilities offered should be within the capacity to pay of relatively low-income artisans. Specifically the buildings and equipment should be such that the monthly depreciation should be covered by the rent or rate of depreciation which such artisans can afford.

It is worth giving some order of magnitude to this. Suppose the loan must be paid off over 10 years at 8 per cent interest and that on top of machinery loans and land rentals the client can afford to pay at the rate of Shs 600 per annum, or Shs 50 per month. The cost of the premises should

not exceed Shs 3,333. At a 5 per cent interest rate this cost could go up to Shs 4,000. Against this the prototype shed being built experimentally at Embu as 'appropriate' technology is estimated to cost Shs 25,000. Ten sheds built at Kakamega cost approximately Shs 50,000 each. What suggests itself is some standardised pre-fabricated unit which can be produced cheaply and readily assembled in any location, perhaps to form different sized sheds out of standardised pieces.

Advanced proposals do exist at Machakos for sheds of flexible construction at an estimated cost of Shs 4,500, very close to our figure. This proposal has not yet been taken up at other Centres which operate independently in this regard. Even at Machakos there is still a reluctance to take over direct responsibility for the construction of sheds and operation of the estate. The Machakos design could however provide the model for general adoption.

THE OPERATION OF THE WORKSHOP CLUSTER SYSTEM AND ITS ADVANTAGES

The system of workshop clusters would facilitate much more direct assistance to artisan industries and would have a number of advantages.

The Creation of Employment

By boosting labour-intensive activities using 'appropriate' technology, and increasing their ability to compete with urban factory production, considerable employment may be generated without the necessity of subsidising inefficient small establishments. As an indication of the potential in this respect it is worth referring to the example of the National Small Industries Corporation workshops in Dar-es-Salaam which formed the basis of initial efforts at craft industry promotion in Tanzania. These consisted of about 100 simple cubicles, made with mbati sheets, arranged in what we would call a 'major cluster' and rented out to artisans for about Shs 30 per month. Central facilities were provided for woodworking, to be paid for as they were used. These compact workshops, occupying a relatively small piece of waste land, housed some 400 artisans, the size, in terms of employment, of a substantial factory. Although only a portion of this can be considered as net employment creation, the new employment created by a national programme along the lines suggested, and the increased incomes accruing to all those assisted, would be very substantial.

The Provision of Premises

Kristensen may be right in his suggestion in the conference reports that the rate of capital accumulation among many artisans could be higher. But taking preferences as given, premises and lack of tools appear quite critical among artisans. These things, and the lack of capital generally, are named repeatedly as serious handicaps, as indicated in Table 13. In Dar-es-Salaam, at least, where the premises offered were rudimentary, and no tools or machinery were supplied apart from the central saw facilities, the queue for admission to premises was huge: the 100 units could have been filled several times over. The reluctance of tenants to leave the R.I.D.C. workshops

Table 13. Clients distributed by recorded problems, all Centres, 1973.

Problems	% of clients mentioning	Problems	% of clients mentioning
Plots and premises	13	Lack of electricity	6
Raw materials	15	Bookkeeping	5
Production methods	10	Marketing and sales	5
Lack of skilled manpower	3	Unknown problems	12
Lack of tools and machinery	32		
		Total no. of clients' problems recorded	100% (N=882)

(admittedly more lavish), about which the R.I.D.P. management complains bitterly, is perhaps an indication of a similar situation in Kenya. One of the obvious advantages of supplying capital by provision of premises is that of a readily repossessable loan: in contrast cash loans have distinct drawbacks as East African experience readily shows. The workshop-cluster system should facilitate loans-in-kind for equipment and materials. Failure to repay should mean eventual eviction from the workshop, which would be an important sanction.

The Provision of Common Facilities

The competitive advantage of factory production may be reduced by the provision of one or two large pieces of machinery as a common facility for the individual artisan-units. In Nyeri it was noted that a "characteristic feature" was the clients' coming in from outside to have work done in the Centre. It is rather interesting to note that when one such entrepreneur earned Shs 30 for a job carried out in the Centre for Shs 15 there was considerable indignation, and his access to the facilities subsequently restricted: this would have been better seen with relief as an indication of positive returns from such machinery.

In rural areas small clusters could be built around the crucial common facility of a generator to provide power. As already mentioned, the practice of offering loans for generators to particular individuals in small centres should be discontinued in favour of establishing power as a common facility to serve simultaneously a group of people and a variety of rural non-farming activities.

Bulk Purchase of Materials and the Provision of Storage

The bulk-purchase scheme at Machakos, although quite limited, was described by the Centre as "the best thing here". The system of workshop clusters should permit considerable increase in the scope for bulk-purchase activities. The case for these is two-fold. Because of the lack of a well established craft industry, demand for materials tends to be insufficient for satisfactory supply through local dealers: expansion of the sector under the Programme would expand supply and demand for materials simultaneously. Outside clients could continue to purchase materials from the Centres, which would now be much more widely distributed. Secondly, artisans at present have to purchase materials at retail prices, and in up-country centres at high retail prices. Bulk purchase should permit supply at wholesale prices and thus more effective competition with factory production. Finally, in metal-working there is the particular problem that a principal raw material is scrap metal of various types, which is more plentiful in the towns, particularly Nairobi. Collection of bulk supplies of such scrap through the R.I.D.P. would be a significant form of assistance.

An important element in the bulk purchase system would be storage facilities distributed in an optimal way throughout the system. This should mean not only cheap and speedy delivery, but also a wide range of choice of materials. Storage could initially be at mini-estates or main clusters only, with clients at smaller clusters and outside clients travelling to make purchases: once the system is in full swing a more ambitious system of delivery might be organised on a commercial basis.

In general, were private entrepreneurs performing this supply function adequately, it would be better to leave this activity to ordinary commercial channels. Because rural industries are dispersed, disorganised and undercapitalised, the private distribution sector has not been attracted to cater for their needs and in any case is itself poorly organised in the rural areas. The success of the limited arrangements made so far for bulk purchase through the R.I.D.P. is indicative of a gap being filled. Lack of

working capital to purchase materials appears to be a major constraint on the viability and growth of a majority of small establishments, moreover, and the R.I.D.C.s can play an important role here. After an organised system of workshop clusters is established, consuming materials on a much larger scale, the supply of these will be more economic and attractive to private commercial distributors.

This is one point where the Programme's stated priority of finding new products and new activities to promote is in conflict with the need to establish a substantial foundation in terms of staple activities which would permit the Programme to reap economies of scale. The search for new activities should be in addition to and not at the expense of immediately feasible goals.

Training and Skill-improvement

Training and extension services are likely to be very much easier if artisans are brought together in workshop clusters. Referring to a Machakos client, for instance, it is said that:-

This is one of the few cases where we have been able to change the attitude of a person, and it is fully because we have had the person 'under pressure' (that is, at the Centre) for several months.

This suggests that extension may only work where clients are organised in workshop clusters. Even though training courses can be organised for non-resident clients, considerable reluctance to release employees for training has been noted among clients. This would be much more readily organised where apprentices and other employees could be released for training on the spot for occasional afternoons and for specific jobs. An interesting phenomenon remarked in the N.S.I.C. estate in Dar-es-Salaam was the informal (and rather inefficient) system of apprenticeship operating among the tenants: an obvious opportunity exists to strengthen this informal on-the-job system as an alternative to 'technical school' training. This could also be used to 'graft' Village Polytechnic leavers into ongoing small enterprises.

Product Development

The identification and promotion of new products is potentially of vital importance in fostering the growth of rural industry in Kenya. This appears to be particularly true of firms engaged in metalworking. Such firms tend to be much less remunerative than woodworking establishments, and success in increasing the number and technical competence of metalworking

seems clearly to require an effective programme of product development, often reinforced by technical assistance. Both activities would be facilitated greatly by the establishment of workshop clusters.

There appear to be two types of products which have been designed and developed at the R.I.D.C.s. First are products suitable for particular circumstances and situations in Kenya: these fall under the heading of 'appropriate technology'.

The Centres, particularly the embryonic product development group at Machakos, have explored a wide range of possibilities under this heading, and a few specimens have been constructed. Ideas include a donkey-cart (as used in West Africa), a bicycle-cart, a wooden wheelbarrow (particularly for road work), school chairs (based on a Sudanese model), wooden toys, a rotating hand planter (based on an American model), a maize-sheller (from Tanzania), a kerosene-driven incubator, a soil-cement block press (from Ghana), housing components, a Kumasi pump and a windmill/pump. Low cost farm equipment is considered more fully below.

The second category of products are modifications or copies of ordinary manufactured goods at present imported, but capable of being produced locally at much lower prices. Work in this direction has gone on particularly at Embu R.I.D.C. A bench-saw constructed by artisans at Embu has been sold commercially through Gilfillan and Co. at substantially below the imported price, and is a superior product in that it can do two operations (crosscut and rip). Tools such as a G-clamp and flat bar clamp have been produced at the Centre at a fraction of the import price and appear to be superior to the old-fashioned British designs still imported. It is claimed that the whole range of woodworking machinery could be made much more cheaply in Kenya than the imported models: a bandsaw and a beltsander, for example, at a fraction of the price in Nairobi.

The possibilities for competing effectively with imported items appear to arise partly out of conservatism in the import trade. Old-fashioned models continue to be imported, and the tendency is to rely on traditional suppliers from a limited number of countries **although alternative sources of supply might be less expensive.**

Despite the attractiveness of both categories of products, little actual production has been achieved so far. A major constraint has been the absence of production capacity which would permit a guaranteed supply sufficient to meet the needs of local wholesalers. This lack of production capacity could be alleviated by a system of workshop clusters. Managers

at the R.I.D.C.s could allocate orders to groups of clients and supervise to some extent the quality and homogeneity of the work. It would also be possible to organise specialisation among artisans, who might produce different component parts of a product, but this would, initially at least, require a large management input by the Centres. Without increased production capacity, efforts at product development seem doomed to continue to yield no tangible commercial results, and as previous efforts run to waste in this way, the incentive for further product development is diminished.

Further, in the case of experimental appropriate technology products, development at the R.I.D.C.s can only be successful in collaboration with the appropriate ministries (for example, the Ministry of Works for wheelbarrows, the Ministry of Agriculture for agricultural equipment and the Ministry of Water Development for windmills and water pumps). **Such** collaboration has not yet been initiated.

Finally, product development has so far been allocated relatively little financial support. Finances for R.I.D.C.s have mostly been diverted to supervising a handful of resident clients or to the extension service. The proposal for a fully fledged product development group to be based at Machakos has not been acted upon, though an informal committee exists among the Centres for the exchange of ideas. It appears essential that a product development group, embracing all the Centres, be allocated the necessary financial support and staffed with **competent engineers** who are inventive and particularly interested in appropriate technology.

One last consideration in the search for new products is that the development of production capacity **would** perhaps be best facilitated by concentrating, at least initially, on a few products in order to establish a substantial foundation of production. The search for new activities should be in addition to, and not at the expense of immediately realisable goals.

The Special Need for Low-cost Farm Implements: There appears to be a particular need for concentrated efforts to identify, adapt and promote local manufacture of appropriate low-cost farm implements. To be successful, such efforts will have to be coordinated with a testing programme and farmer training and extension activities organised by the Ministry of Agriculture (and by the Ministry of Lands and Settlement in settlement areas). In as much as the Ministry of Agriculture is currently finalising arrangements for an FAO/UNDP

Agricultural Equipment Project that will focus on simple tools and implements suited to the needs of small-scale farmers, it appears that this type of coordinated effort is now a realistic possibility.

Up to the present time very little attention has been given in Kenya to identifying and promoting the use or local manufacture of low-cost farm tools and implements suited to the needs of the country's small-scale farmers. Research and development work related to intermediate technology was supposed to have been one of the two main activities of the Agri-Service Station in Mbere, but in practice the work of the Station has been concentrated almost entirely on providing a **subsidised tractor** hire service. Toward the middle of 1974, two local farmers were hired as day labourers to train oxen, but there is nothing innovative about this activity. The Ministry of Agriculture appears to have provided very little support for this work on intermediate technology. This has been influenced by many factors which need not be reviewed here. It should be emphasised, however, that it is a formidable undertaking to identify, test and promote wide use of improved farm equipment. It was, therefore, probably unrealistic to expect the Agri-Service Station and the Mbere SRDP to carry out useful work in testing and promoting the use of this type of improved farm equipment without the support of a national programme such as the one that is only now being developed.

The failure to promote expanded use of low-cost farm equipment and local manufacture of such products is most unfortunate. Particularly with the sharp increase in fuel prices and in the cost of imported tractors, tractor-drawn equipment, and spare parts, only a small fraction of the country's farmers have sufficient cash income to be able to rely on tractor hire service. A heavily subsidised service such as has been provided by the Agri-Service Station at Siakago has enabled a limited number of farmers to expand their cultivated area, but it would not be possible to replicate this type of service so as to benefit a large percentage of farm households. Even if Government were able to make budget allocations sufficient for that purpose, it would be an inappropriate use of limited resources.

Although many farmers are using their own or hired oxen to supplement manual labour, the resource represented by the livestock available in rural areas is being grossly underutilised. With very few exceptions, only one animal-drawn implement, the 'Victory' mouldboard plough, is available. In general, oxen are used only for primary tillage, although in some instances the mouldboard plough is also used for inter-row cultivation, an operation for which it is not at all suited. It also seems likely, though this has not yet

been demonstrated conclusively, that the traditional method of training and controlling oxen is much less efficient than the so-called Indian method. With the Indian method, a pair of oxen are guided by reins connected to a nylon rope (or metal ring) inserted through a hole in the nose. This technique makes it possible to control the animals more accurately, and it is also claimed that because oxen controlled in this way pull a plough at a steady pace, it is possible to get as much work output in a day from a pair of oxen as with a team of four using only yoke chains.

A steadily growing demand for a widening range of simple farm equipment would have a very favourable impact on rural industrial development as well as contributing to increased farm productivity. Much of this equipment could be manufactured with reasonable efficiency by small- or medium-scale workshops in rural centres, and gradual expansion of such production could make a significant contribution to increasing the technical and entrepreneurial skills available in the country's metalworking industry. Increased competence in metalworking would facilitate expanded local production of consumer goods as well as farm inputs, and it would also contribute to the development of an indigenous capability for production and adaptation of machine tools. Increasing the size and technical competence of the capital goods sector is a key factor in making it possible to adapt imported technologies to Kenya's resource endowment which differs so drastically from conditions prevailing in technology-exporting countries.

As already noted, it is no easy task to realise the potential benefits from expanded use and local manufacture of appropriate items of farm equipment. First of all, effective demand for such equipment is restricted by the limited cash income of the majority of farm households. However, a notable advantage of emphasis on this type of innovation is that it can be expected to lead to increases in farm productivity and output so that the purchasing power constraint is gradually eased as farmers are able to expand their output of export crops or of products to satisfy the increasing domestic commercial demand. (The availability of subsidised tractor hire service will, of course, tend to undermine the growth of effective demand for the simple, less costly type of equipment.)

Secondly, a fairly difficult search operation is involved in identifying new items of farm equipment adapted to the needs of farmers in various regions. Moreover, the most significant increase in productivity will often result from the simultaneous introduction of equipment and tillage innovations, e.g. a shift from mixed cropping based on broadcast

seeding to planting a suitable mixture of crops in alternate rows so as to facilitate the use of an inter-row weeder-cultivator. The need for devising appropriate equipment and tillage innovations appears to be especially great in Kenya's semi-arid 'medium potential' areas. There is general agreement among experts on dryland farming that the mouldboard plough is poorly adapted to a situation in which moisture conservation is a primary consideration, but local research is needed to determine which of several alternatives - e.g. use of ridging ploughs for a ridge and furrow system or minimum cultivation techniques using a combination of a chisel plough or sub-soil or shoe implement and sweeps for weed control - is best suited to the soils and topography in different parts of Kenya's medium potential areas.

Third, equipment innovations are difficult to introduce to farmers. The requirements for demonstrations and acceptance trials and for training programmes are fairly demanding and require prior training of the trainers. Fourth, even simple equipment represents a fairly large cash outlay for a small farmer so that the availability of credit is likely to be a more serious constraint than with a very divisible innovation such as hybrid maize seed and its associated inputs.

Finally, there are difficult problems, referred to earlier, to be overcome on the manufacturing side to ensure that growing demand leads to an expansion of local manufacture. The technical skills available in Kenya's small-scale metalworking firms are still at a low level and the range of tools and equipment available is distinctly limited. Experience in Japan, Taiwan, India and other countries that have achieved a considerable development of small-scale, rural-based industries demonstrates the importance of technical skills such as designing jigs and dies and of specialisation among different firms.

The Agricultural Equipment Project and the programme for intensified research on problems of dryland farming, which the Ministry of Agriculture proposes to initiate this year with FAO/UNDP support and other external assistance, should provide a stronger research base for promoting expanded use of a wider and better adapted range of farm equipment. However, adoption by farmers of new types of equipment is likely to be very limited unless steps are taken to train extension specialists in the use of such equipment so that demonstrations can be carried out and training provided at selected F.T.C.s and other locations, e.g. Village Polytechnics, to create a nucleus of farmers capable of diffusing knowledge of the new technologies and providing contract

services for a variety of cultural operations. Finally, there is a need to strengthen the capacity of the R.I.D.P. to provide practical technical assistance to encourage efficient local manufacture of farm equipment; and the establishment of workshop clusters or 'mini estates' as proposed here should make it easier to provide such assistance and also to encourage specialisation among small-scale firms engaged in the manufacture of components or particular items of equipment. A number of the somewhat more sophisticated items of farm equipment are probably better suited to manufacture by the 'moderate-sized' establishments discussed later in this chapter. Furthermore, certain components which can be produced more efficiently by large-scale firms using expensive equipment or sophisticated processes should perhaps be imported or manufactured in Nairobi or another large industrial area. Experience and technical expertise are too limited to provide definite answers to such questions at this time.

Marketing and Publicity

An important potential form of assistance to clients at the Centres is assistance in marketing. Even without specific assistance, experience in Dar-es-Salaam showed that the concentration of large numbers of artisans in itself attracts traders and customers to the site. If the major workshop clusters were better located in population centres (as the existing ramshackle informal-sector premises invariably already are), the volume of direct sales to consumers might be greatly increased. Finally, a network of major and minor workshop clusters, by offering visible evidence of the existence of the R.I.D.C.s, could provide useful publicity of a general kind attracting various types of entrepreneurs to seek assistance.

An important market for craft industry, particularly furniture, in the rural areas, is the demand from institutions: public authorities, hospitals, schools and the like. With production capacity concentrated in workshop clusters at the Centres, the R.I.D.C. management should be able to go much further in acting as intermediaries in obtaining such orders for distribution among resident artisans. Small-scale craft entrepreneurs have also been handicapped in obtaining and handling such orders by the postponed repayment practices of most public authorities and institutions, a practice which has also affected the entrepreneurs' capacity to repay materials loans. A remedy for this situation would be for such institutions to place orders with the R.I.D.C. management rather than individual entrepreneurs, the former carrying the burden of credit. This would have the additional advantage of the R.I.D.C.s being able

to distribute larger orders among several units, offering some supervision of the production.

There is of course a danger in institutions allocating orders to the R.I.D.C.s that such patronage may promote inefficiency. Management (and the institutions) should ensure that only competitive prices are offered to artisans for such orders.

COMPARISON WITH EXISTING PROPOSALS

The system of workshop clusters proposed here is in some respects similar to ideas being discussed among R.I.D.P. staff for site-and-service schemes (also called mini-R.I.D.C.s) and industrial promotion areas. These ideas include the notion of workshops built in rural centres around a generator and other common facilities. However, they have not been fully clarified, and it is uncertain how much support they would receive, particularly financial backing and support within the K.I.E. They appear inconsistent with the proposals in the 1974-78 Development Plan for opening conventional R.I.D.C.s at Voi and Malindi.

Further, although staff at the Centres have recognised the need for some sort of workshop sheds adjacent to the existing facilities, they appear to be highly uncertain what form these structures should take. An architect has been called in to make plans, but a variety of designs are being considered rather than one cheap standardised model, and some existing proposals would cost much more to build than could be recovered from the rents which low-income artisans would be able to pay.

There remains, therefore, a gulf between the Centre proposals and the shanty-town craft-industry areas which already exist in these townships, whereas the aim should be to rehouse a substantial proportion of such artisans. This might bring the work of the Centres still nearer to the reality of the local economy. For example, one Centre stated it could not make beds (a staple item of demand in the rural economy) in competition with the local product being made with old tyres and sold at Shs 40: clearly if the current producers were transferred to the Centre's workshop cluster the Centre would in effect be producing these and ways might be found to improve the product, increase production or, through marketing, sales.

As yet, there is no widespread commitment to building workshop clusters and no agreement on the design of sheds. No minor clusters have been built in rural areas, despite a two-year-old proposal, for example, for a

cluster at Manyatta in Machakos. Although findings strongly critical of the extension approach were published in April 1974 (9) and funds for extension are now running low, this is the approach the Centres continue to follow. The 1974 report itself, after criticising extension, fails to recommend an alternative modified estate approach since this is deemed "impossible to administer". (9, p.86) The report suggests that in order to promote the field extension service "the centres might be started with only an office building with two or three rooms and a garage. The staff would then be forced out in the field..."² (9, p.74) Similarly, the previous practise of offering clients only a limited stay at the Centre workshops was to be reenforced by issuing contracts in advance to ensure that no one would stay longer than six months.³ The conclusion is that in future the Centre workshops should not be used for resident clients at all.

The points made in the 1974 report are summarised in the following paragraph. The contrasts with the proposal for workshop clusters made in this SRDP Report could not be more clear.

It has been impossible to administer this kind of assistance (provision of a workshop at the centre), when tried. This might be because no contract has been made with the client in advance, but more likely it is a weakness with the assistance form as such. In the future the centre workshops should not be used as client workshops. And no stay at the centre should be permitted without signing a contract for the stay. The proposed sheds attached to the centre must also be used in a deliberate way, and not just as cheap premises for a few lucky entrepreneurs. The workshops should be rented out on a temporary basis with no leases exceeding e.g. one year. If this is not done from the very beginning, the centre might easily be reduced to a mini-industrial estate, and the extension services rendered outside the centre will be reduced accordingly. (9, p.86)

DIVERSIFICATION OF WORKSHOP ACTIVITIES

The trades presently assisted by the R.I.D.C.s are extremely circumscribed, being almost entirely limited to wood and metalworking. If the Centres were sited more appropriately within townships, it should be possible to diversify considerably into motor repair work, masonry and construction,

2. It is not intended to criticise here the commendable desire to reduce unnecessary overheads.

3. Surprise is expressed at the reluctance of entrepreneurs to come to the workshops under these terms. Yet it would seem unwise for them to leave permanent premises of their own, however rudimentary, for such a short-term arrangement.

tailoring, gheemaking, and more specialised activities such as plumbing, electrical work or the manufacture of components and tools. Motor repair probably ranks with woodworking among the most highly remunerative rural trades. The Embu R.I.D.C. has already successfully provided facilities for a motor car spray shop. However, thought would need to be given to the most appropriate lay-out of the Centres for facilitating such diversification.

SUGGESTIONS REGARDING MODERATE-SIZED ENTERPRISES

The craft industry establishments which have been discussed usually employ less than ten persons, and generally only three or four. In comparison, establishments of, say, 20 to 50 employees to which we now wish to refer will be called moderate-sized establishments within the general category of small industry. The brief treatment of moderate-sized industry in this Report, and the concentration on craft industry, should not be taken as reflecting the view that the moderate-sized establishments are any less important.

The R.I.D.C.s have come up with a number of project proposals for moderate-sized establishments. At Embu, for example, proposals exist for raw material based industries: sawmilling (4 establishments), sisal decortication (2), animal feed (3), milling (1), stone-crushing (1), tannery (1) and honey refining (2). Proposals for local consumer industries include: dry-cleaning (3), garments (2), soap-making (1), leather goods (1), printing (1) and bakery (1). Miscellaneous industries include: garages (2), tyre retreading (1), electrical motor rewinding (1), blockmaking (1), paper bag making (1) and nailmaking (1). Most of these are only under investigation at present and loans have so far been approved only for one sawmill, a tailoring establishment, a shirt-making establishment, a salt unit and a furniture establishment. The Centres have in general found it very difficult to find viable projects and as a consequence, despite the foregoing list, there are very few moderate-sized projects actually being operated in the four areas. Such limited assistance as has been given has been in the form of loans, a function already covered by I.C.D.C.

It is not clear what form of assistance is currently proposed for these establishments. The 1974 conference report states paradoxically that while estate assistance is "too costly for general use" it should be utilised for the promotion of new industries "demanding intensive assistance in their initial phases". It adds that "the estate should be seen as giving a very high support preferably to basic industries needed in the region". (9, p.74) In fact, it is for just these enterprises that the extension approach, including

project planning and business consultancy, should be most relevant as well as economically feasible, and given the greater heterogeneity of these enterprises, the advantages of centralisation are less obvious. Many are likely to be raw material oriented industries with dispersed locations, such as saw-mills, posho mills, sugar processers, tanneries and canning plants, which would not be suitable for an estate approach.

Two fundamental reasons may underline the lack of progress made by the R.I.D.C.s in respect of moderate-sized industry. While there is some scope for further expansion of processing industries based on local products, many of the more obvious possibilities for such processing have long ago been taken up. Secondly, there is no policy of countering the centrifugal tendencies concentrating industry in Nairobi and Mombasa or of directing larger industries, through licensing, to provide some core to the proposed secondary industrial centres. Without such a policy, there is little or no hope of these centres attracting core industries (except those exploiting a local material) and therefore of developing ancillary and feeder industries around these.

Generally speaking, one would not expect a locally based R.I.D.C. manager or engineer to be in a position to offer significant consultancy services for the wide range of types of enterprise involved here, or to be in a position to indicate which industries should be allocated to or 'persuaded into' the area. This is not to say that R.I.D.C. staff would not be capable of making project suggestions and acting together as an intelligence network for transmitting proposals from local business for new projects. One possibility would be for the Provincial Trade Officer to be located, together with one or two consultants at most, at the regional industrial estate, with the task of coordinating the intelligence and advice network for the region.

COOPERATION WITH VILLAGE POLYTECHNICS

At present there has been little or no coordination of the R.I.D.P. with the activities of the Village Polytechnics, and yet their activities relate to the same trades to a great extent. In a 1974 evaluation report, the courses offered at Village Polytechnics were listed as follows: leatherwork including shoe-making, blacksmithing, tinsmithing/metalwork, fitting and welding, electrical, these last two relevant for motor repair which was another very popular course, masonry, plumbing, carpentry, tailoring, bicycle repair and a few others. (5)

There would be important economies of scale in locating Village Polytechnics at major clusters or locating new workshop clusters at existing Village Polytechnics. The Village Polytechnics tend to be located in the

same places which have been found suitable for workshop clusters. Major advantages of locating these two types of institutions together would be:-

1. Some degree of sharing machines, tools and personnel would be possible, as well as economies in the use of administrative staff. At present Village Polytechnics are suffering from a serious shortage of tools and teachers.

2. Polytechnic leavers would be trained within the atmosphere of the informal sector, would know what to expect in the 'real world', and would absorb more notions of entrepreneurship than they could obtain in the schoolroom.

3. By and large Polytechnic leavers at present have inadequate skills and managerial experience to start on their own. For this reason they should not be given priority in the allocation of sheds. However, they could much more easily graduate from the Village Polytechnic to positions of apprenticeship or assistance to established artisans, either at the Centre at which their polytechnic is located or at other associated workshop clusters located further away.

4. The attachment of Village Polytechnics will help promote R.I.D.C.s as 'growth poles' and publicise them as centres for technical advice and business consultancy.

THE RELATIONSHIP OF THE R.I.D.P. TO DISTRICT PLANNING AND TO A POSSIBLE SMALL BUSINESS DEVELOPMENT CORPORATION

The proposed regional system based on the 'Kisumu-model', with one industrial estate and two or three rural centres, needs to be modified. The most sensible arrangement would seem to be one regional centre and a system of district centres (major workshop clusters) and subsidiary or minor clusters. The regional centre would provide some coordination, consultancy services and storage facilities at the Provincial level, while the system of clusters would be integrated with district planning. This system would be financially autonomous from the regional centre to permit closer integration with district level operations, though it would purchase raw materials and other supplies from the regional centre. This suggestion differs from **the conference proposal** for the regional estate to be the basic unit and administrative focal point, which would tie in less well with district efforts. The R.I.D.P.'s lack of financial independence under the K.I.E. up to the present time appears to have slowed the programme to a considerable extent.

The precise form and scope of the Small Business Development Corporation proposed in the 1974-78 Development Plan is uncertain. The first requirement is for the S.B.D.C. (or whatever institution emerges) to recognise that

a substantial part of its programme will relate to craft industry, and that the approach here will be somewhat different from that for 'moderate-sized' enterprises. Secondly, if the system of major and minor workshop clusters proposed here is adopted, with the greatly increased organisational input that this implies, it would seem unwise to attempt to incorporate the promotion of trading establishments into the same organisation. Separate arrangements should therefore be made for assistance to commerce. More homogeneity exists in fact between craft and other small-scale industry in the rural areas and urban industry of the same type, than between small industry and commerce. Indeed, Nairobi has the greatest concentration of artisans and craft industry in the country. Thus if the S.B.D.C., or Small Industry Development Corporation (S.I.D.C.), is to be set up as an umbrella organisation, it should comprise two divisions, an Urban Small Industry Division incorporating the regional industrial estates, and a Rural Small Industry Division.

SUMMARY OF FINDINGS AND MAIN RECOMMENDATIONS

1. The detailed activities of the four existing R.I.D.C.s were assessed on the basis of the following potential contributions:

1. Servicing of craft and moderate-sized industry,
2. Offer of common facilities,
3. Provision of training and skill improvement,
4. Provision of capital,
5. Supply of materials,
6. Bookkeeping and management advice and
7. Product development.

The results were comprehensively negative.

Recommendation: The existing Centres should not provide the model for the 23 R.I.D.C.s proposed in the 1974-78 Development Plan and specifically for those shortly to be established in Voi and Malindi. A modified structure is proposed.

2. The K.I.E. proposals in the 1974-78 Development Plan for industrial estates at Nyeri, Kakamega and Embu appear to overlap with the R.I.D.P. proposals. The research carried out suggests that the K.I.E. proposals may be even less successful than the R.I.D.C.s have been, unless Government policy with respect to location is revised.

Recommendation: This potential overlap should be scrutinised.

3. Policies have suffered from a failure to make a clear distinction between moderate-sized industries and craft industries, and to recognise that a substantial part of rural industry promotional activities will be directed towards the craft industries. The appropriate forms of promotion for craft and for moderate-sized industry are different.

4. Up to now the K.I.E. and the R.I.D.P. have been inclined to different approaches, the K.I.E. towards more heavily-capitalised centres with client assistance at the centre somewhat along the lines of industrial estates, and R.I.D.P. officials towards an extension approach with assistance at the clients' own premises.

Both approaches have been excessively costly (the estate approach because of excessive overheads in relation to numbers served, the extension approach especially because of transportation costs); neither has reached many clients or created much employment; neither has had much impact on the clients.

5. The absence of content in the extension approach arises principally because the main constraint on the development of craft industry has been ignored: the lack of capital in the form of premises, power, tools and materials.

Recommendation: Reliance on the extension approach should be abandoned.

6. The capacity for loan distribution has been underutilised, and loans have not been distributed in the most equitable way possible.

7. Some of the existing Centres are badly located vis-a-vis town centres, and the different locations produce measurable variations in performance among the Centres.

Recommendation: More attention should be paid to the sites chosen for Centres. They should be as close to town centres as possible.

8. An alternative form for craft industry development, workshop clusters, appears to have significant advantages over the estate and extension approaches.

Recommendation: This paper proposes an integrated system of major and minor workshop clusters:-

- (1) Existing Centres in townships would be transformed by building thirty to forty cheap sheds or workshop units around the existing buildings.

- (2) In smaller rural centres, smaller clusters of five to ten units would be built around a generator and some common facilities.

9. The cost of such sheds should be such that artisan tenants could afford to pay rent which would cover the full depreciation of the building. This means that each workshop should not cost more than around Shs 4000/-, compared to an R.I.D.P. prototype being built at Embu at Shs 25,000/- and actual sheds at Kakamega at Shs 50,000/-. Sheds of the type required are being designed at Machakos, but need to be accepted as the general model.

Recommendation: Flexibly constructed sheds of the Machakos type should be adopted generally. Economies of scale in construction could be achieved, and more rapid progress made, if these were built by the R.I.D.C.s for rent or for sale rather than leaving clients to build their own premises.

10. The integrated system of major and minor workshop clusters proposed represents a compromise between the estate and extension approaches. Its advantages would be: (1) By providing premises it removes a major constraint on craft industry development, (2) Supervision of tool loans is facilitated; (3) Capital can be provided to artisans in minor rural centres more equitably; (4) Common facilities would be better utilised; (5) A national system of bulk purchase of materials can be undertaken; (6) Training to improve skills, particularly for apprentices, would be easier; (7) Wastage in product development and innovation due to lack of production capacity to deliver orders would be reduced; (8) Assistance to clients in marketing and obtaining orders would be facilitated; and (9) It would be easier to place Village Polytechnic leavers.

11. Recommendation: The range of craft industries assisted can and should be expanded.

12. Recommendation: Village Polytechnics should be located adjacent to workshop clusters.

13. A major objective of the R.I.D.C. system should be the development of appropriate technology products and competitive manufactured goods, especially tools. Some promising preliminary work has been done already. There appears to be a particularly important need to intensify work on identifying and adapting promising items of low-cost farm equipment. However, the success of efforts to promote local manufacture of such equipment will require a parallel Ministry of Agriculture programme to carry out local testing and to organise farmer training and extension to promote wide use of items of equipment suited to conditions in various farming regions in Kenya.

Recommendation: More support should be provided for product development with a particular emphasis on simple, inexpensive items of farm equipment.

Recommendation: The Ministry of Agriculture, in implementing the FAO/UNDP Agricultural Equipment Project, should emphasise the identification of simple equipment capable of increasing agricultural productivity and the promotion of its use on farms. This will simultaneously promote rural industries by stimulating demand for items manufactured locally.

14. So far the R.I.D.C.s have made a negligible impact (by granting a very small number of loans only) on moderate-sized rural industry. Most projects in this area have not progressed beyond the investigatory stage. The main reasons for this are: (1) Possibilities for agro-processing industries have often already been taken up, and the new possibilities which exist are frequently raw-material dispersed industries not suitable for an industrial estate approach; (2) The main need, for loans, is already catered for by the I.C.D.C.; (3) R.I.D.C. personnel necessarily have only a limited capacity to evaluate potential industries; and (4) Most important, there is no policy of directing or persuading industries which might provide nuclei for the development of ancillary industry away from Nairobi towards other townships.

Recommendation: Project evaluation could be strengthened by a regional system combining experts at a regional industrial estate with managers of major district centres (major clusters).

Recommendation: Location policy should be reexamined to explore the possibility of directing nucleus industries to townships other than Nairobi.

15. Recommendation: The proposed Small Business Development Corporation should NOT incorporate assistance to trading enterprises, but should concentrate on industry. It should comprise a Rural Small Industry Division and an Urban Small Industry Division, the latter incorporating major regional industrial estates as well as urban craft industry workshop clusters.

16. The Rural Small Industry Division would administer a decentralised system of major and minor workshop clusters, organised on a District basis to fit in with a system of District planning.

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APPENDIX: THE OPERATIONS OF PARTNERSHIP FOR PRODUCTIVITY IN THE VIHIGA/HAMISI
SRDP AREA

Background and Activities

In 1971 a pilot project for small business promotion in Western Kenya was started by Partnership for Productivity (PFP), a U.S. non-governmental Quaker organisation. The core of the PFP programme has been loans and advice to individual businessmen, primarily traders, and promotion of handicraft production, with funding from charitable organisations in Kenya, the U.S. and Europe.

The Vihiga/Hamisi SRDP rural industry project is administered by PFP with a special grant from USAID, which amounted to U.S. \$40,000 in 1974. PFP makes no clear distinction between industrial activities and other business activities. Its activities in the Vihiga/Hamisi SRDP area are no different from those in the rest of the Province, except that there is more assistance to businessmen in Vihiga/Hamisi because of the greater funds. The USAID finances are used for a variety of trade promotion activities.

Initially, PFP offered business management and bookkeeping advice, and in 1971 a loan agency was begun, West Kenya Productivity Investments, Inc. (W.K.P.I.). As a supplement to business activities, a Business Clinic was opened in 1972 and management and technical training was begun at a few youth training centres. In 1973 PFP began working with rural market committees in the allocation of loans, and offices were opened in two rural market centres. Also a craft shop was opened by the head office in Kakamega. In 1974 more branch offices were opened, and PFP started training youths as business consultants for its 'Bicycle Brigade'. By 1975, PFP activities in Western Province, and in Vihiga/Hamisi in particular, consisted of management advisory services, the W.K.P.I. loan scheme and cottage industry projects. Total PFP staff was 23, with 17 Kenyans and 6 expatriates.

The Rural Industrial Development Centre at Kakamega also provides assistance to rural industries in Vihiga/Hamisi as well as other areas, but there are no formal links between the Vihiga/Hamisi SRDP and the R.I.D.P. In 1974, the SRDP staff initiated an industrial committee on which both PFP and the R.I.D.C. were represented, but this committee has never become effective.

Loans

Western Kenya Productivity Investments, Inc. is a separate legal entity with a Kenyan Board of Directors on which PFP is represented. Although budgets for the two organisations are meant to be separate, loans for all PFP activities come from W.K.P.I.

The first W.K.P.I. loans were large, in the range of Shs 50,000, and repayment rates were low and some loans disappeared or were used for purposes other than those for which they had been intended. The low repayment rates were attributed to the dual role of PFP staff as management advisors and loan collectors, and the loan programme was shifted in favour of smaller loans administered through rural market committees.

There are six rural market committees in the Vihiga/Hamisi SRDP area which select rural traders to receive loans and collect repayments. PFP provides management advice to the loan recipients. The market committees operate with a revolving loan fund, varying from Shs 4,000 to Shs 10,000, and loans are made ranging from Shs 300 to Shs 1,500 with an annual interest rate of 6 per cent plus a service fee to the committee. In 1974 a total of Shs 38,000 were disbursed.

Two of the committees have managed to overcome potential favouritism in loan allocation, and repayment has been according to schedule. However, in the other four rural market centres the scheme has been less successful, if not a complete failure. Discontent with the project is voiced by traders who have not received loans from the committees.

Business Clinic and Management Advice

In 1972/73 PFP operated a Business Clinic in Kakamega where businessmen were supposed to come on a regular basis to discuss problems and seek advice. Attendance at the Clinic was very low, so a shift was made towards management advice given at the client's place of business. Advice is given on bookkeeping, accounting, price setting, marketing, customer relations, tidiness, and so forth. PFP estimated that approximately 300 clients were being visited early in 1975, but certainly a smaller number is actively responding to the advice.

Most advice is provided by a group of junior business consultants called the 'Bicycle Brigade', whose recruitment and training were begun in 1974 according to the advice of Dr. Malcolm Harper, formerly of the University of Nairobi. Harper envisaged providing school leavers with basic training in

management techniques and using them as rural business consultants. First, twelve leavers from Kaimosi Friends Commercial College were recruited and later a group with no previous commercial training. It was hoped to bring the number of clients up to 1,000 within a year, but rural businessmen have proven reluctant to accept advice from young people whose knowledge of business is limited and whose ability to deal with actual problems depends on recurrent short periods of training. Nevertheless, PFP is currently planning to expand the 'Bicycle Brigade' by recruiting a new group of commercial college leavers.

Other Advisory Services

PFP also gives advice on planning, marketing and lay-out to well-established firms with expansion potential and takes part in the development of new enterprises, though the number of industries which have actually been created with PFP assistance remains very small. A cloth printing factory was begun in Chavakali with PFP marketing advice and investment, but the factory went bankrupt in 1973 when the PFP-appointed manager left.

PFP has approached the R.I.D.C. in Kakamega for assistance with three projects, a Turkana basketweave table with folding legs, tailored men's shirts made from handprinted cloth and replication of a sisal-weaving process, but none of these has been implemented. Recently, PFP, in conjunction with Technoserve, another private organisation, has proposed a Shs 1,000,000 labour intensive, intermediate technology sugar factory. Shareholders would be W.K.P.I., Technoserve, and **I.C.D.C.** or Barclay's Development Fund, plus ten Kenyans. Technoserve expected to be an equity shareholder and to be given the management contract. When this proposal was made, the R.I.D.C. in Kakamega was already far advanced in planning a similar project. PFP suggested cooperation and a company of Kenyan shareholders has now been formed and the project accepted by Kenya Industrial Estates.

PFP provided bookkeeping and mechanics instruction at Keveye Village Polytechnic and furnished a mechanics workshop using USAID funds. Now instruction assistance has been discontinued in favour of placement assistance for Village Polytechnic leavers, and some carpentry leavers have been successfully placed in rural workshops. Three mechanics were placed in Kakamega's largest garage, but retraining problems were found to be considerable. A cooperative workshop in Majenge which would absorb leavers trained in mechanics has been in the planning stage for two years, but has not yet been implemented. PFP also gives advice on teaching in other Village Polytechnics.

Cottage Industry Projects

PfP opened a retail shop in Kakamega in 1972 as an outlet for local crafts. This has encouraged a number of women's crafts groups, initiated or assisted by PfP technical and marketing advisors. Three of the groups are in Vihiga/Hamisi and produce soft toys, banana fibre items, tie-and-die cloth and pottery. The high **quality** required by the tourist or overseas markets to which these products appeal means that saleable turnout is small, especially in the case of the Kaimosi pottery project. Members of the Kaimosi women's society were previously paid on a piece-rate, but now are paid monthly, and many of the women feel that their earnings are too low. All the crafts groups depend heavily on expatriate support for procurement of materials and marketing.

PfP has proposed the replication of a sisal-weaving process, involving handloom weaving, which would use looms **manufactured** by R.I.D.C. clients. However, experience elsewhere has indicated that handloom weaving cannot compete with factory weaving unless a tourist market is secured. We are not in a position to assess the prospects for sales to tourists.

Evaluation of PfP Activities

PfP is staffed by businessmen, business economists and junior trade advisors, rather than industrial economists, engineers or technicians, so it is not **surprising** that PfP has concentrated on business promotion. Although PfP was given the responsibility for promoting rural industry as part of the Vihiga/Hamisi SRDP, it has concentrated on the promotion of small business rather than rural industry, and it is questionable how effective PfP activities have been even in the commercial sector.

Western Kenya Productivity Investments plans to participate in business activities and generate additional capital as follows:-

Dec. 1974	March 1975	June 1975	Sept. 1975	Dec. 1975
nil	Shs 100,000	Shs 100,000	Shs 200,000	Shs 300,000

Loans provided by W.K.P.I. and PfP either directly to individuals or through market committees have generally been for working capital. PfP now considers the educational effects on the businessmen who are members of the market committees more important than the direct economic effects of the loans. It has worked in cooperation with a number of other private loan organisations, each with its own terms and some with dubious business motives. Residents of the Kakamega area have found the overlapping activities of private loan organisations confusing and are increasingly suspicious.

PfP is more active than other business promotion organisations in advertising its services. Sub-offices, which were originally meant to be business clinics, now serve as centres for the 'Bicycle Brigade' and to advertise PfP's presence. The number of junior business consultants is being expanded in spite of the limited response of local businessmen and the apparent high costs of the programme compared with the benefits. The project is not coordinated with Kenya Government activities in the field, and it is not likely to be taken up by any Government agency.

Attempts to place Village Polytechnic leavers need to be coordinated with the Ministry of Housing and Social Services' ongoing research and action programmes. The crafts groups, mainly women's groups, are handicapped by distance from the tourist markets, and none has so far achieved self-sufficiency.

Conclusions and Recommendations

Partners for Productivity has not been active in the development of rural industry. As a business development organisation, it is still experimenting and its justification has not yet been fully established. Its primary justification in Western Province so far seems to be the supply of capital to the area.

As Government policies and programmes concerning the promotion of rural industry and business develop, PfP cannot be expected to continue its activities without Government supervision. Overlap and even contradictions among the activities of private organisations and Government agencies are already evident and causing confusion. It is recommended that:-

1. The special USAID fund for rural industrial development in Vihiga/Hamisi be retained within the SRDP for a future District development body.
2. Consultancy on rural industrial development be directed to Government rural industrial development agencies, at present the R.I.D.C. in Kakamega and eventually the proposed Small Business Development Corporation.
3. PfP should have only a limited role in what may be the trade development section of the proposed Small Business Development Corporation.
4. The operation of a number of essentially expatriate organisations to extend loans to Kenyan small businesses should be reexamined.
5. Curriculum development and placement assistance for Village Polytechnics should be channelled through the Ministry of Labour and the Ministry of Housing and Social Services.

6. PFP should direct its business management services to women's handicrafts groups to enable them to become self-sufficient.

7. Alternatively, more emphasis should be placed on developing other productive activities for women. If these are to be agricultural activities, PFP lacks the relevant expertise and projects should be coordinated with Community Development Assistants.

APPENDIX TO PART I:PESTICIDES AND THE DEVELOPMENT OF LOCAL RESOURCES

Each year Kenya imports substantial quantities of chlorinated hydrocarbon pesticides¹ for such uses as crop protection, cattle dips and the protection of stored products. The purpose of this brief comment is to sound a note of concern in regard to this practice and to put forward some recommendations in connection with it. The issue is raised here because of its relevance to SRDP projects. In the Vihiga/Hamisi and Tetu areas, for example, DDT has been a component of the package of agricultural inputs in maize credit projects. Another chlorinated hydrocarbon, toxophene, is used in cattle dips, many of which have been constructed under the SRDP.

There are strong reasons for concern over the pesticide issue:-

1. Compounds of the chlorinated hydrocarbon group are now widely regarded as serious environmental pollutants; they are known to have multiple adverse effects across a wide range of life systems. The potentially harmful effects of chronic exposure of human beings to chlorinated hydrocarbon residues cannot be treated lightly. In addition, they have not always proved to be effective pest control mechanisms; their wide range of biological action, affecting non-target as well as target organisms, has often made them self-defeating in character since natural enemies of pests can be eradicated and the natural system of checks and balances upset. In acknowledgement of the hazards which chlorinated hydrocarbons are actually known to have, as well as those they are strongly suspected to have, many countries have established much tighter controls on their usage. In some instances, and particularly in the case of DDT, outright bans have been

1. Compounds of the chlorinated hydrocarbon group include DDT, benzene hexachloride or BHC, dieldrin, endrin, aldrin, chlordane, lindane, isodrin, toxophene and other chemicals.

imposed.²

2. If such substances are to be used locally, they must be imported. Government statistics show that in recent years, Kenya has spent roughly Kf 1,000,000 annually on imported pesticides.

3. There appear to be good prospects for the expanded use of alternative pest control techniques. Methods of biological control (e.g. the use of natural insect predators) and other non-chemical measures such as the development of resistant plant strains and proper cultural practices (e.g., early planting in some instances, crop rotation, mixed rather than mono-culture) as well as the use of less toxic chemicals (especially natural substances) have long been known and applied.

4. Pyrethrum is one of the preferable, safer pesticides that is frequently mentioned when there is discussion of alternatives to synthetics and the current ecologically damaging course of pest control programmes. Kenya is the leading world producer of pyrethrum, supplying about 70 per cent of the world market through the export of about 99 per cent of the country's total annual production.

5. The widespread production and use of DDT and other synthetics after World War II proved a major setback for the pyrethrum market. A combination of the relatively high cost of pyrethrum products and the necessity for more frequent applications due to pyrethrum's nonpersistent quality made it a poor competitor with the synthetics. The picture is now beginning to change with the development of new and improved pyrethrum formulations and a growing awareness of the additional costs of the synthetic products in terms of environmental impact. While a wholesale substitution of pyrethrum-based products and other control techniques for synthetics is

2. Chlorinated hydrocarbons are wide-spectrum pesticides of extreme persistence. They tend to be very mobile in the environment and to concentrate at higher trophic levels -- i.e., they accumulate in greater concentrations in organisms at the higher end of the food chain. These characteristics are the basis for both the advantages and disadvantages which have been associated with chlorinated hydrocarbons. While their wide-spectrum action and delayed effects have often made them effective agents in crop husbandry and disease-vector control at least in the short run, these two characteristics together with their ease of movement through the environment and their tendency to concentrate in food chains have also made of them effective agents of environmental degradation and very often self-defeating pest control mechanisms. For these reasons many countries have restricted the use of chlorinated hydrocarbons. In a number of cases, the use of DDT has been banned.

probably not feasible at this time in Kenya (or elsewhere), there is certainly scope for the greater utilisation of pyrethrum locally particularly in stored products and indoor pest control. An intensified research and development effort by locally and internationally sponsored agencies in the country such as agricultural research stations, the Pyrethrum Board laboratories, the International Centre for Insect Physiology and Ecology, and certain other agencies, is called for. The aim should be to increase the effectiveness and lower the application costs of pyrethrum products and to build integrated (chemical and non-chemical) control packages for agriculture and other use areas.

6. A movement away from the current level of reliance on DDT and other 'hard' pesticides in Kenya could bring quite substantial benefits in the form of the preservation of both environmental quality and foreign exchange reserves.

7. Although the SRDP cannot be expected to consider such a vast array of problems in detail, we do feel that it is appropriate to raise the issue here. Three aspects of the SRDP are integrated development (i.e., the coordination of projects in various sectors so that they are mutually supportive), experimentation and the use of local resources. The use of standard synthetic chemical techniques for pest control in conjunction with such projects as grade cattle development and maize credit in the Vihiga/Hamisi SRDP do not appear to be in line with these objectives. For example, the development of fish farming in the Vihiga/Hamisi area has been encouraged by the Department of Fisheries for several years, but it is questionable whether the use of DDT in agriculture is consistent with fish pond development projects. Aside from its directly toxic effects on fish (in sufficient quantities), DDT is readily taken up and stored in fish tissues, from which it is easily transmitted up the food chain. Again, the Ministry of Agriculture has as one of its SRDP projects the development of grade cattle in Vihiga/Hamisi. Chlorinated hydrocarbons are readily concentrated in milk and other dairy products intended for human consumption, yet cattle are repeatedly exposed to these substances through cattle dips (toxophene) and feed (contamination from DDT-treated areas).

8. USAID is heavily involved in the Vihiga/Hamisi programme, including the maize credit scheme and other agricultural projects. Since USAID represents a country which several years ago imposed a ban on DDT, one would have expected the agency to demonstrate some interest and

initiative in testing the effectiveness of alternative means of pest control (which would include the use of pyrethrum-based products) in which DDT is not a component, but this has not been the case.

OBSERVATIONS AND RECOMMENDATIONS

1. The issue of 'hard' pesticides has been generally treated casually in Kenya to date, even though the matter warrants serious consideration. There is a strong case that chlorinated hydrocarbon pesticides pose far too many real and potential environmental hazards to justify their continued extensive and unquestioned use. In addition, the substances must be imported even though Kenya could mobilise the basic resources required to develop more ecologically sound alternative means of pest control in different sectors.
2. In keeping with the above, there is a need to stimulate research directed towards the determination of: (a) the exact extent to which chlorinated hydrocarbons are being used in Kenya, by what Government and private agencies and for what purposes; and (b) the use areas in which restrictions on these chemicals could be imposed with immediate effect as opposed to areas in which minimum use of these chemicals ought to be allowed, pending the development of more suitable substitute methods.
3. An intensified research and development effort should be encouraged to establish effective alternative means of pest control in agriculture and other use areas. An emphasis should be placed on integrated control techniques (i.e. using both chemical and non-chemical measures), one aspect of which would be the greater utilisation of pyrethrum as opposed to imported, more hazardous substances. Ideally, this research and development effort would be coordinated, using existing local research facilities and also involving international research centres and financial backing.

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CHAPTER TWELVELABOUR INTENSIVE ROAD CONSTRUCTION AND SRDPTHE DEVELOPMENT POTENTIAL

A large body of underemployed rural workers represents a resource that can be mobilised for the building of rural public works - roads, dams, terracing, drainage for fields, irrigation waterways and so forth - and at the same time a great need exists for precisely these types of rural public works in many areas of Kenya. Roads are required to provide easy access to markets; irrigation and water supplementation are required to increase production in dry seasons and periods of uncertain rainfall; soil conservation practices are required to maintain the fertility of areas with substantial gradients.

From the experience of SRDP in labour-intensive road construction useful lessons can be drawn for a greatly expanded rural access roads programme, and for a wide variety of other rural local public works. In this report the elements required for the successful operation of a labour-intensive public works programme are described, critical decisions which must be made on the basis of local conditions are enumerated and analysed, and the implications of SRDP experiences for future development of rural access roads in Kenya are discussed.

Mobilisation of a rural unskilled labour force may prove more expensive or less reliable than a project carried out by a professionally trained cadre of workers. However, the SRDP roads experience indicates clearly that conditions exist under which large-scale employment of a local work force can be cheaper than the application of a capital-intensive technology. At the same time, use of labour-intensive techniques is neither a panacea for developing local infrastructure nor is it a technique that can be used without careful supplementation by capital inputs at critical points and competent supervision. The reasons for these conclusions will become apparent after the elements that appear to characterise successful SRDP roads programmes have been presented and discussed.

Next, criteria for scheduling and siting roads are discussed and their relevance to the SRDP situation is set forth. Then proposals for phasing and maintaining roads with labour-intensive methods are explored, the organisation of labour-intensive road gauges is dealt with and lessons learned in SRDP are reviewed, and finally recommendations are offered for future labour-intensive road building projects.

ELEMENTS OF A SUCCESSFUL ROADS PROGRAMMEOperations

The operation of a labour-intensive roads programme clearly requires recruiting, deploying and supervising gangs of workers as they undertake the basic tasks of clearing, removing topsoil and rocks, cutting and filling to establish the road and drainage gradients, preparing drifts, culverts or other necessary waterways to prevent erosion of the road, and providing the road with a suitable surface for traffic.

Recruiting appeared to be one of the least difficult tasks involved in the labour-intensive roads programme. The chief of the location in which the work was to be undertaken was asked to announce the availability of casual employment. Because all the programmes were offering wages far in excess of local agricultural levels, far more workers applied than were needed on the road gangs.¹ Lotteries were used to assign positions to the available workers, and that device ruled out charges of favouritism, nepotism or corruption in the assignments.

Once recruited, workers were organised into gangs; persons recommended by the chief or known to the local leaders were designated as headmen in charge of each gang. A roads inspector supervised eight gangs of 25 workers in Migori and appeared amply qualified for the job. In other areas civil engineers headed the teams, although the engineer in Vihiga trained an overseer to be in charge of day-to-day decisions, so that he could be phased out the programme. The main constraint on the programme's expansion was a shortage of skilled overseers who combine the necessary technical competence in road building with the equally necessary experience of labour-intensive methods. This issue is discussed in the section on supervisory personnel. There is ample evidence that both headmen (those who supervise the gangs of workers) and overseers (Ministry of Works (MOW) technicians whose task includes the laying out, shaping, etc. of the road) can, given adequate supervision, rapidly be trained on the job.

Choice of an appropriate technology required on-the-spot decisions by the road engineer according to local costs. In a number of SRDP areas it has been determined that culverts could be fabricated on the spot more cheaply than they could be purchased. In Migori the local river bed provided a ready source of rock and this was being chipped by hand. In other areas this procedure was regarded as excessively expensive, and ready-chipped rock was purchased.

1. This situation was quite unnecessary and implied that the cost of labour was excessive. See Table 1 and the section on wages.

Detailed cost estimates of inputs required for labour-intensive construction were prepared for Vihiga. See Table 1. Costing of comparable activities using conventional road building technology is now underway at the MOW.² Nonetheless some tentative conclusions can already be drawn from earlier work: 1) A mixture of labour-intensive and machine operations is generally required; 2) If labour is paid a competitive wage rather than the higher level paid under SRDP, use of labour-intensive methods will be even more attractive; 3) It will be difficult for machinery to compete with labour-intensive methods in clearing brush, and for other activities it is likely that the cost advantage has shifted in favour of labour in the last three years, as prices of petrol, spares and imported equipment have risen relative to the agricultural wage.

The last element of operations is a procedure for scheduling and supervising progress. R.H. Bartolo (the engineer at Vihiga) is in the process of preparing a work system that will make it easy for inexperienced supervisors to estimate the work required for completing a particular road segment. The worksheets also provide for an optimal scheduling of successive work crews to a particular road segment as various phases in the construction are completed. This work system will be extremely valuable in estimating labour requirements and in keeping workers effectively employed on the rural access roads programme.

The period of time necessary for road construction will vary according to the extent of labour-intensive operations. Two general points need to be made: 1) It is possible to achieve a wide range of rates of planned construction within the framework of a labour-intensive technology. More rapid completion simply requires a commitment of more experienced and trained units of workers to a given task. (Once the MOW Rural Access Roads Programme is at full strength there will be 88 units of several hundred men available for labour-intensive construction.) Where the cost, in foregone benefits, of delaying the road justifies greater speed in road construction, this greater speed is still possible within the context of the labour-intensive programme. 2) The strategy of SRDP to make a maximum use of local resources implies that labour-intensive road construction should not be accelerated beyond a rate that utilises surplus labour in between periods of peak agricultural demands for labour. Thus use of local resources implies modest rates of road development extended for a period of years.

2. An extensive research programme on labour-intensive methods has been funded through NORAD, ILO and IBRD. Comparison of the costs in Vihiga with costs on a similar segment of road built with conventional technologies will be available from the MOW in July, 1975.

Table 1. Technical coefficients for road construction (per kilometer).

	Labour	Capital
Bush clearing	30 man-days	14 pangas
Stump removal	53 man-days	16 mattocks 5 axes 5 shovels
Topsoil removal	112 man-days	15 jembes 15 fork jembes 15 shovels
Stone removal	?	jack, hydraulic
Tree removal	202 man-days	rope, axes
Preliminary grading	224 man-days	15 jembes
Final grading		15 fork jembes
		15 shovels
		15 mattocks
		3 wheel barrows
Laying culverts (3 culverts/ kilometer)	162 man-days	3 culverts
Surfacing (murrum)		
Loading	297 man-days	Tipper and driver
Spreading	198 man-days	
Clean-up	<u>30 man-days</u>	
Total Man Days	1,662 man-days	
@ 3 shs/day	4,986/-	Capital cost in Vihiga was excessive due to requirements that U.S. products be purchased with AIA funds.
@ 4 shs/day	6,648/-	
@ 5 shs/day	8,310/-	
Actual cost Vihiga	8,443/-	

Planning and Siting of Roads

While most of the problems in organising the operations of labour-intensive road building were carefully studied during SRDP, little attention was given to the problem of planning and siting. Inadvertently, Migori became the locus of an unplanned experiment. As in all the other SRDP areas, plans for road construction were initially laid out by technical experts, rather than by indigenous residents. Withdrawal of the planning team occasioned a complete rejection of the original road plans. Subsequent developments proved that local involvement in road siting can be extremely advantageous for rural access road development. This issue is extensively **examined in the section on sequential investment.**

After rejecting the original plans for Migori, the A/C asked the headmen in each sub-location to devise an alternate plan. Each headman formed a committee that drew up a new plan. The plans submitted far exceeded the funds budgeted for road development. The A/C then responded by asking how each sub-location could contribute to reduce the need for expenditures. As a result it was decided that each sub-location should use volunteer labour to clear the right of way. SRDP funds would be used to finish the road development.

Using committees at the sublocation level gave the entire community **an opportunity to voice its opinion on road siting. Local needs that might not appear critical** to a planner were included in the recommended plan. However, the A/C's requirement that self-help labour be used to undertake the clearing of the right-of-way forced some realism into the plans presented by the local committees. Only those road segments that evoked a serious commitment from the community elicited the volunteer labour needed for clearing.

Maintenance

The maintenance of completed segments is a vital ingredient of any roads programme. All the SRDP programmes entailed maintenance by the MOW. Insistence by the MOW that it would accept roads for maintenance only if they were constructed to a minimum standard led to construction of a much higher standard of road than required for traffic in the near future. At the same time none of the A/Cs saw an alternative to MOW maintenance. The opinion is virtually universal that self-help would not motivate a continuing maintenance effort.

It is our view that a maintenance and upgrading scheme using labour-intensive methods should now be initiated for these non-scheduled, rural access roads. This will either require a whole new set of responsibilities for the

existing MOW inspectorate, or a new inspectorate. In conjunction with local development or project committees, this inspectorate would schedule maintenance and upgrading activity, determining whatever labour requirements were necessary. Work could be programmed during slack agricultural periods to assist in reducing unemployment of small-holders. The amount budgeted for each task would be determined by the inspectorate on the basis of local conditions. Local involvement in maintenance combined with a flexible local work force employed on an ad hoc basis as the need arose would, in all likelihood, provide for maintenance and upgrading at a far lower cost than a centrally scheduled piece of heavy equipment that would be used on the road at far more arbitrary intervals.

Maintenance is closely related to the question of adequacy of labour-intensive construction techniques. It is certainly the case that more uniform compaction and shaping of the road can be achieved by machines than by labour-intensive methods. However, the additional maintenance required during the early life of a road because of excess settling and drainage deficiencies due to labour-intensive methods can be compensated by planned early maintenance.

With a labour-intensive maintenance strategy sustaining labour-intensive construction it is not clear that any significant difference in the quality of access roads would arise.³

Utilisation

Road utilisation must be measured periodically. Only in that way can it be determined whether the original standard of construction was too high or insufficient to meet the local demands. Knowledge of the type of vehicles on the road and the character of peak use, as in harvest periods, is essential for good allocation of maintenance.

Measurement of road use also makes it possible to schedule road development as a series of small investments rather than a single massive effort. Decisions to install some culverts, to murrum the surface, or to extend the width of the right-of-way need not be taken before the usage of a simple track with minimal drainage has been measured. If decisions on up-grading of road segments in use are taken according to local demand, it will be possible to spread a limited investment over a much wider network of roads.

3. For a major traffic artery it is clear that some means of mechanical compaction is required to stabilise the roadbed. For the moderate loads and slow speed traffic on access roads compaction does not raise serious problems.

When measurement of road usage is combined with a local system of road maintenance, it becomes a relatively simple matter to provide limited improvements in road quality through a continuation of labour-intensive activities, even after the original track has been cleared.

Summary

The operation of rural labour-intensive roads programmes entails three phases: planning and siting, managing the operations involved in road building, and a programme of maintenance and measurement. The success of a road building programme requires local participation in both planning and maintenance; thus the involvement of workers in labour-intensive construction should be seen as only one element in a continuing plan for using local resources for the construction and development of a transportation network. This point will be elaborated in the following discussion.

ALTERNATIVE MECHANISMS FOR SITING AND SCHEDULING ROAD INVESTMENTS

For an active road construction programme of any sort to get under way, one of the most important questions is the siting and scheduling of what roads are to be constructed. The SRDP areas have not followed a single policy or procedure on this issue. This section will attempt to analyse and comment on various approaches to this problem, drawing on the SRDP experiences. Four different methods of choice will be discussed; elements of each have occurred in each of the areas where road investments have been undertaken. The four different methods to be discussed are:

1. Engineering choice,
2. Decentralised choice,
3. Integrated planning choice, and
4. Development potential and economic benefit choice.

These methods are clearly not presented as hard and fast alternatives; they are rather designed to highlight different aspects of the decision-making process.

Engineering Choice

A standard engineering problem is to take a physical map of an area, consider existing population centres and existing roads and, within a given budgetary ceiling, design an enhanced road network. The installation of physically efficient linkups between existing roads and centres is generally the principal consideration in this exercise. Minimisation of distance or of cost is generally used as the planning criterion. Standard economic engineering judgements are made in trading construction cost against maintenance

cost on the one hand; and trading public expenditures against user costs on the other.⁴ The engineering approach may also give some weight to equitable distribution of road over a given area; i.e. new roads are sited in locations that are relatively under-served. More sophisticated versions of network planning include other skills and disciplines besides engineering and eventually tie in with area and regional planning involving the identification of a hierarchy of growth centres and appropriate linkages between them. If an area has a relatively mature road network, the planning exercise calls for traffic counts, source and destination studies and so forth, to help clarify which marginal road investments are justified. Where the existing road system is rudimentary or non-existent, traffic patterns have not yet developed and such efforts are fruitless.

One difficulty with the engineering approach is that what appears to make logical sense on a map may not be related to the productive needs and capabilities of an area. Furthermore, the engineering choices may not be related to the perceived needs of the people, which is of particular importance when a high level of local participation is required for construction. An initial road planning exercise was carried out in Migori, for instance, by a capable young expatriate engineer, only to be rejected out of hand by the local project committee as being totally unrepresentative of what was wanted in the division. The final product of a more decentralised approach to choosing where roads should be placed looked reasonably similar to the initial engineering effort, yet the roads construction project may not have elicited local participation without this more decentralised approach to siting.

Decentralised Choice

The decentralised method of choosing and siting road investments involves the mobilisation of local political and decision-making processes. This mobilisation was attempted to varying extents in the different SRDP areas and with markedly varying degrees of success. Where the implications of the choices are adequately understood and the demand for road and transport services exists, considerable political energies are released that can have very favourable effects on the whole construction phase of the project. In Migori, competition for road investment resources became intense. No doubt, residents wished to attract the employment opportunities into a particular location or sublocation. Nevertheless the perception that roads had economic value in the development of their own areas was

4. The interested reader is referred to engineering economic texts such as the classic, Roland N. McKean, Efficiency in Government Through Systems Analysis, New York, John Wiley and Sons, 1958; or Eugene L. Grant and W. Grant Ireson, Principles of Engineering Economy, New York, The Ronald Press, 1964.

undoubtedly an important motivation for interest in road construction. Residents perceived that they were, to some extent, in competition with other areas for limited resources. In the atmosphere that developed local people became intensely involved in the decisions as to where the roads should be placed, and considerable harambee self-help effort was mobilised in the initial clearing operations. This local commitment of volunteer labour was shrewdly made one of the principal criteria in choosing which projects to support. In view of the labour-intensive, participatory nature of the construction exercise, broad-based support and consensus at the local level was an enormous and almost indispensable asset. The dissemination of appropriate information and the generation of local enthusiasm both tend to be less of a problem when such support is widespread and consensus is achieved. Further, problems of right of way, and even questions of compensation or payment for the land used by the road, are swept away by a tide of local enthusiasm and local authority, with no reference to Central Government agencies or machinery. (We have rather strong reservations about not compensating people for land used by roads. Where farms are small, the individual farmer whose land is appropriated for the road suffers a cost that is completely out of proportion to the benefit that he personally gains from the road. Nevertheless if the policy is to be one of no compensation, it can probably only be achieved by the use of locally legitimated authority.)

For the decentralised method of siting rural access roads to lead to the most rational allocation of resources from the point of view of the economy, some fairly rigid assumptions about the functioning of local political processes are required, and herein lies a problem. If those for whom a road has the highest economic payoff exert the most vociferous and effective political pressure and demonstrate the most effective local organising ability, the decentralised method would result in the most appropriate use of economic resources. The problem is that organising ability is not evenly distributed and road uses with small economic benefits can also generate political pressure. If there is a development minded chief in one area and none in another, this can lead to a totally disproportionate allocation of resources between the areas. A politician or other individual with a car and enough local influence can pervert the process to the extent that his own and his family's personal consumption needs are met to the detriment of other, more generally beneficial productive purposes. It is clear that in devising decentralised choice systems, adequate representation and appropriate checks on the abuse of the system should be ensured.

Integrated Planning Choice

In the preparation of an integrated plan, a complementary package of development projects is conceived of as a whole. An obvious case when roads occur in such a package is smallholder tea development. There would be little point in growing tea if there were no roads to ensure the timely collection and delivery of tea leaf to the factory. The same sort of logic applies to dairy development. The marketing of milk, especially if it is to be exported from the area, requires relatively sophisticated transport arrangements, and there may be little point in developing the productive capacity of the farms if the marketing facilities are not dependable. In these cases it is clear that any plan for development must consider roads as an integral part of the investment programme.

This point can be generalised. In Kapenguria, where the integrated approach is particularly explicit, a somewhat unlikely road wended its tortuous way down to a river where an SRDP health centre was being developed. Another long and arduous road climbed up over rugged and beautiful country to where an SRDP sheep development programme was under way. Any of these specifically project-related roads can have a full measure of 'opening up' effects to be described shortly, but the process of selection and phasing is quite deliberately related to incremental projects and programmes in which Government is currently involved. It is here that perhaps the principal problem exists with the integrated planning approach. While roads should clearly be an integral part of a number of different types of well-conceived projects, there is a danger of viewing roads almost exclusively as addenda to other projects. Roads that are related to current Government developments and projects are chosen, and roads that do not relate to such projects, but may well have higher economic payoff, tend to be ignored. This is perhaps part of the general danger that planners become so mesmerised with the projects that they have chosen, and so concerned lest they fail, that they overallocate all sorts of additional resources and subsidies to them, ignoring areas of higher payoff elsewhere.

Economic Benefit Choice

The principal problem with siting roads in terms of the benefits they are likely to bestow on the economy is that the benefits are very hard to predict before the roads are constructed. Where roads and traffic exist, the principal benefits of road or network improvements are road user savings.⁵ Where road users

5. See, for instance, H.A. Adler, Economic Appraisal of Transport Projects: A Manual With Case Studies, Bloomington, Indiana University Press, 1971; H.D. Mohring and M. Harwitz, Highway Benefits, Evanston, Northwestern University Press, 1962; and A.A. Walters, The Economics of Road User Charges, World Bank Staff Occasional Paper No. 5, I.B.R.D., 1968.

are virtually non-existent, as is the case in a number of areas where SRDP roads are being constructed, it is the development effects of the road that must be considered as most significant. The problem is that those development effects are hard to predict. In formal terms, the development effects of a road are the net economic consequences of the decreased transport costs. This is not to say that all the developments that go on in an area where a new road goes in can be attributed to that road. To take the former example, tea roads would not have a very high payoff *ex post* unless complementary tea production investments were undertaken simultaneously with the road investments. In the genuine 'opening up of an area' case, the benefits of whatever developments are stimulated must be measured net of the cost of the resources used in their best alternative use without the road. It is necessary to ask, in other words, what activities and developments would go on without the road and what would go on with it. The difference, in both costs and benefits, can then be thought of as stemming from the road, and the net effect, suitably discounted, is then compared with the discounted costs of constructing and maintaining the road.

This approach is summarised, not because it is considered realistic to go through a complete and rigorous analysis of each increment to the road system, but because even where the analysis is not undertaken, the approach, at least, should be explicitly kept in mind. The reduced transport costs, either in terms of greater timeliness, miles saved or reduced vehicle expenses, that are the immediate purposes of the new road permit productive activities in an area that would not be feasible without the reduction in transport costs. The net value of this increased production (increased over what would have happened without the road) is the benefit attributable to the road. In comparing two proposed roads of equal cost, for example, it is this benefit which must be explicitly considered.

Reducing transport costs can be thought of as changing the prices of goods and resources in an area. The prices of exportable goods are likely to be increased and the prices of those coming in from outside are likely to be reduced. Enterprises which were previously not economically feasible are likely to become so, and those which previously existed are likely to become more profitable and experience expansion (except those that depended on the high transport costs to restrict competition from outside the area). Benefits arise from higher output levels stimulated by the road and from greater local value added in existing output as a result of the more favourable prices. Land prices rise as higher value enterprises replace those of lower value, and the economy tends to improve because of specialisation and trade.

Roads that have the above effects may lead to some current Government project area, or they may not. Farmers can and do respond to price signals and price changes with changes in what and how much they produce, with or without a Government programme. While there is every reason to link road construction to directly productive investments and programmes that are planned, it must be recognised that farmers make the overwhelming majority of investment and production decisions, and that it is these decisions that provide the main justification for the placing and timing of road investments.

It is our view that the development effects should be explicitly considered in road siting and scheduling decisions. In a local area planning exercise, this task should be a function of the project committee, and a procedure should be laid out for considering and comparing the anticipated developmental effects of the various possible roads. We did not find any such procedure in operation in any of the SRDP areas. It is our view that experimentation with such a procedure should begin forthwith, and that an effort be made to keep careful tabs on the projects associated with the experimentation so that selection procedures may be verified and improved.

Two significant conclusions can be drawn from this section. The first is that costs incurred in road construction or improvement should be related to the benefits that are to be derived from the investment. There is a great deal of variation in costs between a high quality road, built to withstand heavy loads of traffic, and a relatively simple track over which occasional vehicles can pass. The high-cost road is clearly not justified if the traffic coming over it is light.⁶ The second conclusion is that forecasting the benefits of roads, especially where no road currently exists, is a speculative and uncertain task. Ideally the task requires a knowledge of which prices for goods and services will be affected by the construction of the road, and a knowledge of the supply and demand elasticities of those goods and services. While some estimate of the benefits is required to justify incurring costs, it is simply not realistic to expect accuracy in these estimates, especially when it comes to long range forecasts.

The implications of these joint conclusions on the importance of relating costs to anticipated benefits, together with the extreme difficulty

6. The roads constructed in Vihiga, for instance, have been primarily engineering procedural experiments, demonstrating the quality of road that can be built by labour-intensive means, and ignoring the questions raised in this section. It would clearly be grossly inappropriate to build all developmental rural access roads to such a standard in the initial construction phase. When it is clear that high levels of traffic are coming across such a road, the Vihiga experiments demonstrate that a road necessary for such use is feasible with the labour-intensive technology that is being used there.

of estimating benefits, is that the construction of developmental rural access roads should be undertaken in phases. The initial opening up of the road should be a relatively primitive, low-cost undertaking. Only as it becomes clear that the benefits justify greater expenditure levels should those expenditures be undertaken.

Fortunately, all the benefits we have cited depend very obviously upon road use. So much is this the case that relating road investments and improvements to traffic counts, i.e. the volume of traffic that passes over a road, is a useful rule of thumb. The only problem with this rule of thumb is that it does not differentiate between the purposes for which a road is used. Uses of the road for consumption purposes (e.g. the local preacher visiting his flock or the local big-shot visiting his nightclub) are given equal weight with uses that have more productive and developmental implications (e.g. a milk collection run that stimulates the whole dairy production industry in an area, or a truck that brings in needed farm supplies). If some roads are predominantly used for productive purposes and others predominantly for consumption purposes, the rule of thumb is a relatively poor indicator of the benefits accruing to the economy. If all roads have about the same ratio of production- to consumption-related use, the problem does not arise.

SEQUENTIAL INVESTMENT ON SCHEDULED ROAD SEGMENTS

A Sequential Approach to Road Development

A significant conclusion of the previous section was that rural access roads should not, at first, be built to a high standard. It was further argued that road expenditures should be related to the use to which the road is put, and that this should be determined in the field.

One of the great advantages of labour-intensive technology in the construction of a road is that it makes it feasible to programme the development of the road in phases. In the case of machine-intensive technology, the availability of equipment and the high costs of moving equipment from place to place imply that the investment is more of an all-or-nothing affair. Where local labour is used, the development of a road can be programmed over a long period of time. It is not necessary to make massive investments at a single point in time. We view road development as having several stages, each of which must of course be based on sound engineering:

1. Basic track -- a minimum width right-of-way such as that proposed by the MOW for rural access roads, with a minimum of construction to provide needed drainage and a road surface that is smooth enough for easy and safe use by vehicles. Sufficient murrum to provide one lane of all-weather access.
2. Improved track -- a basic track with some additional culverts for drainage, the removal of some elevation changes by cut and fill, and an additional murrum surface designed to carry heavier and more frequent vehicle loads.

The development of a rural access road network should begin with the preparation of basic tracks. Further investments in the right-of-way should only be scheduled as it is clear that the use of the road warrants additional development.⁷

Sequential development of the roadbed also requires a system for regularly monitoring road usage. Lack of such monitoring was a major deficiency of the SRDP roads programme. It would be highly desirable in the first year after opening up a new road segment to sample three or four days per quarter to obtain some idea of the amount and nature of use of the road. Usage by bicycle, vehicles, animals and pedestrians should be distinguished. Usage that entails the development of the local economy should be distinguished from consumptive uses. For example, the transport of seed and fertiliser from a market centre would be a productive development use; the transport of friends to a local feast would not.

The conclusion of this section and the recommended procedures for scheduling road construction run directly counter to the approach and the procedure that is current in the SRDP areas in one further respect. It appears to us that in all the thinking and planning about roads, the notion of 'takeover' of a road by the Ministry of Works (MOW) receives gross overemphasis. The whole construction procedure under these circumstances takes on something of the character of an attempt to pre-empt MOW resources and attract them into a given area by meeting certain MOW standards. To summarise our recommendation, rural road building should involve a phased sequence of construction, maintenance and upgrading costs, and these costs should be related **to the level of road use and the economic benefit associated**

7. An important question that we do not feel qualified to evaluate is whether the initial right-of-way needs to have the same profile as the completed murrum road. If it is possible to build the original right-of-way to a narrower profile without excessive labour costs at a later stage, it would clearly make it possible to 'open up' more road segments for development. Some of the Kapenguria roads involved little more than clearing grass off the track and filling in pot holes and washed out sections. With the level of use of some of those remote roads, it is very doubtful whether more elaborate construction could be justified. The MOW is currently evaluating some alternatives for 'phasing' and improving upon a basic road construction profile.

with that use. The 'MOW takeover' approach which is currently prevalent leads to over-building and under-maintenance. The roads are likely to be built to too high a standard purely to meet MOW criteria, with the hope that they can join the list of 'scheduled' roads and thereafter be maintained by the Ministry's inspectorate, using machine-intensive methods.

The MOW takeover approach appears inappropriate. In the first instance, timely attention to maintenance by machine technology poses a difficult scheduling problem. It is our recommendation that an entirely new inspectorate be set up to cover the maintenance and upgrading of the labour-intensive roads. The criteria proposed in this section could be used as a basis for maintenance and upgrading decisions. Needless to say, the technology used in this maintenance and upgrading work should be labour-intensive. Gangs of workers recruited for road building should be maintained on a part-time, work-as-needed basis. Such gangs can slowly improve road quality when improvement is justified by actual use. They can measure the road usage to determine whether road development is warranted. They can serve as a decentralised work force that can be quickly mobilised to handle maintenance.

The advantages of labour-intensive maintenance should be apparent. The trained workers and supervisors required for building cleared tracks become a resource that is available when maintenance is required. The decentralisation of maintenance to small crews operating independently in each location assures timely attention to small problems before major reconstruction of a road is required. The availability of trained local labour means that segments can be slowly improved when usage shows there is clear benefit.

The MOW has already created the potential for such developments. The establishment of a Special Projects Section containing the Rural Access Roads Programme and the Graveling Programme makes it possible to develop an integrated approach to construction, improvement and maintenance by labour-intensive methods. It is important for the MFP to support the maintenance activities that will develop in the Special Projects Section by an adequate budget.

WAGES IN LABOUR INTENSIVE CONSTRUCTION PROGRAMMES

In all the SRDP areas except Kapenguria, a wage of Shs. 5/- per day is paid for workers who are involved in the labour-intensive road construction programme. These workers are hired as 'casual labour' and receive no other benefits such as housing, transport, gratuity, pension or any other allowance.

Since the question of wages and terms of service is somewhat controversial, and clearly of central importance in any labour-intensive programme, this section is designed to analyse and make all recommendations on the topic. First of all some evidence will be cited about the 'going wage' in the relevant areas. Secondly, the financial implications of the wage paid for the choice of technique and the scope of the road construction exercise will be discussed. Thirdly, the notion of the 'shadow wage' and the opportunity cost of labour will be introduced, and the relationship between road construction activities and the alternative use of labour in local agricultural production will be raised. The general conclusion of this section will be that for the reasons of equity, of employment and of efficient use of labour and other resources, the wage has not been too low but rather too high.

The Going Wage and the Availability of Labour

A universal feature of the recruitment of labour for these road construction projects has been an excess supply of labour at the wage offered. Sometimes there have been two, three or four times the number of workers as there are jobs offered. In each of the areas this has necessitated some non-price rationing mechanism for the jobs. These mechanisms have usually involved some kind of lottery system whereby there are a limited number of 'yes' papers and the rest are marked 'no', with a random drawing being made from a hat. So eager are the applicants to win the right to work for five shillings per day, that a market frequently develops in 'yes' papers which, until restrictions were placed on this kind of transaction, became worth a substantial number of shillings. Evidence of this kind clearly suggests that five shillings per day is considerably above the workers' estimates of the alternative returns to labour either from other employment or on their own farms. The going wage for other labour transactions undoubtedly varies among different rural areas,⁸ but the eagerness and the excess supply of workers offer prima facie evidence that the going wage in these particular areas is less than Shs. 5/- per day. While Government wage payments and settlements generally tend to ignore these market factors, it is clear that no shortage of labour is to be expected even at a wage that more closely approximates the market wage in these areas.

No clear justification for unnecessarily high wages was given: various A/Cs and road engineers suggested that some moral duty existed to pay workers on this programme a premium. There appeared to be little understanding that setting an excessively high wage limited the number of man-days

8. Other I.D.S. studies indicate that wages in these transactions might be as low as 1/00 or 1/50 in some areas and as high as 3/50 or 4/00 in others.

that could be used within the fixed budgets allotted for labour-intensive road development. There was also no recognition of the fact that paying excessive wages also limited the number and kind of activities in which workers could successfully compete with more capital-intensive methods. At the same time those in charge of the programme were concerned that large numbers of workers had to be turned away from employment at the recruiting barazas. In addition there was concern that the programme avoid charges of favouritism or the recruiting of workers from outside the particular area in which the construction was being undertaken.

Any economic analysis of a casual labour market will conclude that it is not necessary to pay wages above the prevailing level when there is a large surplus of underemployed workers. Moreover, administrative problems of dealing with an excess of applicants can be minimised by paying wages at roughly the prevailing rate for agricultural labour. We conclude that the wage offered for labour-intensive road work should be determined by the prevailing wages paid to agricultural field labour and should vary from district to district according to the relative scarcity of such labour.

It is clear that some premium should be paid to gangleaders for the additional responsibilities that they take on. This premium should also be viewed as an incentive to keep experienced supervisory staff and reduce turnover.

The Wage and the Choice of Technology

One of the principal reasons for concern about the issue of wages involves the choice of technology to be used in road construction. There is no doubt that a significant part of the argument for labour- rather than machine-intensive construction methods centres around costs. If the total cost of an operation using labour-intensive methods is higher than the cost of the operation using machines, it will be quite likely that capital-intensive methods will be chosen. No wages will be paid to local unskilled labour and greater sales for foreign equipment suppliers will result in a loss of foreign exchange reserves. Under these circumstances it is particularly important not to raise the costs of the labour-intensive approach unnecessarily by artificially inflating the wage. An argument that also deserves mention is that an excessive wage implies a social cost rather than a mere transfer from taxpayers to labour. If the recipients of wages have a lower propensity to invest (higher marginal propensity to consume) than the agency from which the financial resources are obtained, capital formation is reduced in proportion to the amount of excess wage payments.

The Wage and the Optimal Allocation of the Labour Force

From a social point of view those workers should be employed in labour-intensive public works programmes who are the least well used in their alternative employment, who have in other words the lowest opportunity cost. Discovering who these workers are in some planning or bureaucratic fashion must be written off as unfeasible. It is, however, useful to assume that workers have a reasonable notion of the opportunity cost of their own time. If a wage is offered for some new employment which is too high, a large percentage of the work force in a given area will be motivated to come and seek that employment. Some of these workers will have an opportunity cost which is substantially lower than the wage offered, while others will have an opportunity cost that approaches or is equal to that wage. If the wage offered were lower, those with the higher opportunity cost would not be motivated to apply, they would rather stay in their existing employment. The work force would then be drawn from those with a lower opportunity cost, and the cost to the economy of the work force mobilised would thus be lower. The labour force of a given area would be more efficiently allocated under these circumstances, and there would be less disruption to local productive activity. It is very unlikely, given normal assumptions, that the social opportunity cost of labour is higher at the margin than the wage that a particular work force is prepared to accept. A wage that is just high enough to attract the necessary work force and no more is therefore the optimum wage from a social point of view. Arguments that those workers who do undertake the employment should receive a higher wage than the going wage to give them a 'better standard of living' than their fellows are abhorrent from the equity point of view; employment by this method is restricted, and fewer people get a larger slice, rather than more people getting a smaller slice of the total wage payment. The latter situation is obviously the more equitable.

Wage Seasonality and the Social Cost of Labour-Intensive Public Works

An extension of the argument of the previous paragraph concerns off-season employment. Labour demand in agriculture frequently has a highly peaked characteristic, with real labour shortages and even bottleneck constraints at certain seasons followed by periods of substantial unemployment or under-employment at other seasons. Another way of describing the situation is that the wage (opportunity cost of labour) varies widely through the year. It is argued that the social cost of labour-intensive public works which employ labour in those seasons when the agricultural demand is weak is a great deal lower than the cost of work undertaken at the peak labour demand seasons.

A low wage is an ideal mechanism for attracting workers in their agricultural off-season when their opportunity cost is low, and not diverting those whose own farm tasks have a high payoff in the particular season concerned. The consequent cost to the economy of the road installation is thereby kept to a minimum.

In Vihiga, failure to monitor the need for agricultural labour led to a critical shortage at a time when labour was deployed on road-building. This situation can be avoided by coordination between the local Agricultural Officers and the Roads Inspector in charge of the unit.

Recommendation with Regard to Wages

The recommendation that emerges from our observations and analysis is that, far from being too low, the current wage of Shs. 5/00 per day paid to construction workers on the labour-intensive road projects is too high. It is hard to know how the figure was arrived at in the first place. It appears to have been chosen merely as a 'round figure'. The Ministry of Agriculture and the Ministry of Natural Resources both pay casual labourers at a lower rate and appear to have no difficulty meeting their requirements. From the employment, the equity, the technology, the allocative and the cost points of view, a lower wage appears to be more desirable. In general we recommend that the wage to be offered be subject to periodic review, bearing in mind the considerations raised in this section; in particular we recommend that a wage of between three and four shillings a day be paid, on an experimental basis at least, in subsequent labour-intensive road and rural public works projects. Our reasoning suggests that a single standard wage should not be applied to all divisions. The rural access roads programme should receive evidence on the number of applicants in relation to jobs and should pay only that which is required to staff the local gang.

The Ministry of Labour Directive on Wages

The MOW has now received a directive to establish wages at a level of 6/75 per day for its casual labour. This bureaucratic directive creates a wage payment formula for the rural access roads and SRDP programmes which flies in the face of the reasoning above.

It can be expected that the increase in rural wages will: (a) aggravate the problems of allocating jobs to applicants, (b) intensify the tendency for labour-intensive road construction to withdraw labour ~~from~~ productive agricultural activities, and (c) overstate the real cost of labour-intensive operations and unnecessarily deplete the MOW resources for road construction.

While it is clear that flexibility in setting wages at a competitive level is a preferable policy to a fixed wage, some of the negative features of the wage directive can be avoided:

A. Labour-intensive construction activity should be curtailed at planting and harvest periods, in accord with local AOs' information on the need for agricultural labour.

B. MOW reports and planning activities should choose between the use of machine and labour intensive construction methods on the basis of a 'shadow wage'. That is, MOW should collect information on locally prevailing wages for unskilled labour in areas where rural access road units are to be deployed. Labour intensive techniques should be employed whenever their cost, assuming workers could be hired for prevailing wages, is less than machine intensive construction. Estimates for the cost of the rural access roads programme should budget the difference between wage costs at prevailing levels and the cost at the directed wage level as a special item, to make the cost of this policy readily apparent to all concerned.

C. The MOW should document the relation between applicants for casual work and the available positions, as evidence of the excess supply available.

We would reiterate that a wage boost of the kind that has been adopted has the threefold effect of decreasing the employment generating potential of the project, worsening the equity with which income is distributed, and raising the economic cost of the capital infrastructure that is created. Since the aims of the labour-intensive works programme are to achieve the exact reverse of these effects, the decision must be regarded as ironic and unfortunate.

CONCEPTS REQUIRED FOR THE DEPLOYMENT OF RURAL LABOUR ON ROAD CONSTRUCTION PROJECTS

All of the officials concerned with the labour-intensive road programme under SRDP were interviewed concerning their procedures for hiring and remunerating the rural work force. Several concepts emerged from these interviews; the need for guidance from Nairobi on setting policies in certain areas was also apparent. In this section deployment of workers and supervision will be discussed.

Deployment of Workers, Recruiting Costs and Turnover of Work Gangs

Concern was expressed by the road engineers and A/Cs about the extent of the territory that each work force should cover. Restricting the activities of a particular work unit to one sub-location minimised the worker's travels to

the job site, but also increased the number of separate groups that had to be recruited. In addition, the amount of work for any one individual would be smaller if his activities were restricted to road segments in one sub-location. Thus the employment would become more sporadic and less permanent.⁹

Recruiting workers in separate work groups for each sub-location has advantages beyond that of minimising transport to the job. A work group tied to a sub-location could easily be employed on a **sporadic basis for maintenance** work. Once trained in road construction, the work group could be revived easily for maintenance duties. Secondly, the linking of local workers to local planning for road siting and road improvements may generate more local responsibility for road projects as a self-help activity. Thirdly, the availability of a larger work force makes it possible to schedule a greater quantity of work during the slack periods of the agricultural year -- thereby increasing the number of persons who would be available for employment.

On the negative side, deploying separate work groups in each sub-location has some costs. Obviously more workers must be recruited in toto. In addition more supervisory gangleaders are required.

On balance we did not obtain convincing evidence that the cost of supervisory personnel and recruitment were sufficiently large to warrant organising and deploying work groups on an area larger than the sub-locational level.

This view directly contradicts the opinion expressed in the earlier I.D.S. evaluation. In our opinion there is no merit in maximising the amount of work per worker employed, which was the view taken by the earlier evaluators. On the contrary, the objective should be to minimize the long-run cost of building and maintaining a road network, and this can best be done if the skills of road construction and gang supervision are available in every sub-location.

Supervisory Personnel

A major objection raised against the use of labour-intensive methods in construction is that the problem of adequate supervision is insurmountable. Not one shred of evidence in support of this assertion can be found in the experience of SRDP. While the expansion of the programme obviously depends on the availability of such personnel, an adequate supply of individuals to take on supervisory roles appears to be readily available and, given proper

9. One of the A/Cs expressed particular concern that the workers be provided with as much job tenure and security as possible. This concern seems misplaced, since it can not be imagined that the employment provided by the labour-intensive roads programme was the sole source of support of the workers in question.

supervision, rapidly trained. This conclusion will be discussed, first by reference to headmen, and then by elaborating on the possibilities for obtaining competent managers for the programme.

Recruiting Headmen

In general, the SRDP pattern has been that the chiefs and sub-chiefs were asked to supply the roads engineer with nominees from the work gangs who were known to be reliable and to command respect in dealing with others. The list of people obtained in this fashion served as an adequate and acceptable source for individuals who could be designated as headmen and made responsible for the work performance of a group of up to 25 men.

Training headmen (road gang leaders) was easily arranged by rotating the candidates through a variety of tasks on existing crews and then putting them in charge of a new group. On-the-job training of this kind implied that it was desirable to phase-in work gradually to build a cadre of workers up to full strength. Bartolo's work system is a further aid to the development of supervisors, as it involves the use of specialised work groups in each of the operations of clearing, stump removal, stone removal etc. The need to retrain those engaged in clearing only arises after the entire length of the proposed road segment has been cleared. In this fashion crews can be initiated to work on a piecemeal basis.

In any case, those in charge of the road programmes reiterated several times that the most important quality in a headman is the ability to deal with people and handle such disciplinary problems as absenteeism, tardiness and poor work effort. The standing of the headman with the sub-chief and others in responsible positions appeared to be a reasonable indicator of leadership qualities, and the system worked in a satisfactory way to produce reliable gang leaders. It is also clear that the responsibility entrusted to the headman should be compensated with a wage sufficient to retain him. Headmen were paid 6/- to 7/- per day, and this level may be required to retain the quality of men desired over a longer period of time. On the other hand, we have no evidence to indicate that the differential of one shilling per day generally paid on SRDP projects was insufficient. We would emphasise the importance of good headmen in any labour-intensive operation and make the observation that good headmen are in some measure discovered rather than trained. This implies a crucial role for the selection process. Those headmen who prove to be less good on the job should be allowed to go, those who turn out to be particularly good should be given the incentive to stay with the programme or return to other programmes.

Technical Level Supervisory Personnel

Below the Road Superintendent in the MOW, who is a civil engineer, is the Roads Inspector. Personnel at this level are well versed in the technical aspects of road design, construction and maintenance. The Migori road projects were the responsibility of a Road Inspector who demonstrated that, given an interest in the project and an ability to handle a large work force, such an individual is fully capable of initiating, laying out and supervising a series of labour-intensive road projects.

Experience in both Migori and Vihiga indicated that it was possible to find MOW employees with lesser qualifications than a Road Engineer to take on the operation of the road building programme. As the Roads Inspector in Migori put it, the task at hand was similar to jobs that he had performed on scheduled road segments, the only difference being that men, not machines, were required to complete the material moving tasks.

In Kapenguria the Roads Inspector did not work out so well, the problem in this case appears principally to have been one of commitment rather than technical competence. Indeed, the Kapenguria experience clearly indicates the problems that arise when no one of an inspector level or above is given a clear and undivided mandate to develop the programme. The local Roads Inspector, no doubt partly reflecting ambivalence with regard to the programme at the provincial level, took no interest in it. It therefore remained stagnant. Only when a young Dutch engineer who happened to be interested in this aspect of the overall road development programme under his supervision was posted to the District, was any significant labour-intensive construction started. In this case the engineer was directly responsible for the headmen on the construction site. He laid out the tasks in visits that were often a week or more apart, and they carried them out. In such tasks as the installation of simple culverts, for instance, it was this engineer's experience that after two or three had been installed under close supervision the headmen were capable of supervising further jobs on their own. For the construction of masonry drifts which were used quite extensively in dry areas, the mason responsible for making culverts undertook the work.

Below the Roads Inspector is the Overseer who, in the MOW hierarchy, is given considerable responsibility for the road construction process. On the technical side of road building, such as ensuring correct camber, determining the appropriate amount of cut and fill activity in the earthworks and designing appropriate drainage systems, Overseers can deal with the day-to-day problems

under the overall supervision of a Roads Inspector or a Roads Engineer. The Overseer's task therefore complements that of the headman, with the headman providing the crucial management and organisational skills with regard to the labour while the Overseer provides the on-site technical supervision. The Vihiga experience showed that an Overseer is capable of serving several on-going road gangs.

In developing the supervisory personnel to be used in operating an enlarged programme of rural access road construction, training will be needed to assist them in the management of a substantial labour force **and the administration of an activity** that relates to local development generally. One of the reasons for the relative success of activities in Migori is that the Roads Inspector had the constant advice and assistance of the A/C in matters pertaining to procurement, relations with the residents desirous of developing new road segments, and the problems of paying the workers. Without an administrator in a similar position to assist, it may be rather difficult for a specialist in construction to supervise a roads programme. For example, if construction is to be scheduled during periods between planting and harvesting, the Roads Inspector may need to have assistance from someone familiar with the area in scheduling periods of work on road projects.

Administration

One of the strengths of the roads programme, as is mentioned in discussing the administration of SRDP generally, was that the A/C was the fiscal agent of the programme in three areas (Vihiga, Migori and Mbere). Local decisions concerning rates of pay, procurement of materials and the siting of roads could be executed according to local inputs and local conditions. It would appear highly desirable to have this degree of local financial control devolved on a district officer in all areas. Appropriate timing of construction activities can only occur when an official resident in the area is capable of making quick disbursements of funds to workers according to the effort completed.

In addition there appear to be some rudimentary possibilities for using the roads programme to foster the development of local industry in constructing culverts, quarrying murram and chipping ballast. Whether that is appropriate will depend on the location of the work in relation to existing suppliers. Flexibility in the use of roads funds has been an advantage in fostering the use of local sources of materials.

Summary

While existing supervisory capacity is a limiting factor in the development of labour-intensive construction and maintenance systems, no evidence of difficulty in recruiting and training supervisory personnel appeared in SRDP road projects. The combination of assistance from the A/C plus previous training was sufficient to permit a Roads Inspector in Migori to function well in a position held by civil engineers in other areas. MOW Overseers were also being trained and utilised to good effect.

On future rural access roads programmes it might be advisable for the Roads Inspectors who are recruited to have some ancilliary training, but that training should be directed more at the management of large labour forces, human relations and Government administration than at the mechanics of labour-intensive techniques.

The mechanics of labour-intensive techniques have been thoroughly systematised by the work of Bartolo in Vihiga; his systems and planning forms will provide sufficient guidance to Roads Inspectors.

The headmen needed for gangs of about 25 workers appear to be readily available. Selection of these road gang leaders should be made on the basis of their leadership ability in motivating and supervising a work gang. Given appropriate supervision there is evidence that these headmen rapidly learn the simpler processes and tasks of road construction. Our only recommendation is that a sufficient rate of pay be established for these individuals to minimise turnover. If, as we have recommended, casual labour wages are reduced, the differential between labourer and foreman may need to exceed 1/-.

RECOMMENDATIONSRural Access Roads

The SRDP roads programme has been successful. Experience gained under SRDP has been a valuable input to the rural access roads programme that is now being implemented by the MOW. Reviewing this analysis, the reader will see eight major implications and recommendations for rural access road programming:

- 1) Planning/Siting--Local involvement in the siting of road segments can have a powerful motivating force both in the success of the roads programme and in other complementary development efforts.

- 2) Development Impact Evaluation - Road investments should be related to the benefits accruing from the road. A careful monitoring and evaluation of these benefits should be built into the road development programme.
- 3) Sequential Phasing -- The development of roads in an extended process of small improvements is made possible by local road gangs making limited inputs over a long period of time. The rate of improvements should be determined by direct observation of road use. Large volumes of traffic for productive purposes justify priority being given for road improvement.
- 4) Maintenance -- Labour-intensive maintenance should be planned as an integral and permanent feature of the road network created under the rural access roads programme. Once the supervisory structure is created and local labour has some experience in road building, full capability for road maintenance on a decentralised labour-intensive basis is also established.
- 5) Wages -- Wages should be paid at a level barely sufficient to recruit the needed number of workers from agricultural pursuits during the slack seasons. If higher wages are paid, special efforts must be made to avoid the drain of labour away from agriculture at peak planting and harvest times. In addition decisions on the extent of labour-intensive projects should be made using the lower prevailing agricultural wage as a 'shadow price'.
- 6) Supervision -- Adequate leadership and supervision for the construction of rural access roads can be recruited and trained from the Roads Inspectorate of MOW (for directing a divisional programme) and from local talent (for headmen). Training should centre on management and human relations in the case of the Roads Inspectorate. Training and selection of personnel should largely be done on the job.
- 7) Budgeting -- The need for considerable local flexibility entails fiscal management at the district level.
- 8) The 1974 evaluation of the Vihiga SRDP by Harmon and others recommends the use of intermediate technologies in road-building. Ox drawn carts and compacting devices are examples. We urge that such local resources be used, both because they will enhance the cost-effectiveness of road building and because the incentive to local ownership of ox teams will enhance the development of intermediate technology in agriculture.¹⁰

The MOW is already beginning work that will help to implement a number of these recommendations. The establishment of the Special Projects Branch creates a clear locus of responsibility for labour-intensive construction in MOW. Efforts are being made to investigate the cost and logistics of labour-intensive maintenance and the gains from sequential phasing of construction. Work on usage monitoring is planned and should be encouraged.

10. See B.F. Johnston and G. Muchiri, Equipment and Tillage: Innovations for Small-Scale Farmers in Kenya, Working Paper No. 197, Institute for Development Studies, University of Nairobi, 1974.

Current grants for research on labour-intensive technologies from IBRD contain plans to investigate intermediate technologies.

SRDP Roads

- 9) The programmes begun under SRDP should be phased into rural access roads as rapidly as possible.
- 10) The available information on siting and planning of roads should be transferred from the Project Committee to the District Development Committee.
- 11) Extension of the road network in SRDP areas beyond what is now underway should not be permitted until reports from usage monitoring can be analysed to ascertain a qualitative picture of benefits.
- 12) The Project Committee should consider what opportunities are appropriate for labour-intensive development in water and soil conservation.

Ministry of Finance and Planning

- 13) Expansion -- The experience in building roads should be extended to programmes of water and soil conservation to determine whether small budgets could be used equally effectively by labour-intensive projects in those areas. Whether or not experimental projects can be implemented in these areas under SRDP, the Ministry should explore a fiscal mechanism to allow the Ministry of Agriculture and the Ministry of Natural Resources, in particular, to purchase services of the 88 Rural Access Roads Units for other types of construction activity.
- 14) The Ministry should require supporting evidence on need and usage of rural access roads as part of the requests for district development grants.

CHAPTER THIRTEENAN APPRAISAL OF WATER RESOURCE DEVELOPMENT IN THE
SRDP AREAS OF TETU AND MBERE IN KENYAPURPOSE AND SCOPE

The Kenya Government's water development policy provides that good quality piped water should be available to all families in the Republic by the end of the present century. The Special Rural Development Programme was designed to enhance our understanding of the best ways and means of promoting integrated rural development by carrying out a number of experimental projects, including water development projects, in six different Divisions representing varying environmental conditions. In this chapter the development of water resources in two SRDP areas, Tetu-Thengenge and Mbere, will be evaluated. The following aspects of water development will be examined:-

1. Water Availability. For the proper development and utilisation of water supplies in these areas, it is necessary to have information on the flow characteristics of the streams feeding the water systems. Here both low and high flows as well as the total water availability are important factors.
2. Water Quality. In these two areas water is used primarily for domestic consumption and for livestock. This water must therefore satisfy minimum chemical, bacteriological and physical standards if it is to be used for these purposes.
3. Water Management and Utilisation. For proper planning of the management and development of these water projects, it is important to look at the various social, economic and environmental problems which have arisen either in connection with these schemes or with the previous use of water in these areas. Actual and potential benefits must be scrutinised, as well as costs, with a view to offering suggestions for future projects.

THE TETU-THEGENGE WATER SUPPLYIntroduction

This SRDP water development project is located in a high rainfall and medium to high potential division of Nyeri District. The area is relatively densely populated, with a population of 400 per sq. km.

The project is being carried out by private contractors on behalf of the Kenya Government, with funds provided largely by the Swedish International Development Authority (SIDA). It is being undertaken in two phases - Phase One is partly completed, whereas construction for Phase Two is still underway. A feasibility study of the scheme was completed in August 1970. The design of the water works was started in May 1971 and the construction started in February 1972. It was estimated that Phase One of the project would cost about shs.4,880,000. The design for Phase Two was completed in May 1973 and construction started the same year. It is estimated that Phase Two of the project will cost about shs.3,978,000 on completion.

The primary objectives of the project are to increase employment and incomes in the area, but other benefits may also be gained in the process such as creating a more positive attitude on the part of the local people toward innovation, building up the administrative capabilities of the local communities so that they can operate some of their own local institutions, improving the quality of rural life through expanded social and cultural activities, and many others. It was hoped that there would be close coordination of development activities in the area so that the newly available water resources could be used for maximum agricultural development.

The Government has not been very much concerned with generating revenue through charges to water users, but rather the primary concern has been to supply water to the local people. Thus, users at the communal watering points will be charged only shs.4/- per month, which will not even cover the costs of operating the water system. Estimates for maintenance costs are quite high, though no actual figures are available as yet, because of breakages, especially of taps. In the long run it is hoped to provide every household with its own water connection, but at present the emphasis is on communal watering points.

Water Availability

The project is mainly supplied by the Zaina River and can provide maximum water storage of 1200 m³. Runoff data for this stream indicate that sufficient water can be supplied for more than 60,000 people and some 25,000 livestock. At present Phase One of the project is serving over 250 families. Pumping is done by gravity, which reduces operating costs considerably.

Water Quality

A chemical analysis of a sample of water drawn from the intake is given in Table 1. It shows that although the water is neutral and soft, it is coloured and turbid. The sample indicates a high iron content and organic pollution. Table 2 shows that the sample contains a concentration of 46.9 mg/l of suspended sediment. These findings indicate that the water should be treated to make it suitable for domestic use.

Table 3 gives the results of a chemical analysis of a water sample taken from one of the watering points in the Tetu-Thegenge supply system. This analysis shows that the water is neutral and soft; it has a low mineral content, but it is organically polluted. The concentration of suspended sediment for this sample, as shown in Table 2, is 46.8 mg/l. The chemical analysis and sediment concentrations of the two samples are nearly the same, which indicates that merely pumping the water from the intake to the watering point does not substantially change its quality. This water needs to be treated to render it suitable for domestic use.

Water Development and Utilisation

Phase One of the Tetu-Thegenge Water Supply was completed in November 1973, but the treatment plant was not in operation as of December 1974. It was hoped that the treatment plant would be functioning by the time the second phase of the project is complete. The main gravity line for the first phase is of a diameter varying from 80 to 250 mm. There are six reservoirs with a **total** gross capacity of 607.5 m³. As of December 1974, there were 31 communal watering points and 199 individual connections, which are watering points connected to individual households.

From the field survey it was evident that practically all families would like to have individual connections, but the cost was apparently too high for the majority of farmers. To have a private connection, an individual or group of individuals has to pay labour costs of about shs. 150/-, a deposit of shs. 60/- and the cost of pipes from the main pipeline to his house or shamba. This means that a farmer would have to raise about shs. 225/- to have a connection installed at his farm, and subsequently he will have to pay a monthly charge of shs. 15/-. Considering that the average monthly income for a farm household is around shs. 200/-, the cost of installing a private connection is still out of reach for many.

At present there is no charge on water drawn from the communal watering points. When Phase Two and the treatment plant are completed, each household using the watering points will be charged shs.4/- per month, regardless of how much water they use. It is hoped that in future, particularly if there are more private connections, it will be possible to charge people for the amount of water they actually use, rather than just a standard amount for everyone.

The communal watering points are located at estimated intervals of 1.5 km, but emphasis has been placed on locating them at markets, schools and other sites of dense population. Field observations have indicated that some of the watering points are poorly sited in terms of the population they are intended to serve. Indeed, some of the watering points are within about 50 metres of a stream, and are thus unlikely to be of great benefit. There are strong suspicions that extraneous factors have influenced the poor siting of some of the points. Watering points should of course be located where they will most efficiently serve the needs of the surrounding human and livestock population.

The management of the communal watering points, which is left entirely in the hands of the local users, has been a serious problem. Indeed, management problems could jeopardise the success of the entire project. For example, in December 1974 more than half of the watering points were not functioning because the taps had been broken or destroyed. There were long delays in arranging and carrying out repairs, and as a result water was left flowing, sometimes for as long as a month, wasting water and in some cases causing serious soil erosion.

Phase Two of the project, when complete, will provide for the extension of the distribution system and the installation of 17 more **reservoirs** with a total capacity of 675.0 m³. The treatment works will also be expanded to provide sedimentation tanks and chlorination and mixing chambers. Because of shortages and delays in the delivery of materials, the treatment works were not completed on schedule, but they are expected to be ready in late 1975.

Impact on the Local Population

The direct effect of this scheme is the provision of good quality water in convenient locations for livestock and domestic use. Housewives will be relieved of the burden of hauling water for distances often as great as three to five kilometres return, and will have more time for other

activities. It is hoped that there will be a significant increase in the number of grade cattle and pigs in the area, and that the quality of the cattle will be enhanced since they will no longer have to walk long distances in search of water. Finally, new income-generating activities may become possible, such as irrigated vegetable growing.

Since the water project has been in operation for such a short time, it is difficult to find quantifiable evidence of economic benefits. However, available data show that there has been a continuous rise in milk production since the implementation of Phase One of the project. It is Government policy to expect a water scheme to show a reasonable economic return after it has been in operation for about three years, but this will require coordinated action from the extension service, from other Government agencies and from the local farmers. The local people must be taught how to help maintain the purity of the water supply and minimise wastage and how to take advantage of the potential economic benefits.

Supplying piped water to a rural area is bound to have both negative and positive effects on the productivity and welfare of the different groups of people living in the area. For example, in Tetu-Thegenge burst pipes have been quite a common problem which causes soil erosion and damage to crops. In most cases **the Government is compelled to compensate farmers** for this type of damage.

Repair and maintenance of the system is inadequate for a number of reasons. For one thing, supervision of pipeline maintenance is not sufficient to ensure that breaks are detected promptly. At the time of the survey, there were only two maintenance personnel for the entire system, and four or five would appear to be a more adequate number. In addition, delays in receiving spare parts have added to the difficulties. These comments are made in order to illustrate that, although the water system has certainly brought economic benefits to the area, it has also created certain economic and environmental problems.

This water development scheme should not be introduced into the area in isolation, but rather as an important component of a comprehensive, integrated development programme. As a crucial aspect of such a programme, a baseline study should have been conducted to determine the potential impact of the new water supply on the population in terms of health and economic productivity. Unfortunately, such a study has not been carried out.

MBERE WATER SUPPLY

Introduction

Mbere Division in Embu District is a difficult region geographically. It is surrounded by rivers - the Thuchi River to the north, the Tana River to the east, the Tana and Thiba Rivers to the south and the Rupingazi River to the west - but the only **permanent** stream which runs through the Division is the Ena River in Evurori, the northernmost Location in the Division. Rainfall is insufficient throughout the area, and dry **periods, when most of the streams dry up**, are experienced during large parts of the year. The area is mostly underlain by the old metasediments of the **Precambrian Period**.

There are two main water schemes in Mbere, the Ena River Water Scheme and the Thuchi River Water Scheme. The Ena project is by far the biggest and most sophisticated in the area. It covers the more densely populated and fertile areas of Nthawa, Mavuria and Mbeti Locations, where cash crop production has been planned, and the lower parts of Mavuria and Mbeti where group ranches have been proposed. The scheme is intended to serve a population of 25,000 people and 12,100 stock units.

The Thuchi scheme will supply the drier parts of Evurori Location and Ishiara. This scheme is small and simple. It is designed to serve some 2,000 people living far from the permanent streams by extending the existing gravity pipeline about eight kilometres from the Thuchi River via Ishiara Market to Kamutu where there is a storage tank. Besides these two major projects, there are two smaller ones: the repair of an existing small water supply at Kerie and an extension of the supply at Iriatune.

Several factors were taken into account in siting these water supply schemes, including population density, scarcity of water, the potential for economic development and the likely ability to pay for the water. Areas within two miles of permanent streams were excluded.

Economic Aspects

Due to the limited number of permanent streams in Mbere, people walk eight kilometres and over each way to fetch water during the dry seasons. This means that during dry periods a good part of the day is spent fetching water. It also means that the amount of water obtained for household use is less than optimal, and this has contributed to a high incidence of disease

in the area with negative effects on the labour supply. It is hoped that increased water supplies will make possible a higher standard of health and improved labour productivity.

In Mbere land preparation and planting are done during the dry season, just when the farm family is forced to spend a good deal of the day fetching water. In particular, the women who are responsible for fetching water are also the primary source of agricultural labour, so that scarcity of water creates a serious farm labour bottleneck. Children also spend a great deal of time fetching water, so that once a more convenient supply is provided this responsibility will be lightened and they may find it easier to attend school. School attendance would also be increased if fewer days were lost due to illness. In the long run, of course, better education for the children will be of crucial importance for the general development of the area.

It is not possible to calculate a full cost-benefit ratio for the water development schemes in Mbere because the economic benefits of the new water supplies cannot be quantified. It is obvious, however, that the provision of water is vital for development in the area. An attempt has been made to calculate one economic benefit of the water development schemes - the resolution of the labour bottleneck which has acted as a constraint on increased agricultural production. This has been done by considering a number of factors and making comparisons with similar areas where intensive surveys have been carried out.

It was found that for each family in Mbere at least 100 man days a year are spent collecting water. More time for this task is required during the dry season, just when labour is needed for land clearing, land preparation and planting. The value in increased production of additions to the agricultural labour force has been estimated at shs.2/- per man day, so with an estimated 3,500 families living in the areas served by the water projects, the value of increased production would be shs.700,000/- per year if no time were spent collecting water. This figure should be compared with the total cost of the projects of over shs.3,290,000/-. Of course, this is only a consideration of the increases to the labour force which might result from the water projects. A more thorough analysis of the potential economic benefits of the schemes would require three or four years.

Initial estimates of the overall costs of the water projects in Mbere Division, including construction as well as operating costs, were based on field surveys, plan sketches and comparisons with similar installations recently constructed elsewhere. The estimates were as follows:-

<u>Scheme</u>	<u>Construction Costs (shs)</u>	<u>Operating Costs (shs)</u>
Ena (Siakago, Mavuria, Mbeti)	1,385,000	90,000
Thuchi	49,000	-
Total	1,434,000	90,000

These initial projections proved to be much too low: the present estimate, based on costs already incurred and estimated future costs, is that the total project on completion will cost at least shs.3,290,000/-. The increase in projected costs can be attributed to the rising price of materials and earlier underestimations. The cost of the project per head of population served will be at least shs.100/-.

It was recommended that water users should be charged rates which would help pay for operation and maintenance of the schemes and repay the loans used to finance construction. Although most people in Mbere are not accustomed to paying for water, a survey revealed that a number of users, such as shop owners, butchers and bar owners, were already paying. It was found that retail shops used from 13 to 24 gallons of water a day, butcheries up to 30 gallons and bars up to 70 gallons. Each 4-gallon debe cost from 15 to 80 cents, depending on the location and the season, so that the owner of a retail shop was spending up to shs.300/- annually for water.

For the Ena River Project, detailed proposals were formulated for a system of rates and methods of collection. The rates are tied closely to the consumers' ability to pay which means that only certain types of consumers are charged for water at all - private traders, group ranches and the Mbere Farmers' Cooperative Society. Ranches will be charged according to the number of cattle owned, and the Cooperative Society will be charged according to the number of members, with rates deducted from sales receipts. Households with private connections will be charged according to the Ministry of Water Development's scale of **tariffs**. The proposed water rates are as follows: -

Retail shops	shs 180/- per annum
Butcheries	shs 360/- per annum
Bars, coffee shops	shs 600/- per annum
Group ranches, per stock unit	shs 12/- per annum
Mbere Farmers' Cooperative Society, per member	shs 20/- per annum
Private connections	shs 180/- per annum

When the project is complete, the projected revenue will be about shs 18,000/- per annum.

The Ena River Water Scheme

Water Availability: As shown in Table 4 and as indicated by the flow characteristics of the Ena River at RGS 4EC3 given in Table 5, the highest recorded discharge at that station is 0.14 cusecs and the lowest is 0.009 cusecs. The station is not yet rated, and fear has been expressed that there may not be enough water to supply areas beyond Kiritiri (See map.). Although further investigation is required, the data available suggest that in fact the Ena water supply may not be sufficient for the needs of the area it is intended to serve. If this proves to be the case, then alternative sources of water will have to be found, perhaps from the main branch of the Thiba River further downstream or from earth dams, boreholes or wells.

Water Quality: Table 6 gives the chemical analysis of a sample of water taken at the Ena River intake. It indicates that the water is of low mineral content, neutral and soft. The suspended sediment analysis given in Table 2 indicates a concentration of suspended sediment material in the water of 2.4 mg/l. There is slight organic pollution which may require treatment before the water is suitable for domestic consumption. Further treatment is recommended to remove colour and turbidity.

Table 7 gives the chemical analysis of a water sample taken from a well at Kathira near Kirina which is near Kiritiri Market. According to this analysis, ground water in the area is neutral and soft but contains excessive amounts of iron and is also polluted and highly turbid. To render it potable this water should undergo chemical treatment. In general, a thorough study is needed of the underground water resources in Mbere to discover the potential quantities available, the quality of the water and the economic implications of its exploitation.

Water Development and Utilisation

The feasibility studies and design for this scheme were completed in 1971. The project was to be constructed in phases - Phase One was the construction of the intake works and the supply of water to Siakago Township. The scheme is based on an intake near the 4,000 foot contour line on the Ena River. From here the water is pumped to a **reservoir** 8 kilometres west of Siakago which is 500 feet higher. The storage tank has a capacity of 50,000 gallons. The main line for this phase of the project required about 16 kilometres of pipeline; a total of 90 kilometres of pipeline was used in all.

Communal watering points were to be constructed in the densely populated areas no more than two miles apart. However, at the time of our survey only four communal watering points had actually been installed on an experimental basis. It is planned to provide many more when the project is completed.

After Phase One is completed, work will start on the Nthambu-Kawenindi extension and then the Mbeti supply. The development of later stages will depend on the completion of the main line and the quantity of water available from the Ena River.

The consumption of water was estimated at five gallons per capita (per unit), or a total of 190,000 gallons a day. The feasibility studies showed that the present scheme of pumping water from the Ena River is the most economical way to meet this demand. The few boreholes in the area could not begin to provide this amount of water, and even if it were possible to find sufficient catchment areas - which it is not - the cost of constructing storage tanks to meet this level of demand would be prohibitive.

Thuchi Water Supply

Water Availability: Table 4 indicates that the highest recorded discharge at the intake point for this scheme is 337.32 cusecs and the lowest is 0.80 cusecs. This means that the water supply may be inadequate during the low flow periods, but this problem should be minimised if the storage tanks are fully utilised.

Water Quality: Table 8 shows that the water in Thuchi River is neutral and very soft, and has a low mineral content, but some traces of organic pollution have been detected (as revealed by the level of absorbed oxygen). Table 2 shows that the concentration of suspended sediment is 15.9 mg/l. The chemical analysis shows that the water must be treated to render it fit for human consumption, and appropriate treatment works are under construction.

Water Development and Utilisation

The Thuchi River water scheme is a gravity system, so that there are no diesel generators at the intake. However, the cost of the project will evidently be much higher than originally estimated. The Catholic Mission associated with the Diocese of Meru, receiving funds from Italy, has provided the bulk of the support for the project in the form of material and personnel. The Mission has donated a total of shs 300,000/- in material and cash, and the Kenya Government has contributed shs 100,000/-, mainly from NORAD funds. In the 1973/74 financial year shs 186,915/- was spent on the project, and by December 1974 a further shs 130,208/-. It is expected that the Kenya Government may have to spend a great deal more than it has up until now by the time the project is completed.

It was learned from field observations that the pipes for this project have been laid at less than the minimum prescribed depth due to labour shortages and the rocky soil in the area. This may well lead to burst pipes in the future with the serious environmental and economic consequences described earlier. Another potential problem is that these pipes were made and tested in Italy and the very different climatic conditions in Mbere might lead to a shortened life expectancy for the pipes.

Delays in obtaining materials at the site have caused considerable delay in the implementation of the project. Sometimes work has had to be suspended for as long as one month. These delays have sometimes been caused by late orders and sometimes by delays in passing through customs at Mombasa. For future projects of this type, a much more efficient system for ordering materials and delivering them at the site should be employed.

CONCLUSION

The two SRDP areas discussed in this chapter, Tetu-Thegenge and Mbere, are quite different socially, economically and geographically, and these differences mean that the introduction of water development schemes is bound to have different effects in the two areas. Tetu-Thegenge is a high rainfall area, suitable for many types of farming, and Mbere is a semi-arid area with only limited suitability for crop production. Tetu-Thegenge is also much more densely populated than Mbere at the present time. Agricultural production in Tetu-Thegenge is also much more highly developed than in Mbere, where, due to the harsh ecological conditions, possibilities for rapid economic development are limited unless new technologies are introduced.

Because Tetu-Thegenge is already more highly developed, water schemes introduced in the area will not bring about any immediate dramatic economic changes unless they are coordinated with other development projects. Economic

development will take place with increases in agricultural productivity brought about by improved inputs and machinery. Water development can help to enhance dairy production and irrigated vegetable crops. Poultry production should also be encouraged on a larger scale.

In Mbere, on the other hand, the completion of the water development projects could bring about impressive economic changes if carefully planned and if the local people are **suitably** motivated. There will not be sufficient water to introduce irrigated farming, but Government projects for ranching and the introduction of grade cattle will be more likely to succeed if water is available. More research should be conducted on drought resistant crops and varieties, if increased crop production is to be encouraged in the area.

In Tetu, where the water supply is already in operation, there have been maintenance problems, particularly in regard to the communal watering points. No specific individual or group is entrusted with the responsibility for looking after the watering points, and half the taps are broken by negligence or vandalism. One possible way to maintain the watering points would be to employ the owner of the plot on which a point is located for a small payment (say, shs 15/- **a month**) to see that the taps are not damaged.

It is also evident that poorer farmers are using less water than the wealthier ones, so that it is not equitable for all users **to pay** the same rate. One solution to this problem might be to charge each household according to the number of people in the family and the number of livestock owned. This problem will disappear, of course, when all farms have private connections and the use of water is metered.

Water in both Tetu and Mbere is slightly polluted and needs treatment to make it safe for human consumption, but this problem will be solved when the treatment plants presently under construction are completed. Apart from the Ena River scheme, there seems to be adequate water for human and livestock consumption, but not for irrigated farming.

The delays in constructing the systems in both SRDP areas can be attributed to a number of factors. Late delivery of materials has been due to late orders, delays in shipping and delays in clearing at Mombasa, especially in passing through customs. Increases in the price of materials required additional funds which could not be raised **at** short notice. Also during the rainy seasons, especially in Tetu, materials could not be delivered to some sites because the roads became impassable, and this halted construction

in some instances for several weeks. Finally, there is evidence of some cases of inefficiency, and there were unnecessary delays in giving tenders for construction to contractors.

In conclusion, any evaluation of the impact of a water development scheme requires baseline studies carried out before, during and after the introduction of the water system. These studies should be of an interdisciplinary nature, taking into account the environmental, health, social and economic implications of the introduction of piped water supplies. It must also be stressed that these water schemes should not be introduced in isolation if they are to have significant economic benefits. Rather they should be introduced as one aspect of a comprehensive development programme including other projects designed to exploit the potential benefits of the water supply.

Table 1. Chemical analysis of a water sample taken at the intake point on the Zaina River, Tetu-Thegenge, November 23, 1974.

COLOUR	50
DEPOSIT	SILT
TASTE	
PH	7.1
TURBIDITY	19
ODOUR	NIL
ELECTRICAL CONDUCTIVITY AT 25°C (Micro Mhos/cm ²)	37
	<u>Mg/l</u>
BICARBONATE (HCO ₃ ['])	17.7
CARBONATE (CO ₃ ["])	NIL
CHLORIDE (CL ['])	4
SULPHATES (SO ₄ ["])	4
NITRATE (NO ₃ ['])	NIL
NITRITE (NO ₂ ['])	NIL
FLUORIDE (F ['])	<u>NIL</u>
Σ ANIONS	<u>25</u>
SODIUM (Na ['])	2.1
POTASSIUM (K ['])	2.2
CALCIUM (Ca ["])	4.8
MAGNESIUM (Mg)	1.9
IRON TOTAL (Fe)	6.0
AMMONIUM (NH ₄ ['])	0.3
MANGANESE (Mn)	0.2
HEAVY METALS (Pb, Cu, Zn)	<u>1.0</u>
Σ CATIONS	<u>18</u>
HARDNESS CARBONATE (CaCO ₃)	14
HARDNESS NON-CARBONATE (CaCO ₃)	6
HARDNESS TOTAL (CaCO ₃)	20
BIOCHEMICAL OXYGEN DEMAND 5 DAYS @ 20°C	-
TOTAL DISSOLVED SOLIDS RESIDUE DRIED AT 180°C	50
TOTAL DISSOLVED SOLIDS AFTER IGNITION	-
CO ₂ FREE	3
SiO ₂	15
O ₂ ABSORBED	6.4

Table 2. Results of suspended sediment analysis.

<u>SAMPLE SOURCE</u>	<u>SAMPLING DATE</u>	<u>SILT CONTENT MG/L</u>
ENA RIVER	28-11-74	2.4
THUCHI RIVER	28-11-74	15.9
ZAINA RIVER (INTAKE)	23-11-74	46.9
ZAINA RIVER (WATERING POINT)	22-11-74	46.8

Table 3. Chemical analysis of a sample from the Zaina River taken at a watering point on November 22, 1974.

COLOUR	Less than 5
DEPOSIT	Silt
TASTE	
PH	6.9
TURBIDITY	NIL
ODOUR	NIL
ELECTRICAL CONDUCTIVITY AT 25°C (Micro Mhos/CM ³)	33
	<u>Mg/l</u>
BICARBONATE (HO ₃ ')	15
CARBONATE (CO ₃ ")	NIL
CHLORIDE (CL')	4
SULPHATES (SO ₄ ")	NIL
NITRATE (NO ₃ ')	NIL
NITRITE (NO ₂ ')	0.01
FLUORIDE (F')	<u>NIL</u>
Σ ANIONS	<u>19</u>
SODIUM (NA')	2.8
POTASSIUM (K')	2.0
CALCIUM (Ca")	2.4
MAGNESIUM (Mg)	3.4
IRON (TOTAL)(Fe)	0.3
AMMONIUM (NH ₄ ')	NIL
MANGANESE (MN)	NIL
HEAVY METALS (Pb, Cu, Zn)	<u>Not detected</u>
Σ CATIONS	<u>11</u>
HARDNESS - CARBONATE (CaCo ₃)	20
HARDNESS NON-CARBONATE (CaCo ₃)	NIL
HARDNESS TOTAL (CaCo ₃)	20
BIOCHEMICAL OXYGEN DEMAND 5 DAYS @ 20°C	-

Table 3. Contd.

TOTAL DISSOLVED SOLIDS RESIDUE DRIED AT 180°C	40
TOTAL DISSOLVED SOLIDS AFTER IGNITION	-
CO ₂ FREE	2
SiO ₂	20
O ₂ ABSORBED	4.2

Table 4. Some Characteristics of the Thuchi and Ena Rivers.

STARTED OPERATING	RIVER	STATION	CATCHMENT SIZE	LOCATION		FLOW CHARACTERISTICS			
				LAT.	LONG	LOW FLOW (CUSECS)	DATE	HIGH FLOW (CUSECS)	DATE
22-9-52	THUCHI	4EB4	43 Sq. MI	0° 23 30"s	37° 35 55"	0.80	25-5-58	337.32	
17-2-73	ENA	4EC3	-	0° 20 00"s	37° 28 45"	0.009	27-6-73	0.14	

Table 5. Flow characteristics of the Ena River (4 Ec3).

DATE	GAUGE HEIGHT (M.)	DISCHARGE (Cusecs)
1. 13-2-73	—	0.020
2. 2-3-73	0.17	0.025
3. 3-4-73	0.13	0.0092
4. 27-6-73	0.305	0.143
5. 2-8-73	0.26	0.10
6. 2-1-74	0.22	0.0366
7. 3-2-75	0.16	0.0297

Table 6. Chemical analysis of a water sample taken at the intake point on the Ena River, Mbene, November 28, 1975.

COLOUR	40
DEPOSIT	SILT
TASTE	
PH	6.7
TURBIDITY	14
ODOUR	NIL
ELECTRICAL CONDUCTIVITY AT 25°C (Micro Mhos/cm ³)	49
	<u>Mg/l</u>
BICARBONATE (HCO ₃ ['])	24
CARBONATE (CO ₃ ["])	NIL
CHLORIDE (CL ['])	6
SULPHATES (SO ₄ ["])	5
NITRATE (NO ₃ ['])	NIL
NITRITE (NO ₂ ['])	NIL
FLUORIDE (F)	<u>NIL</u>
Σ ANIONS	<u>35</u>
SODIUM (Na ['])	5.0
POTASSIUM (K ['])	1.8
CALCIUM (Ca ["])	4.0
MAGNESIUM (Mg)	2.4
IRON (TOTAL) (Fe)	1.2
AMMONIUM (NH ₄ ['])	NIL
MANGANESE (Mn)	0.1
HEAVY METALS (Pb, Cu, Zn)	<u>1.0</u>
Σ CATIONS	<u>16</u>
HARDNESS CARBONATE (C. Co ₃)	20
HARDNESS NON-CARBONATE (CaCo ₃)	NIL
HARDNESS TOTAL (CaCo ₃)	20
BIOCHEMICAL OXYGEN DEMAND 5 DAYS @ 20°C	-
TOTAL DISSOLVED SOLIDS RESIDUE DRIED AT 180°C	75
TOTAL DISSOLVED SOLIDS AFTER IGNITION	-
CO ₂ FREE	6
SiO ₂	30
O ₂ ABSORBED	1.5

Table 7. Chemical analysis of a water sample taken from a well at Kathira near Kirima (Kiritiri), Mbere, on March 29, 1975.

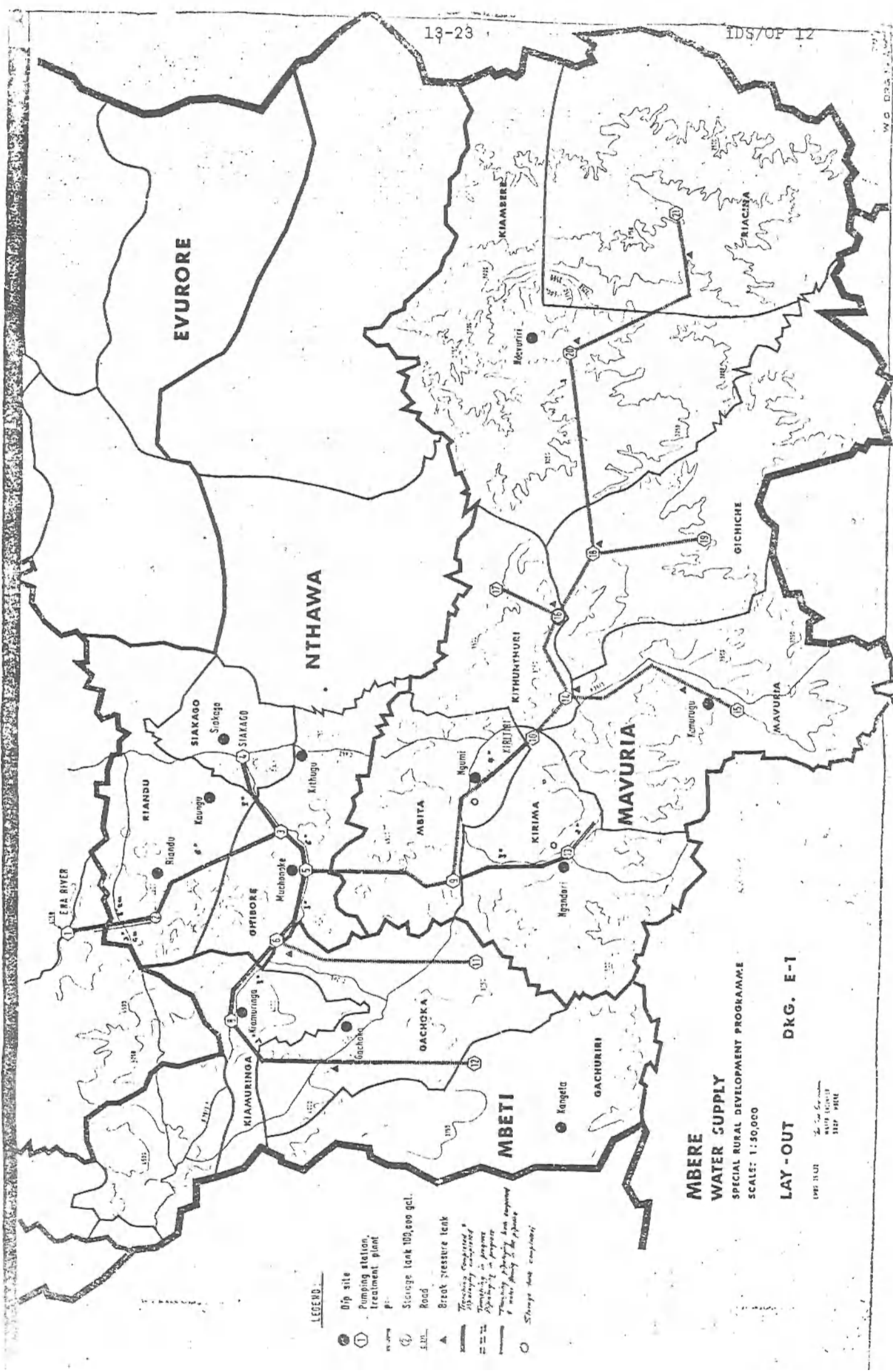
COLOUR		60
DEPOSIT		SILT
TASTE		-
PH		7.2
TURBIDITY		88(J.T.U _s)
ODOUR		NIL
ELECTRICAL CONDUCTIVITY AN 25°C (Micro Mhos/cm ₃)		225
		<u>Mg/l</u>
BICARBONATE (HCO ₃ ')		80
CARBONATE (CO ₃ ")		NIL
CHLORIDE (CL')		27
SULPHATES (SO ₄ ")		13
NITRATE (NO ₃ ')		NIL
NITRITE (NO ₂ ')		NIL
FLUORIDE (F')		0.6
Σ ANIONS		<u>120.6</u>
SODIUM (Na')		24.5
POTASSIUM (K')		8.2
CALCIUM (Ca")		10.4
MAGNESIUM (Mg")		4.8
IRON (TOTAL) (Fe)		1.6
AMMONIUM (NH ₄ ')		NIL
MANGANESE (Mn)		NIL
HEAVY METALS (Pb,Cu,Zn)		Less than 0.001
Σ CATIONS		<u>49.5</u>
HARDNESS CARBONATE (CaCo ₃)		46.0
HARDNESS NON-CARBONATE (CaCo ₃)		NIL
HARDNESS TOTAL (CaCo ₃)		46
BIOCHEMICAL OXYGEN DEMAND 5 DAYS @ 20°C		-
TOTAL DISSOLVED SOLIDS RESIDUE DRIED AT 180°C		260
TOTAL DISSOLVED SOLIDS AFTER IGNITION		-
CO ₂ FREE		4.0
SiO ₂		50.00
O ₂ ABSORBED		1.2

Table 8. Chemical analysis of a water sample taken at the intake point on the Thuchi River, Mbere, on November 28, 1974.

COLOUR	Less than 5
DEPOSIT	Vegetable Matter
TASTE	
PH	6.9
TURBIDITY	NIL
ODOUR	NIL
ELECTRICAL CONDUCTIVITY 25°C (Micro Mhos/cm ₃)	43
	<u>Mg/l</u>
BICARBONATE (HCO ₃ ')	22
CARBONATE (CO ₃ ")	NIL
CHLORIDE (CL')	4
SULPHATES (SO ₄ ")	1
NITRATE (NO ₃ ')	NIL
NITRITE (NO ₂ ')	0.2
FLUORIDE (F')	<u>NIL</u>
ΣANIONS	<u>27</u>
SODIUM (Na')	4.8
POTASSIUM (K')	2.0
CALCIUM (Ca")	3.2
MAGNESIUM (Mg)	1.4
IRON (TOTAL) (Fe)	0.8
AMMONIUM (NH ₄ ')	NIL
MANGANESE (Mn)	0.1
HEAVY METALS (Pb,Cu,Zn)	<u>Not detected</u>
ΣCATIONS	<u>12</u>
HARDNESS CARBONATE (CaCo ₃)	14
HARDNESS NON-CARBONATE (CaCo ₃)	NIL
HARDNESS TOTAL (CaCo ₃)	14
BIOCHEMICAL OXYGEN DEMAND 5 DAYS AT 20°C	-
TOTAL DISSOLVED SOLIDS RESIDUE DRIED AT 180°C	35
TOTAL DISSOLVED SOLIDS AFTER IGNITION	-
CO ₂ FREE	6
SiO ₂	15
O ₂ ABSORBED	2.1

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LEGEND

- ① Dip site
- ② Pumping station, treatment plant
- Storage tank 100,000 gal.
- Road
- ▲ Break pressure tank
- Transmission line
- Transmission line
- Transmission line
- Transmission line
- Storage tank complete

MBERE WATER SUPPLY
 SPECIAL RURAL DEVELOPMENT PROGRAMME
 SCALE: 1:50,000

LAY - OUT **DKG. E-1**

1963 11 01

THE ADJUDICATION PROCESS AND THE
SPECIAL RURAL DEVELOPMENT PROGRAMME

INTRODUCTION

Project Manuals of the Special Rural Development Programme (SRDP) generally classify the adjudication process as a 'supporting service'. This is in line with a broader and long-standing Government policy, namely that reform of African land tenure systems is a prerequisite to rapid agricultural development. The essence of this view, which is most consistently formulated in the Swynnerton Plan of 1954¹, is that customary tenure must be transformed from a community based to an individualised system before it can provide a basis for sound agricultural planning and management practice. More specifically agronomic experts argued that individualisation would cure certain alleged ills of customary tenure, namely its diffuseness and tendency to encourage fragmentation, incessant disputes, and infinite subdivision of holdings.

In order to achieve this goal, it was recommended that a three-tiered process involving first the adjudication of claims, secondly the consolidation of holdings and thirdly their registration be undertaken in all those areas still under customary tenure. The adjudication process was expected to define clearly once and for all what interest each person had in what land and thus clarify what was seen as an area of much confusion and internal conflict. It was this diffuseness in customary tenure that was seen as a source of disputes. The consolidation process, however, was expected to eliminate fragmentation - a factor that greatly reduced returns to labour and time in customary land use. Besides, the aggregation of scattered holdings in single units was seen as a more sensible basis for farm-planning and the delivery of extension service advice. The registration process as the final stage would confirm the above processes and thus render African-owned land 'secure' and therefore an acceptable basis for generating agricultural credit, and an incentive to long-term capital investment. Furthermore, a state-guaranteed record of this kind would make it easier to regulate customary inheritance procedures and thus make it possible to control sub-economic parcelation of holdings.

In evaluating the impact of land adjudication on the SRDP therefore, some caution is necessary (a) not to isolate this process from the total

1. See R.J.M. Swynnerton, A Plan to Intensify the Development of African Agriculture, Nairobi, Government Printer, 1954.

2. The word 'fragmentation' is used to mean ownership of scattered fragments not contiguous to one another. This is in contradistinction to 'sub-economic parcelation' which merely refers to the relationship between size of holding **and** its optimum potential.

Tenure Reform Programme (TRP) of which it is merely a phase, and

- (b) to isolate general questions about the relationship between the T.R.P. and agricultural development from specific issues that have arisen from the interaction between the farmer and the SRDP.

The discussion next following will be limited to those SRDP areas that were visited by the author, or in respect of which relevant data were available from other members of the evaluation team, namely Kwale, Mbere, Tetu and Kapenguria.

THE ADJUDICATION PROCESS IN SRDP AREAS

The three-tiered T.R.P. processes outlined above remained standard procedure for the whole country from 1956 to 1968 when it became quite clear that this was not simply inappropriate in certain areas, but also that the consolidation phase was extremely unpopular. It was inappropriate in such areas as the Mwereni sections of Kwale, much of Lower Mbere and practically the whole of Kapenguria, where the dominant land use pattern was basically pastoral and therefore not as fragmented as in most agricultural areas.³ According to a senior land adjudication official in Coast Province, consolidation was unpopular because it did not take into account the people's notions of land ownership and distribution⁴ a factor which goes to the root of the entire *raison d'être* of the Tenure Reform Programme and to which we shall return later.

Consequently new legislation was passed in 1968 to enable TRP personnel to by-pass the consolidation phase and thus register adjudicated holdings directly.⁵ The original intention was to apply this new Act mainly to pastoral areas or to those areas to which existing legislation was as yet not applied. In the event, however, the new Act was applied to all areas in which adjudication was not complete whether they were under the old Act or not. The only exceptions were areas such as the Taita Hills in which fragmentation had reached rather absurd limits. **This meant** that of the four SRDP areas under discussion only the Tetu T.R.P. was carried out under the old regime. Indeed the Tetu programme was one of the first ever to be undertaken in the country, having been done during 1952-56 under Emergency conditions.⁶ Of the other three, Kwale and Mbere started

3. See the recommendations contained in the Report of the Mission on Land Consolidation and Registration, Nairobi, Government Printer, 1965.

4. Personal Communication, Senior Land Adjudication Officer, Coast Province, 23/11/74.

5. The old Act is the Land Consolidation Act (Cap.283), Laws of Kenya (passed originally in 1959). The new Act is the Land Adjudication Act (Cap.284), Laws of Kenya.

6. For a full discussion of the Nyeri Tenure Reform Programme see M.P.K. Sorrensens, Land Reform in Kikuyu Country, Nairobi, Oxford University Press, 1967, Ch.VIII.

in early 1970 and Kapenguria in late 1971. Table 1 below indicates the progress which has been achieved in each of these areas as of October 31, 1974.

Table 1. Process of land adjudication.

SRDP AREA	LOCATION	ADJUDICATION SECTION	STATUS OR TRP
KWALE	KIKONENI	Bumbani 'A' Mrima Mwananyamala))) Registration under individual title
		Bumbani 'B' Bumbani 'C' Mwananasini Mwagunda	Adjudication complete Adjudication complete Adjudication complete Adjudication in progress
	MSAMBWENI	Mafisini Sikirazi	Adjudication in progress Adjudication in progress
	MWERENI	Mwereni Trust Lands	Registration under group title
	SHIMBA SOUTH	Mkongani 'A' Mkongani 'B'	Adjudication in progress Adjudication in progress
MBERE	MBETI	Kiamuringa	Reg. under individual title
		Gachuriri Gachoka Mbita Riacina	Adjudication complete Adjudication complete Adjudication in progress Adjudication in progress
		Kithunthiri Kirima Mavuria Gichiche Kiambere	Adjudication complete Adjudication in progress Adjudication in progress Adjudication in progress Adjudication in progress
		Nguthi Kerie Gachabari Evurore Kamazandi Kasavari Iriaitune Nthambu	Adjudication complete Adjudication in progress Adjudication in progress Adjudication in progress Adjudication in progress Adjudication in progress)) Adjudication planned in 1975/76 period
	NTHAWA	Gitibari Siakago Riandu Gangara	Adjudication complete Adjudication complete Adjudication complete Adjudication in progress

SRDP AREA	LOCATION	ADJUDICATION SECTION	STATUS OF TRP
KAPENGURIA ⁷	KIPKOMO	Kanyarkwet	Adjudication complete
		Kongelai	Adjudication complete
	SOOK	Morobus	Adjudication complete
Chesera		Adjudication complete	
Chepkobeh		Adjudication complete	
Kipkomo		Adjudication complete	
Serewo		Adjudication complete	
Chepareria		Adjudication complete	
LELAI	Chenochoi	Adjudication complete	
	Kisaunet	Adjudication complete	
	Keringet	Adjudication complete	
	Siyoi	Adjudication complete	
	Nekwijit	Adjudication in progress	
	Chepkomo	Adjudication in progress	
TETU	n.a.	n.a.	Registration under individual title complete
		Kapsangar	

Source: Land Adjudication and Registry Records.

Two very general observations may be made about this brief review. The first is that except for Tetu and parts of Kwale the full T.R.P. was not complete in many of the areas under discussion before the commencement of SRDP. This means that many of the agricultural experiments discussed elsewhere in this Report were and are being undertaken essentially on traditional tenure foundations. This per se would not have been problematic, as was implied, for instance, in the 1972 Special Report on Kwale⁸, had it not been for the fact that the latter programme was substantially pre-dated by the former both in concept and national implementation. This has generated two important areas of conflict. On the one hand, the administrative machinery associated with T.R.P. in the country, if not in the specific areas concerned, appeared to be much more established and therefore far more inflexible than that of the SRDP. On the other hand there were many aspects of the SRDP package, e.g. the issue of credit and farm-planning, for which individual tenure was considered indispensable by many SRDP personnel. The mere fact that T.R.P. was not complete before SRDP in many areas, therefore, had very important implications for the flow of these resources, not simply as

7. Information on Kapenguria was obtained from Mr. John Reynolds, a member of the SRDP Evaluation team.

8. See G.C.M. Mutiso's evaluation of the Kwale SRDP in Appendix B-14 of the 1972 I.D.S. SRDP Report.

between various SRDP areas but within individual areas as well. Both of these factors presented problems in relation to interdepartmental cooperation and the coordination of specific experiments which we discuss fully below.

The second general observation is that even in those areas where T.R.P. was complete, it was invariably carried out without the benefit of compulsory consolidation since the only way that this could be achieved under the new Act was through voluntary exchange of fragments. But as I have pointed out elsewhere⁹, this system almost never yields results and this for reasons not only of cultural notions of land distribution alluded to above, but also because of the range of soil types and ecological variations within specific T.R.P. areas. This means that T.R.P. would in these areas have little impact on the degree of fragmentation, and the location and size of holdings. In the Bumbani 'A', Mrima and Mwananyamala sections of Kwale SRDP for which data were available, the registry records showed clearly that each person held an average of at least three parcels of land most of which were not even contiguous to each other.¹⁰ The size of holdings comes out clearly in the analysis contained in Table 2 below. According to that Table 69 per cent of all registered parcels in Bumbani 'A' are three hectares or less. In Mrima the figure is 64 per cent **and** in Mwananyamala 57 per cent.

Table 2. Size and distribution of land holdings in Kikoneni Location.

SIZE IN HECTARES	NUMBER OF HOLDINGS IN EACH CATEGORY		
	BUMBANI 'A'	MRIMA	MWANANYAMALA
0 - 1	174	173	118
1 - 2	248	172	134
2 - 3	146	90	94
3 - 4	94	75	53
4 - 5	33	47	48
5 - 6	26	36	34
6 - 7	28	20	31
7 - 8	5	14	17
8 - 9	13	9	10
9 - 10	7	8	12
10 - 11	2	10	12
11 - 12	1	4	6
12 - 13	4	1	5
13 - 14	Nil	2	6
14 - 15	3	2	3
15 - 16	Nil	1	3
16 - 17	1	1	1
17 - 18	1	2	3
18 - 19	1	3	5
19 - 20	3	3	Nil
20 - +	16	5	15
	OUT OF 811	OUT OF 678	OUT OF 610

Source: 1973/74 Kwale SRDP Project Report and Annual Evaluation Review, Appendix B.

9. In a report on Kenya's land tenure reform programme, to the Commission of Inquiry into Land Matters of the Government of Papua and New Guinea, September, 1973, pp. 28ff.

10. Indeed as G.C.M. Mutiso (ibid.) pointed out, there were even cases in which individual holdings were scattered in different sublocations in the SRDP area.

An obvious implication of these observations is that the impact of T.R.P. cannot be analysed entirely in terms of the Swynnerton formula since many of its structural prerequisites have not been realised in these areas, except perhaps in Tetu. There are nonetheless, several important problems that have emerged in the course of the implementation of SRDP under these tenure conditions which merit special attention.

EFFECT OF T.R.P. ON SRDP

Land Use Policy and Administration

The first of these problems relates to land use policy and administration in the SRDP areas. The first point to make is that the presence of T.R.P. personnel, consisting of no less than thirty people and incorporating local and traditional leadership, meant that in most cases there were two separate authorities operating within each SRDP area both of which had at their disposal a lot of power over the same subject-matter, i.e. land. This differed from the situation in non-SRDP areas in that administrative and technical personnel in these cases have never pretended to work as an integrated development machinery. Rather they have tended to work in a sectoral and fragmented manner, and consequently issues of interdepartmental coordination and consistency in the communication of agricultural and other development policy, strategy and plan implementation have seldom arisen in the context of on-going development programmes. As much coordination as exists between these personnel has been confined to District and Sub-district Development Committee meetings at which various officers present a catalogue of on-going projects supported or supervised by their ministries. To the extent, **therefore**, that one of the cardinal principles of SRDP called for 'comprehensive rural development',¹¹ deliberate steps needed to be taken to mould T.R.P. and SRDP teams into an integrated and complementary whole. This was particularly crucial in those areas where T.R.P. was lagging behind SRDP experiments since the principles and objectives of the latter needed to be understood by personnel of the former in order that their choice of proprietary forms might not subvert SRDP. Our investigations, however, show very little attempt to do this and as a result some important SRDP experiments floundered for lack of appreciation of what each team was trying to accomplish. Perhaps the most glaring manifestation of this was in the Mbere SRDP area, particularly in relation to the **attempts** to establish group ranching schemes in Gacavari, Gichiche, Iruma, Muchonoke, Kangara, Ngaru, Mihiriga and other areas.

11. See 1972 Evaluation, p.3.

The following areas of confusion emerge from the data available. In the first instance it was quite clear that T.R.P. personnel were prepared to adjudicate the SRDP area on the same basis and according to the same principles as were used in the earlier schemes in upper Mbere. Upper Mbere is basically an agricultural area and the system of land use there is quite intensive as compared to the drier more pastoral SRDP area. It was thus natural for T.R.P. personnel to adjudicate on the basis of individual rather than group title as could have been done under the new Act referred to above. The problem seems to be that no adequate steps were taken to explain this alternative way of owning registered land to the people, particularly in the light of the ranching experiments that SRDP personnel had planned for this area. Consequently a lot of time and effort went into the adjudication of individual claims, even though there was ample evidence to show that ownership and control of land in Lower Mbere was still quite definitely centred on clans. Indeed much of the time was spent on the allocation of land to clan members rather than adjudication of claims *stricto sensu*. This is evident from the procedure followed by T.R.P. personnel which first involved the adjudication of clan lands followed by the identification by clan elders of 'individual' holdings.

In the second instance, SRDP personnel, however, were quite clear in their own minds that much of the area should be developed as group ranches. At a meeting called at Siakago on October 9, 1972, local elders, members of parliament and SRDP personnel had worked out proposals for the establishment of a group ranch at Muchonoke. This was followed later with constant exhortations from range management officials in an attempt to convince the people that ranching was their best alternative. On one such occasion the District Range Officer assured Chiefs and Sub-chiefs that¹² ranching in /your/ area is the greatest and foremost solution to /your/ lack of adequate health". He added that "this has been surveyed and ascertained by economic experts. So you should have no doubts whatsoever when we ask you to establish ranches in your locations."

The fact that adjudication was proceeding on the basis of individual title greatly irritated SRDP personnel who found this an obstacle to the sound economic planning of the area. The Area Co-ordinator complained that it was "contrary to development planning for the future of the wananchi in this non-crop potential area".¹³ The reason is that adjudication on the basis of individual

12. See 195/Range/1/11/14 d. 21/5/73, DRO to Chiefs and Sub-chiefs.

13. See MBR/SRDP AGR 2/10/133 d. 27/9/74 Area Coordinator to Land Adjudication Officer; also 221/Range/18/315 from Provincial Range Officer to LAO. d. 27/9/74.

title meant that these ranches could not be organised around the legal framework for the administration of 'group' lands set out in the Land (Group Representatives) Act 1968.¹⁴ It was still possible, of course, to organise co-operative ranches,¹⁵ but this alternative for some reason or other was not acceptable to range management officials.¹⁶ Instead they insisted on unilateral cancellation of all individual entries in the adjudication register and their substitution with group title¹⁷ - a proposition which the Area-Co-ordinator considered "an illegal imposition unless they the people were themselves willing and did so out of spontaneous urge".¹⁸ When finally the Muchonoke Ranch failed to take off, the District Range Officer attributed this to the fact that "land was adjudicated on individual basis and would-be members were not ready to revoke their individual title deeds in favour of one covering the whole ranch."¹⁹

It is quite clear from this debate that there was no consensus between T.R.P. and SRDP personnel as to what the relationship between tenure and land use planning should be. One might even detect among SRDP personnel themselves a certain amount of uncertainty and confusion as to what alternative legal forms were available, or even whether this excessive legalism was necessary at all given the structure of access to land use in Mbere itself! The explanation for this inter-departmental conflict goes further than merely lack of consensus in the field. T.R.P. personnel, as one official put it, had their own 'targets' to reach. These were 'national level' prescriptions to which they were bound to comply. As far as we could gather, these targets were reckoned in terms of the quantity of parcels they were able to adjudicate in any given period of time rather than the quality of the work in terms of the developmental needs of an area. As far as these officials were concerned the economic arguments of SRDP personnel which, in a general sense, form part of the original *raison d'être*

14. See Cap.287 Laws of Kenya and the regulations made thereunder, especially The Land (Group Representatives) (Prescribed Provisions) Order, LN 204/1969.

15. In accordance with the Societies Act (Cap. 108), Kenya Laws, Revised Edition, 1970.

16. The only reason the officials gave was that cooperative ranches can only operate through the purchase of shares and by leasing land from members and imposing admission fees. This was thought to be unpopular. In Gacavari and Gachiche where such cooperatives were tried, shares were being offered at Shs 200/- and 500/- respectively, even though admission fees were only Shs 5/-.

17. The DRO argued that since the reasoning capacity of the people in Mbere was apparently still too narrow, administrators had a duty to direct them in this manner. See 204/Range/10/1/20 d. 23/10/73, DRO to Provincial Director of Agriculture Eastern Province.

18. See MBR/SRDP/AGR 2/10/74 d. 25/10/73 Area Co-ordinator to District Agricultural Officer.

19. See 195/Range/1/11/(72) d. 14/3/74 DRO to AC.

of the T.R.P. in Kenya did not seem to have any relevance to their work! The only way in which SRDP personnel could have influenced the conduct of land adjudication would have been to lay before the people by way of well-informed persuasion a programme that addressed itself not merely to the pattern of land use in the area but also to the tenure question. As it is, they did nothing of the kind and attempts to impose group registration antagonised not only the people but drove a wedge between certain SRDP personnel as well.

The Issue of Credit and Farm Planning

The second problem relates to the issue of credit, farm level planning and the deployment of extension service personnel. This is a major storm centre in the analysis of T.R.P. and agricultural development. In a recent paper we had occasion to point out that the transmission of farm planning advice and the issue of agricultural credit by private and public **institutions seem to take** little account of the fact of individualisation or otherwise of land tenure. On the question of credit we pointed out that land titles are now regarded merely as a necessary condition to a loan application, never as a sufficient one. We argued further that "in order to receive a loan what appears to count is the social status of the applicant and his liquidity in the monetary system"²⁰ This conclusion is by and large valid for most peasant agricultural areas of Kenya. No significant difference seems to emerge even in the light of the experimental nature of SRDP. In other words, title deeds do not seem to have been accepted as a sufficient condition for the provision of loans. As would be evident from Table 1 above, this means that there was a definite bias in public and private credit lending in favour of those areas in which the full T.R.P. was complete, e.g. Tetu, parts of Kwale and one section of Mbere, and only to those people who were in a position to offer substantial collaterals in the form of urban properties, salaries and similar forms of personal property.

The monthly registry reports for the whole of Kwale District (and not just the SRDP area) show, for example that although 4,742 parcels had been registered in the District as of October 31, 1974, only 221 title deeds had been collected as of November 30. Of these only 23 title deeds were utilised between January 1 and October 31, 1974 to raise a cumulative total of £75,970 in loan funds. This might give the impression that a lot of money was flowing into agriculture in the District. This, however, is grossly misleading

20. H.W.O. Okoth-Ogendo, "African Land Tenure Reform", Chapter V in J. Heyer et al., editors, Agricultural Development in Kenya, Nairobi, Oxford University Press, forthcoming.

since almost all of these loans were from the Industrial and Commercial Development Corporation (I.C.D.C.), and commercial banks and have been issued essentially for non-agricultural purposes. Lending by the Agricultural Finance Corporation (A.F.C.) is thus almost negligible.²¹

This confirms a trend that has been observed elsewhere in connection with the use of land titles for the generation of credit. This is that much of the credit secured on agricultural land, particularly after 1967, goes into business enterprises. The intensification of the policy of Africanisation of petty business enterprises has created the impression even in these areas that these ventures offer better returns, at least in the short-run, than agriculture, despite the very high risks involved. Title to land, in addition, of course, to other collaterals has become an important basis for generating the credit necessary for such businesses. The pay-off to agriculture is not exactly clear since many of these enterprises are not complementary to it at all.

Although the situation in Tetu is radically different from Kwale in the sense that a lot more credit has in fact been issued by the A.F.C. for agricultural purposes, we do not think that this invalidates any of the inferences we have drawn above. Being a much older scheme, most of the farmers in Tetu have had the opportunity to purchase their title deeds. But more importantly, Tetu being a much more intensive and basically cash-crop area, many credit institutions are quite prepared to accept as collateral the value of permanent crops on the land; and to rely on the cooperatives to supervise this. This also means that the loan recovery process that has bedeviled rural lending in many parts of the country is not a special problem in Tetu. The records show for example that more than 80 per cent of the small-farm credit in the Tetu SRDP area is recovered without much difficulty. This, A.F.C. officials agree, is an exceptionally high standard for public lending.

On the question of farm planning and transmission of extension services, no significant concession seems to have been given to the tenure question either, except perhaps negatively by not paying much attention to those areas where T.R.P. was incomplete. For example, it was relatively clear in the case of Kwale that SRDP personnel preferred to work with registered holdings although the actual selection of demonstration farms was based on the size and the status of the parties involved rather than the factor of registration per se. Table 3 below shows the size and zonal distribution of the thirteen holdings chosen to spearhead exotic crop varieties in the area.

21. The monthly registry reports from the Land Registry give fairly accurate information on the total amount of loans secured on title whether these are vetted by the Land Control Boards or exempted as is the case with A.F.C. applications.

Table 3. Size and zonal distribution of demonstration farms in Kwale.

Location	Ecological Zone	L.R. No.	Size in Hectares
KIKONENI	Coastal (Kigombero area)	277	9.4
		292	13.0
		294	6.4
		297	9.4
		298	14.2
	High Potential (Kikoneni village area)	n.a.	38.34
		n.a.	16.4
		n.a.	15.4
		n.a.	13.26
		n.a.	3.0
	Marginal (Mwananyamala area)	497	19.5
		633	19.5
		634	24.5

Source: District Agricultural Records, South Kwale SRDP, Msambweni.

Read in the light of Table 2 above, it will be appreciated that most of these holdings were very much above the average sizes recorded in Kikoneni Location, and as the biographical data on the people involved indicate, many of them were 'influential' members of the community.²²

This is likely to have an important impact on agricultural development particularly on the rate of diffusion of technological innovation to the general populace. In view of current research on the extension service theory espoused by the Ministry of Agriculture, this position is likely to lead not only to income differentials within the community but also to an overall credit shortage within the agricultural sector of the rural economy. The reason is really quite obvious. Once it is accepted as fact that most of the land comprised in the SRDP area had not in fact been registered or even adjudicated, there is no point in insisting on completion of T.R.P. as a prerequisite to the acquisition of loans or the extension of agricultural advice. And once it is discovered that even title is not a sufficient basis for raising agricultural credit, a different type of credit scheme clearly becomes necessary at least on an experimental basis.

22. **These data were** obtained in an interview with the Divisional Agricultural Officer. The names of the people involved have been withheld by the author.

The Structure of Land Distribution

The third problem we have identified relates to the structure of land distribution within the SRDP areas, particularly in those areas where T.R.P. is complete. The first and rather general comment to make here is that all over the country T.R.P. has been accompanied by substantial redistribution of land in a manner that was not exactly contemplated by its authors. For the adjudication process did in fact pre-empt a fairly brisk market. Many people took advantage of this to expand their existing claims.²³ The fact that all SRDP areas were (and still are) very high service areas kept alive the market so pre-empted by attracting many in-migrants into the areas. Under customary tenure this would have raised no special alarm since outright dispositions are in general rare and in any case closely scrutinised by all interested parties in the family or clan, whichever is the unit of land use administration. Individualisation of tenure, introducing as it did a freely negotiable title and shifting the power of land administration to Land Control Boards, made it much easier for in-migrants to acquire property in many SRDP areas, particularly Migori, **Mbere** and Kwale.

In Kwale this phenomenon has been greatly assisted by the fact of fragmentation of holdings and their location in relation to village centres, and the rather low land prices prevailing in this area. As we have already noted, this area was not at all consolidated and therefore multiple ownership remained a common feature. It is clear both from registry index maps and on-the-ground investigations, however, that the larger, less intensively used fragments are in fact located much further away from the villages than smaller, more intensively used ones.²⁴ It is these larger parcels that tend to be sold to in-migrants.²⁵

The going price of land has been an important catalyst here. Although accurate figures are hard to come by, figures quoted to the Kwale Land Control Board indicate that the average price of land ranges from shs 200/- per hectare in parts of Bumbani 'A' to shs 450/- per hectare in parts of Mwananyamala. This price range, however, is likely to appreciate as the market stabilises and begins to narrow down.

The Kwale Land Control Board and SRDP personnel seem to view this trend with indifference and in some cases with unconcealed approval. Their view seems to be that this will enable the more adventurous and 'progressive' minded

23. This point is expanded in my chapter, op.cit.

24. This finding is also reported by G.C.M. Mutiso, op. cit.

25. This conclusion is drawn from a perusal of land adjudication and registry records. These show among other things that land transactions in this area involve whole transfers rather than sub-division and transfers as is the case in less fragmented areas.

in-migrants to 'develop' the area. We believe, however, that there is a more important economic angle to this trend, and that is that in the long run it reduces the capacity of the local population to expand their own agriculture. Besides, as was indicated in the 1972 SRDP Report, this can be the cause of much future political friction in the area, because even though people are in a manner of speaking 'freely' transferring land to in-migrants, most people still see this as a form of 'invasion'. This feeling came out strongly in random interviews in Kwale, Mbere and Kapenguria.²⁶

The second comment we want to make in connection with land distribution relates to the position of women in the control of land. This is an issue that is scarcely ever considered since many researchers do not seem to distinguish between the question of ownership of land and access to the use of it. Under traditional tenure, as we have noted, the power of disposition was restricted within very narrow limits. This is because rights of access to the use of land have always been a paramount consideration in the rural economy. Hence security of tenure lay not so much in ownership (whether evidenced by the power of allocation or administration of use), but rather in actual use. As such the position of women remained just as secure as it would have been if they possessed the power of allocation or transmission rights.

The Tenure Reform Programme changed this situation radically by conferring upon land holders all the attributes of ownership unencumbered by rights recognised by customary law unless these were actually entered against title. The conduct of adjudication, however, took scant notice of these rights since the tendency was to regard only the power of allocation as equivalent to ownership. Many of our communities being basically patrilineal and inheritance systems patrilineal, the powers of allocation were invariably conferred on men as the permanent members of society.²⁷ Adjudication along these narrow limits effectively weakened the proprietary position of women in the rural economy by concentrating ownership rights exclusively in the hands of men. Table 4 below represents an attempt to analyse the situation in those sections of Kwale already registered. The percentage figures hide an important factor in Kwale that tends to weaken the position of women further. This is that most of the women on the register were in fact common owners with their husbands rather than separate owners. Hence the rather high figure in Bumbani 'A' should be read with some caution.

26. Those who sell land do so to raise cash needed for fixed expenses such as school fees, food and clothing. Very rarely is land sold to finance business ventures.

27. Digo society was until recently matrilineal. The position now seems to be that the society is shifting more to a patrilineal system.

Table 4. Registered women landholders in Kikoneni Location.

Registration Section	Total No. of People in Register	Total No. of Women in the Register	Women as % of Total
Bumbani 'A'	820	127	15.0
Mrima	678	20	2.8
Mwananyamala	612	37	5.6

Source: Land Registry Records, Kwale.

Although an attempt to work out similar figures for Kiamuringa in Mbere failed²⁸, we think the position is much worse than in Kwale. This would follow from the manner in which adjudication was done which we have already outlined. The tendency in this case would be to allocate land to male heads of households and heirs rather than to women.

The Kwale Land Control Board following common practice in all former trust lands has **tried** to redress this situation by requiring wives and other relatives of registered land holders to consent to transactions before the Board can approve them.²⁹ But this is neither a legal requirement nor is it likely to last. Hence one can predict that in a few years the proprietary position of women might become extremely precarious. The significance of this point for SRDP and development generally is that the rural economy is bound to be adversely affected if women who form the most important part of the labour force have no effective **say** in the system. This is quite apart from the obvious exploitative **consequences** of such a situation.

We have gone into the question of land distribution at some length because in a land-based economy it is an important indicator of effective power in rural society. If - as we believe is the case - comprehensive rural development includes socio-political development, we suggest that some of these qualitative issues should have been given far greater attention than the SRDP and T.R.P. personnel have hitherto done.

28. The Land Registrar in Embu would not release any of his records without "written authority from the Chief Land Registrar in Nairobi".

29. The Board's powers derive from the Land Control Act (Cap. 302), Laws of Kenya.

CONCLUSIONS AND POLICY RECOMMENDATIONS

We have attempted in this chapter to indicate general points of interaction between T.R.P. and the implementation of SRDP. What emerges clearly is that none of the personnel involved in both programmes really appreciated the interconnection between tenure and agriculture. More particularly T.R.P. personnel were never really integrated into SRDP. Indeed they appeared remarkably unconcerned with the original rationale of the Programme itself!

The most important lesson to learn from this perhaps is that it cannot be taken simply for granted that the Swynnerton formula will work; particularly when the tenurial form recommended is as inflexible as individual tenure obviously is. Significant variations in tenure structure were quite clearly necessary to take account of differences in cultural and economic matrixes of given communities. The policy recommendations emerging from this review may be summarised as follows:-

1. The T.R.P. should be brought directly under the control of SRDP personnel. This would ensure badly needed integration at that level.
2. T.R.P. personnel should pay special attention to so-called 'lesser rights' under customary law so as to guarantee to as many categories of people as possible access to the use of land. This is particularly important in the case of women since they are by and large responsible for the family economy.
3. A certain amount of sensitivity is required in areas such as Kwale and Mberere to the question of the sale of land to in-migrants. This would mean greater supervision by Land Control Boards than has hitherto been the case. Whereas we do not want to develop 'localised' economies along the same lines as that propagated during the colonial era, we do not want to encourage a policy that will create 'localised' political problems either!
4. Since there is no indication that title to land per se is a sufficient condition for the issue of public or private finance, this precondition should be dispensed with altogether. A special credit scheme along the lines of the Guaranteed Minimum Returns but flexible enough to take into account smaller holdings is necessary.

THE WOMEN'S GROUPS PROGRAMME IN THE SRDPINTRODUCTION

Our evaluation of the Women's Group Programme is based on fieldwork in all six of the SRDP areas. In addition to interviews with various Government officials, personnel from non-governmental agencies working with the Programme (Programmes for Better Family Living of the U.N. Food and Agriculture Organisation (PBFL/FAO), UNICEF, the Family Planning Association and Partnership for Productivity) and women's group leaders and members, we have consulted a number of documents -- primarily Government reports and publications of PBFL/FAO. Case studies which trace the Programme in more detail in the specific SRDP areas will be presented in I.D.S. Working Papers Nos. 231 to 236 and I.D.S. Occasional Paper No. 13 to be issued at a later date. The present report is limited to overall discussion and recommendations for the Programme, although some **recommenda-tions** for the specific SRDP areas are also included.

The 1972 I.D.S. Evaluation of SRDP paid little attention to the Women's Programme. There is a one-page description of the Kapenguria experience and that is all. However, the Programme calls for more detailed analysis as its contribution to the SRDP is in fact of some importance. The principles of the Programme seem to be well in line with those of the SRDP.

The background and development of the Programme has been described in PBFL Report No. 14.(10) As this Report notes:

The Women's Group Programme is more of an extension approach than a single programme. It is concerned with some parts of many programmes, designed and executed by different agencies, but for the benefit of the same rural family and farmer.

The major objectives are:

- a) To revitalise and strengthen women's groups in the rural areas through enabling them to make effective use of local resources such as personnel and materials;
- b) To increase the influence of group activities on the welfare of the group member's family; and
- c) To establish more functional connections between group activities and development of the community. (p. 8)

The first formal Government-sponsored programme for women can be **traced to the early 1950s when the Department of Community Development** decided to form an organisation intended to promote development amongst women in rural areas. This new body was called Maendeleo ya Wanawake. The Maendeleo ya Wanawake Organisation was preceded by and co-existed with a large

number of more local-level groups which formed an integral part of indigenous social institutions in various parts of the country. These local-level solidarity groups, being more closely linked with processes in their societies, were and are able to play a far more active and substantial role at the local level than the national organisation. The ngwatio among the Kikuyu, the risaga among the Gusii and saga among the Luo are historically all groups associated with mutual aid efforts in the spheres of agriculture and home and community improvement and welfare. The intention of the SRDP was to build on the foundation provided by such indigenous groups and to some extent the more recently created Maendeleo ya Wanawake body.

The Women's Programme involves experimentation in the area of leaders' training and **subsequent follow-up by field staff**. The idea is to select leaders of existing groups and train them in a variety of fields related to family welfare and community development (e.g. nutrition, vegetable growing and poultry-keeping). The leaders then go back to their groups and pass on the acquired knowledge to the members. The trainers, who are also to be responsible for the follow-up exercise, are supposed to be drawn from all departments whose activities are in any **way related to the Programme**, such as the Department of Social Services and the Ministries of Agriculture, Cooperatives and Health; in this way, there is an attempt to make this a genuinely integrated programme, unlike the less **systematic** approach to women's groups which the Department of Social Services (D.S.S.) and Home Economics section of the Ministry of Agriculture have had in the past. In addition, a thorough monitoring and evaluating component has been designed for the Programme, through which detailed information on the situation of each group in each area is to be obtained. The Programme has also tried to meet the SRDP principle of replicability. In mid-1974, a workshop was held in order to assess how far this could be done. (See PBFL Report No. 14 (10) and Report No. 15 (11)). Steps are now being taken to extend the Programme to various non-SRDP areas in the country.

Although we identify in the following discussion a variety of problems and areas where there is scope for improvement in the Programme as it has been implemented thus far, we take a strongly **positive** general view of the effort to date. There is a solid case for the existence and continuation in an expanded form of a development programme focussed on rural women.

Access and Equity

Women constitute the majority of Kenya's rural population - about 66 to 67 per cent - and, in an economy that is basically agricultural, they carry the main burden of farming work. In addition, rural women play a very important management role in the farming and domestic spheres, and their contribution to self-help efforts across the country, both by joining the men in local communities or carrying out action on their own, is of major importance. The substantial workload carried by rural women both in Kenya and in other African countries has been reported in a number of studies. (See 1, 5, 6, 8, 12, 13 and 14.) It has also been noted that since a larger number of men in Kenya leave the countryside to look for work elsewhere, rural women have assumed an even greater share of agricultural and community improvement work than before. (See 2, 5, 14, 15 and 16.)

Up to the present, extension activities in the agricultural and cooperative development sectors have shown little recognition of the tremendous part which women in fact play in maintaining and improving rural welfare. It is widely recognised that extension activities carried out by Government agencies and their personnel tend to concentrate on more 'progressive' elements in local communities and thus often overlook those who stand most in need of assistance and who would benefit most from such activities. (3, p. 153) It is perhaps less widely realised that the population of 'forgotten farmers' is predominantly female.

We note that the problem of access and equity for women in Kenya has already been extensively reviewed in the I.L.O. Report and recommendations made for possible solutions. As the I.L.O. Report states, "The specific problems of the integration of women in the economy and in society seem important enough from all standpoints to warrant special and sustained attention". (3, p. 299) We also note that the Kenya Government response to this section of the Report contained in Sessional Paper No. 10 on Employment did not really adequately address itself to the issues raised. Indeed, it was merely observed that, "The Government is not aware of overt discrimination against women in the country. Women are employed in important positions in the Armed Forces, in the Police, in the Prisons and in the Government as well as in the private sector". (4, para. 241, p. 64)

Past policy has tended to ignore the real place women have in **subsistence** and development activities and this has been reflected in the neglect of women in the channelling of the informational, organis-

ational and material facilities needed to capitalise on locally available development resources. As long as this state of affairs continues, a valuable major development resource base will be wasted.

Contributions of the Programme Thus Far

In terms of gains achieved through this particular Programme, several significant contributions can be identified.

The attempt to involve various relevant ministries and agencies in a joint effort to plan, administer and follow-up women leaders' training courses has been very productive. The integrated approach stems from the realisation that development cannot and should not be viewed as taking place in mutually exclusive sectors, and that Government structures and functions regrettably tend to operate as if such sectors were a true reflection of development events on the ground. The Women's Programme has provided a practical demonstration of the feasibility and desirability of cooperation among ministries and agencies in planning and administering leaders' training courses. Such joint effort is no small achievement given the strong spirit of departmentalism which sometimes can be observed among Government officers. The emphasis on cooperation among personnel from different Government departments has also been carried over to some extent to group follow-up and extension activities. A sustained effort to monitor group activities and progress following the training of leaders, and to foster the implementation of lessons learnt in training through the provision of extension services, is critical to the success of the leadership training strategy. Although there is clearly a need for significant improvement in the degree of inter-ministerial cooperation in these basic field level activities, the Programme has certainly helped to encourage the idea. This point came out several times during the course of field investigations in interviews with extension and supervisory staff.

A related point is the emphasis the Programme puts on the group approach to extension efforts. This is a highly welcome development. The group approach has distinct advantages: in the first place, when an extension officer visits a women's group, it is possible to address a far larger audience than would be found on visits to individual homes and farms; secondly, the group approach has a built-in follow-up capacity that is lacking in the one-to-one approach. After the extension officer has left, the lessons or advice which were given can be built on and reinforced as the group members collectively consider and act upon the new ideas. What we see emerging from the Women's Programme is a pattern in which extension teams are joining together with client teams to work for development. It

is important to note that the potential client teams -- women's groups -- already widely exist on the ground, thus providing a ready context for the application of group extension strategies. This fact should not be overlooked when it comes to the implementation of such programmes as Maternal and Child Health/Family Planning (MCH/FP) projects planned by the Ministry of Health.

There has been some progress towards the Programme's three objectives of encouraging women's groups in general by opening access to resources, by fostering connections between group activity and family welfare on the one hand and between group activity and community development on the other:-

1. The training of group leaders has been linked to increased group membership in some cases. (11, p. 55)
2. Groups with trained leaders are in effect receiving extension services far more consistently than previously was the case; the leaders themselves are providing these services. This fact is appreciated by group members themselves, judging from comments made during interviews.
3. There has been an improvement in the focus and direction of group activities. The need for careful planning and organisation is being increasingly recognised by the groups, many of which have suffered in the past from overly casual definitions of goals and a consequent diffusion of efforts.
4. At the same time, a re-orientation of attitudes has been encouraged in many cases as women begin to perceive a new meaning in the group experience, to see a broader relevance between the group and their day-to-day concerns. The pre-independence 'women's clubs' functioning under the auspices (or direction) of Government or voluntary agencies sometimes had the closed and non-utilitarian character of a sewing circle. (See 13, p. 81.) Such an orientation persists even now in certain cases, but is fortunately on the decline. It is our view that this re-orientation in attitudes has been fostered by increased awareness of the availability of new options for women, particularly in the areas of community

development and income generation. This increased awareness is especially noteworthy amongst groups in poorer regions less well endowed with resources for group development. The development of a new outlook can be traced in turn to enhanced group consciousness and confidence and to a better appreciation of what is available in the way of tools (materials and expertise) for a group to use for self-development. The question of income generation for women's groups has proven difficult as we shall discuss later. While it is unfortunate that a number of the income **generating** projects which different groups have initiated either have not got off the ground or have fared poorly, it is too early to form any negative conclusions about the general long-term prospects. As we note later, a major problem has been the lack of sound advice from the proper quarters. At present, the fact that women's groups are increasingly thinking in terms of new commercial endeavours, such as trading ventures, posho mills and poultry projects, is significant in itself.

5. In the areas of group activities and home and community development it is clear that the Programme is having a positive impact. On the social welfare side, group members have been encouraged in a number of activities aimed at home improvement, ranging from improving family nutrition, child care practices and home gardening to the building of better fire-places or latrines. On the community side, groups have engaged in such activities as adult literacy classes, communal labour on group **plots**, and self-help projects such as the construction of multi-purpose meeting halls which serve community as well as group interests.

THE GROUPS

The basic elements of the Programme are, of course, the women's groups in the local areas. In this section, we present some of the main features of these groups.

It can be said that women's groups both within and outside the SRDP areas fall into two broad types of orientation. In the first place, there is the social welfare type, which is the predominant one. Here the concern is to improve the living conditions in members' households and the local community. A group may devote its attention to such matters as improved nutrition and child care practices, home improvement such as helping members to replace thatch with iron roofing or to develop better water supplies, etc., or self-help activities aimed at community development such as the construction of a health centre or a nursery school. Many of these groups also engage in recreational activities such as singing and dancing, sometimes for community entertainment, and sports.

The second type of group orientation is the commercial type, where the primary focus is income generation. Commercial goals may be achieved in a variety of ways. For example, a group may set up a small enterprise such as a bus service or a posho mill; or it may set itself up as a savings society through which registered members can borrow money for various investment purposes.

While these two types can be distinguished, it is useful to think of them as complementary rather than mutually exclusive categories. It will be found that the two orientations generally co-exist as different activities of the same groups, but they are emphasised differently from area to area. The commercial orientation is most pronounced among groups located in relatively well-developed areas; outside of these areas, social welfare activities are paramount. The relative emphasis placed on these different activities can also change over time. Groups may pass through an earlier phase in which social welfare concerns are primary and during which a stable membership **and cohesive outlook are acquired**. This provides a foundation for a later phase in which commercial projects receive greater emphasis, although attention is still directed to the social welfare side as well. The mabati/savings groups in Tetu can sometimes be seen in these terms. Groups in Taita/Taveta and mabati groups in Mathira Division in Nyeri provide even stronger examples of this pattern.

The Mbai sya Eitu (literally, clan of girls) in Machakos District is yet another example of a women's organisation which has assumed a strong political and economic role at the local level and plays a leading part in soliciting funds for self-help projects in the area which the members choose

to support for political reasons. This group has increased its fund-raising capacity as a result of the political influence it has acquired at the grass roots level. (See (7).)

While some of the groups are quite old and trace their origins to pre-colonial times, others can be linked to programmes in the early 1950s and still others have originated since SRDP was begun. Two basic modes of group formation seem to be operating at the present time: first, a group may be initiated as a result of the internal dynamics of an already existing group; secondly, external mechanisms may come into play, where either individuals or organisations stimulate group formation. In the first mode, women's groups build on primary foundations of solidarity groupings such as indigenous mutual aid teams and religious associations. For instance, a group of women who belong to an agricultural work group may see the need to organise themselves in a somewhat more formal fashion in order to improve their positions by collectively bargaining for access to services which can be obtained through local politicians or Government programmes. Again, members of a cooperative society or a church group may decide that more needs to be done to mobilise women for local development efforts and they may therefore encourage the establishment of a women's group.

A group can also be formed through influences from outside the local community. Groups may be organised through the efforts of: (1) individual women who have had training in homecraft and related skills through programmes in the early 1950s or more recently at an urban homecraft centre; (2) wives of prominent local persons such as businessmen, clergymen or politicians; or (3) a locational Community Development Assistant, Home Economics Assistant, Nutritionist or a field worker from a voluntary agency such as Partnership for Productivity. In this last case, a field worker may undertake to organise a group out of personal interest and initiative and/or as a representative of a particular agency whose policy is to encourage women's groups. Such field workers often work in **cooperation** with local leaders and pre-existing solidarity groups such as school committees or church groups. Thus, what we have labelled as two categories are once again not to be viewed as mutually exclusive but as complementary. Both mechanisms of group formation may be active in the early stages of a group.

Group Membership

We are unable to give precise figures on group membership and average group size within the SRDP areas. The statistics available from our field investigations and various Government and PBFL reports are not always consistent. Although it is difficult to obtain very reliable figures for all areas, we present the following statistics as a rough approximation of membership.

Table 1. Membership of women's groups in SRDP areas.

SRDP Area	No. of Groups	Recorded Membership
Kapenguria ^a	33	500
Vihiga/Hamisi	43	1312
Migori/Kuria ^b	34	680
Mbere	25	950
Tetu	71	4328
Kwale	23	280
TOTAL	229	8050

a. Accounts of group membership in Kapenguria vary significantly among sources. The figures cited above represent a best estimate based on field investigations and correction for the low and high extremes of figures recorded in official reports.

b. There is a marked discrepancy between D.S.S. reports which recorded 23 groups with a membership of 321 and a PBFL/FAO report which recorded 34 groups with 680 members for the same year (1974) in the Migori/Kuria SRDP area. The PBFL figures are the more reliable ones in our assessment.

The sizes of individual groups vary from a low of around ten members to a high of several hundred. Where membership fees are collected, it sometimes happens that a group has an 'official' (regular and paying) membership and a much larger 'unofficial' (irregular and non-paying) membership.

One should be cautious about assuming that groups with large memberships are more successful. For one thing, women's groups, like harambee groups, tend to be larger, better organised and more active in areas with sedentary populations where cash cropping and diary farming flourish and ensure steady cash returns to farmers. Secondly, group membership tends to be higher in areas of high population density and lower in less populated regions. Thus, membership figures should be interpreted with reference to the general development and population density of the areas where the groups are located.

Group Activities

As previously noted, women's groups are involved in a variety of activities, some of which are primarily directed towards home and community welfare while others are primarily commercial. As has also been indicated above, commercial and social welfare activities are emphasised differently in the six SRDP areas. Groups located in relatively less developed areas which lack a strong pattern of cash crop production or other income generating employment tend to have a weaker commercial orientation. Groups in Kwale and especially in Tetu are much more involved in commercial activities than are groups in Migori/Kuria and Kapenguria, for example.

Table 2. Women's group activities.

A. Activities undertaken in regular meetings (including lessons/demonstrations given by Government extension officers and group leaders):-

- Adult literacy
- Cookery
- Nutrition
- Child care
- Family planning
- Home hygiene
- First aid
- Vegetable gardening
- Crop and animal husbandry
- Handicraft work (e.g., pottery, basketry, beadwork, sewing, knitting, etc.)
- Entertainment (e.g., singing, dancing, sports)

B. Self-help activities:-

- Construction of multipurpose halls (group and community meeting halls, day-care centres, adult literacy centres)
- Home and community improvement (e.g., developing water supplies, installing mabati roofs or improved fireplaces and latrines)
- Savings/credit arrangements for members

C. Income generating activities:-

- Poultry-keeping
- Produce sales
- Labour teams (e.g., farming work, roofing houses)
- Production and sale of building blocks
- Handicraft sales
- Savings/credit societies

The preceding list, though not exhaustive, provides a fuller picture of the range of group activities. It should be noted that in several instances both social welfare and commercial objectives are served by the same activity. For example, poultry keeping and vegetable gardening have a nutritional value for group members' families and should not be judged solely in terms of economic gain. Again, some types of handicrafts can either be marketed or used in members' homes. Even dancing can have a commercial aspect when a group is paid to perform at a local ceremony.

Groups generally meet once or twice weekly. The venue may be a local church or school, the group's own hall, a member's house or outdoors under a tree. The fact that many groups lack an adequate meeting place is the reason why the construction of a group hall is so often given priority attention.

THE ORGANISATIONS INVOLVED

If any agency may be said to have overall responsibility for the Women's Programme it is the Department of Social Services (D.S.S.). SRDP officers in Nairobi have often taken an initiating and coordinating role, but in the field these tasks are performed by the officers of D.S.S. The central figure in the field is the Asst. Community Development Officer (A.C.D.O.) who is responsible for arranging the leaders' training courses as well as the follow-up activities through which group progress is monitored. In this task the A.C.D.O.s are assisted by other D.S.S. staff, as well as staff from other ministries and departments, especially Health, Agriculture and Cooperatives. These other ministries are more involved with the Programme in the field than at the national level. The main voluntary body which has played a part in the Programme is the Family Planning Association of Kenya. In the Vihiga/Hamisi area, Partnership for Productivity has also had an input. Interestingly, the Maendeleo ya Wanawake organisation has not been involved at the national level, and neither has the National Council of Women of Kenya.

The donor arrangements differ from those normally applied to SRDP. The costs of the Programme are borne primarily by the United Nations Children's Fund (UNICEF), which has financed development programmes for women in Kenya since 1957. Another U.N. body, PBFL/FAO, has substantially contributed to the Programme in the **capacity of both a funding and consulting** agency for D.S.S. PBFL has prepared materials, organised leaders' training courses and workshops for the trainers, and worked on group follow-up. D.S.S.

has assigned one officer to work with PBFL -- first on a half-time basis, then full-time since the 74/75 financial year. Currently this officer is assisting with efforts to extend the Programme to twelve other districts in the country.

COSTS

Funding for the Programme has been drawn from UNICEF and PBFL. Tables 3 and 4 indicate the amount of allocation and expenditure from the two agencies since the inception of the programme in 1972.

In addition to UNICEF and PBFL funds, part of the D.S.S. budget allocation for training has been utilised for the Women's Programme, though the figures have not been available because D.S.S. expenditures on training have not been presented in a disaggregated form. **However**, D.S.S. officials are preparing such figures, and they should be available at some future date. It is noteworthy that a token sum of £10 has been set aside in the 75-76 financial year for activities pertaining to women in development. This is significant as an indication of Government's recognition of the Women's Programme. It will now be possible to submit budget requests for expanding Women's Programme activities in this and subsequent financial years if convincing proposals are made.

There appears to have been some difficulty in disbursing UNICEF funds allocated for equipment for women's groups whose leaders have received training through the Programme. The principal reason for non-expenditure, according to the SRDP officers at D.S.S. headquarters, is that previously equipment was wasted which had been purchased for groups who were not ready to use it. Some equipment fell into disuse or was misdirected to persons outside the groups. A cautious attitude was therefore adopted lest this experience be repeated. Disbursal of these funds is now long overdue, however, since there are a great many sufficiently well-organised groups now in existence. As of mid-1975, steps are finally being taken to clear this matter up. D.S.S. has requested lists of funding needs from women's groups and is forwarding this information to UNICEF.

DISCUSSION AND RECOMMENDATIONS

Finance

The Women's Programme has not been financed in the normal SRDP way. The principal donors have been U.N. agencies, UNICEF and PBFL/FAO. However, this arrangement has not enabled the Programme to be altogether

free from inter-agency organisational problems. Until recent staff changes, UNICEF's officers had a poor understanding of SRDP and did not cooperate fully with the Department of Social Services. Delays in disbursing UNICEF funds can be partly accounted for by poor communication between the two agencies. On the other hand, PBFL/FAO seems to have been able to work fairly closely and harmoniously with the D.S.S., but not with UNICEF. It would be beneficial to the Programme if all the participating agencies had a clearer understanding of their respective roles and relationships.

Central Government Administration

Another problem at the national level is that the Programme has been considered to 'belong' to the D.S.S. by other ministries which should be fully involved themselves. This can create difficulties in the field. A Public Health Officer in Tetu, for example, may not feel he can become actively involved in the Women's Programme unless he is assured of support from the senior officers at ministry headquarters. In one case the participation of a Home Economics Officer in a training course for women leaders in Kwale was questioned by Ministry of Agriculture personnel at the provincial level. The involvement of M.O.A. staff in various aspects of the Programme is crucial, yet here inter-ministerial cooperation seemed to be impeded because there were no strong signals of M.O.A. commitment transmitted down the administrative channels.

Field Level Integration

Despite difficulties at the national level, the Women's Programme has probably fared better than most as an integrated programme in the field. Cooperation among different departments is especially evident in the leaders' training courses and the associated trainers' workshops, as demonstrated by the course syllabi. However, there are instances where the Programme has not achieved a high level of integration. In Mbere, for example, at one point the M.O.A.'s Home Economics Division and the D.D.S. each had 'their' groups. Even now, although inter-agency cooperation may be valued in the abstract by field personnel, the concept often proves difficult to put into practice, for example in the areas of group follow-up and extension activities aimed at reinforcing lessons learnt during the training course. Also, little cooperation was observed in the provision of transport, and possibilities for allowing several different Government workers to visit groups together

Table 3. UNICEF budget for Women's Group Programme (U.S. dollars).

TRANSPORT, SUPPLY AND EQUIPMENT	BUDGETED			TOTAL	ACTUALLY EXPENDED	BALANCE NOT SPENT
	1973	1974	1975	73/75		
	\$	\$	\$	\$	\$	\$
Equipment for Trained Women's Groups	-	3,900	7,800	11,700	Nil	11,700
Field Supervisors (1 Land Rover)	-	4,000	-	4,000	Nil	4,000
NON-SUPPLY						
Women's Leaders Basic Course	500	20,000	5,400	25,900	3,882	22,018
Seminars and Conferences	2,600	20,000	17,900	40,500	4,402	36,098
Community Develop- ment Assistants and Youth Leaders Course	7,300	-	-	7,300	7,300	Nil
	<u>10,400</u>	<u>47,900</u>	<u>31,100</u>	<u>89,400</u>	<u>15,584</u>	<u>73,816</u>
Freight	-	500	-	500		
	<u>10,400</u>	<u>48,400</u>	<u>31,100</u>	<u>89,900</u>		
	=====	=====	=====	=====		

Source: Pala (8).

Table 4. PBFL expenditure on Women's Programme (U.S. dollars and K.shillings).

June - Dec. 1972	\$ 1894.00	Kshs 13,523/-
Jan. - Dec. 1973	2380.00	17,000/-
Jan. - Dec. 1974	4301.00	30,711/-
Jan. - May 1975	<u>8092.00</u>	<u>57,777/-</u>
TOTAL: (June 1972 - May 1975)	\$ 16667.00	Kshs 119,011/-
UNSPENT TOTAL FOR 1975/77:	\$ 52451.00	Kshs 374,500/-

Note: PBFL funds have been used for the following purposes:-

1. Petrol and subsistence allowance for fieldwork,
2. Workshops,
3. Educational materials, and
4. Evaluation survey.

A further \$2661.00 (Kshs 19,000/-) has been spent in connection with the Report and Evaluation Study. PBFL personnel have also devoted a considerable amount of their time to the Programme, so that in effect one PBFL officer has been working full time on the Programme since 1974. In terms of salary, this represents a total of \$9804.00 (Kshs 70,000/-).

by sharing a vehicle have not been fully exploited. In order to facilitate communication and cooperation among departments in the field, a newsletter could be circulated among Government personnel, as has been done in Vihiga/Hamisi.

On a more general level, it seems that the field staff of some ministries, such as Health and Agriculture, are trained to think in terms of dealing with the individual patient or farmer. The Women's Programme, however, is organised on community development or group principles. This has produced misunderstandings. The long-run solution is to give all ministry field staff some kind of training in working with groups. It is understood that the newly established Bukura Institute of Agriculture in Western Province is making this welcome innovation.

Income generation for women's groups is an area in which dramatic improvement needs to be made in the integration of national and local Government efforts, as will be discussed in the following section.

Income Generation

Women's groups throughout the SRDP areas are engaged in a number of commercial, income-generating projects. To elaborate the earlier listing, these include such things as the sale of garden produce derived from both individual members' and group plots; the production and sale of various handicraft items for tourist and local markets such as pottery, basketry, sewn or knitted clothing, decorative items such as embroidery and beadwork, simple home utensils, farm implements and furniture; poultry-keeping; production and sale of building blocks; and forming savings/credit societies. Many groups earn money occasionally by working as labour teams. This may take the form of work on private farms during times of peak activity -- weeding, harvesting, bush-clearing, etc.; or it may involve roofing a building, cementing walls or doing other sorts of home repair/improvement work. Interest in commercial activities among the groups seems very high. Even groups that are not actually engaged in such activities at least have plans to do so in the near future. In addition to the enterprises listed above, some of the groups are interested in starting other sorts of operations, such as posho mills, small shops for craft and consumer items and cooperative marketing ventures in which a number of groups within one area would join forces.

A number of groups have achieved modest successes in their income-generating activities. For example, a group in Kwale has made a profit raising poultry, one group in Mbere has earned money by providing farm labour and some groups in Vihiga/Hamisi have made modest profits selling garden produce, handicraft items and building blocks. On the whole, however, the Women's Programme has not enabled many groups so far to generate a significant income: in areas such as Tetu where mabati/savings groups have achieved significant commercial success, the pattern for group activity was well developed before the advent of SRDP.

Handicraft and produce sales are perhaps the most popular approaches to income generation. By and large these supply only negligible returns, although they would be somewhat more profitable if marketing organisation were adequately developed. In some areas it was observed that certain groups seemed preoccupied with the idea of making and selling rather elaborate sewn and knitted items, such as embroidered doilies and the like, or children's wool socks and pullovers, for which adequate markets simply do not exist. As consumer articles, such things are outside the scope of local household priorities and budgets. Furthermore, the knitted items rarely become part of the rural household's functional clothing collection owing to the high cost of materials used and intensive nature of the labour involved in producing them. While it can be observed that the production and display of such fancy goods serves as a status indicator for some, there is no question that these activities also serve to create a false sense of elevated status for persons and families whose resources may be extremely limited (See 5, p. 70.) If in these instances income generation is the real aim, as group members assert that it is, then extension workers should seek to rechannel group efforts into more productive activities.

The widespread practice of women's groups forming labour teams for hire, which might be seen as a contemporary variation on a traditional theme, viz., the mutual aid work party, has limited income-generating potential due to constraints on group members' time, given their own farming and domestic duties, and on the availability of employment at meaningful wages. One possibility which does not seem to have been considered is to offer women's groups (along with local self-help groups) employment as work teams on labour-intensive projects such as roads or erosion control. Such work would prove far more remunerative and, if scheduled to take place in relatively slack periods of agricultural activity, more convenient for the women than agricultural work on private farms.

The collection of membership dues is another device commonly employed by groups to raise funds. These dues may amount to as little as Shs. 3 to 5/- a year, to as much as Shs. 5/- a month (reported for Tetu mabati groups). In most instances, the payment of dues does not have much promise as a means of generating working capital for projects since the amounts involved are very small and group members cannot afford to contribute more.

The role of Government agencies and their staff should also be considered. The dominance of the D.S.S. with its strategy for the Programme thus far, together with rather poor cooperation among various Government departments in the planning and implementing of income-generating projects, seems likely to slow down the pace of commercial development. The D.S.S. and non-governmental agency personnel have emphasised the promotion of women's groups by building leadership and group self-confidence stressing the social welfare aspect of group activities.

Particularly in less developed areas, this approach has been of value in helping groups get off the ground and become viable social units. However, it does mean that rather less emphasis has been placed on organising productive activities, and this imbalance should now begin to be corrected. Group members may anticipate and appreciate instruction in such subjects as nutrition, child care, family planning, etc., but there is also a felt need for complementary activities of a commercial nature. This is due in part to the recognition that there is ultimately little point in instructing women on family welfare or other topics if the lessons cannot be acted upon for lack of resources (money). It is also partly a function of the new enlarged view of the group experience which the Programme has encouraged. Members see new possibilities for group action - not least of all in the commercial sphere. Although the Programme has helped to create a change in orientation, it does not yet have the resources necessary to cater for the new expectations.

In order for income-generating activities to assume a more important role in the Women's Programme, there must be fuller involvement of staff from departments other than the Department of Social Services. Greater participation from the Ministry of Agriculture is especially desirable. This ministry has been insufficiently involved in the Programme except through the Home Economics Section. The situation stems from the traditional M.O.A. practice of distinguishing between home economics and farm management extension services. There has thus been a tendency to block off women and

regard them as homemakers for whom home economics extension services should be provided, but not as farmers in need of farm management extension advice. Yet as we observed earlier, women in rural areas often play as active a role in farming activities as they do in the domestic sphere. Another ministry which could usefully play a more substantial role in the Programme now is the Ministry of Cooperative Development.

Proposed women's group ventures such as poultry-keeping, cooperative vegetable marketing or tourist handcraft shops, whether on a small or large scale, require careful study and planning. This in turn calls for a close working relationship between D.S.S. officers and others with relevant expertise in the Ministries of Agriculture and Cooperative Development. Without this cooperation, it will be difficult, if not impossible, to establish the feasibility of commercial projects and then initiate them. If such foundations are in turn lacking or inadequate, proposals bog down in the discussion stage, or, worse, unsound proposals are actually implemented. In either case, local expectations have been raised and there is the consequent risk of disillusionment and lowered initiative amongst local people should the project collapse. During the field investigations a number of instances were encountered in which either proposed or recently started commercial ventures involving women's groups were suffering from inadequate preparation and little or no joint effort from various Government departments. Three cases will be cited here:

1. In Kapenguria, there is considerable interest in a proposal to establish a combination handicraft and consumers' cooperative shop which would be a joint project of groups throughout the Division and from other parts of West Pokot District (bound together as the 'Kiletat Women's Organisation'). Both D.S.S. staff posted in the area and local women's groups seem enthusiastic about the idea, but Government staff seems to have done little other than discussing the proposal in general terms for several years. To our knowledge, there has been no attempt to carry out a study to determine the feasibility of such a shop, what goods it should carry and on what scale, etc. Such a study - leading to a firm decision either to drop the idea or to pursue it - would necessitate the participation of the Ministry of Cooperative Development personnel, amongst others. While it is true that a plot has been assigned for the shop

in the local market centre, and that local women have collected Shs. 2,000/- (Shs. 20,000/- is thought to be required), the organisational effort is definitely lagging and prospects for the project are not bright.

2. The second case involves the proposed 'MANYATIBU' cooperative in Vihiga/Hamisi. This proposal calls for the establishment of a large-scale (Division-wide) women's cooperative for the marketing of garden and other farm produce and perhaps craft items as well. Although the local Cooperative office has been actively promoting this project, it was not planned with advice from the agricultural experts or marketing specialists who have studied the situation in Vihiga/Hamisi. D.S.S. personnel seem to have gone along with the 'MANYATIBU' idea, but almost in a passive way, and M.O.A. officers seem not to have been involved at all. Given that the project is to be based on women's groups on the one hand, and farm produce on the other, it is surprising that D.S.S. and the M.O.A. staff have not participated more fully. Much discussion has taken place over the last few years, some funds have been collected from individuals and groups, but the project is disorganised and shows no sign of being implemented in its present form.¹
3. The third case is that of a poultry-keeping project now being run by a group in the Migori area. The group was able to begin this business through financial assistance organised by the local D.S.S. office. One hundred grade hens were purchased and these were placed in a well-constructed chicken house which was loaned to the group. It soon became apparent, however, that the economics of the project had not been carefully investigated. Costs of commercial feeds were too high to permit a profitable operation given current local prices for eggs. The women found it difficult to break even. This is unfortunate: poultry production seems to be a particularly suitable project in this case. There appears to be a ready

1. The Ministry of Cooperative Development has no projects in the Vihiga/Hamisi area which are specifically associated with SRDP. The lack of a formal role for this Ministry may have contributed to the present state of the 'MANYATIBU' cooperative.

market for eggs in the Migori area, and the group in question is well organised and entirely capable of running a successful operation given the proper advice. Use of local hens - or perhaps a cheaper exotic variety - in combination with less expensive feeds would quite probably have made this a profitable operation. In fact, the project still has promise if assistance can be obtained from M.O.A. officers who know about poultry production.

Although other ministries now need to become more fully involved in efforts to promote income generation among women's groups, the role of the Department of Social Services is still crucial. D.S.S. ought to coordinate the implementation of proposals for commercial activities. In all three cases noted, D.S.S. officers could very appropriately have taken a far more active role in mobilising the technical expertise necessary to ensure the soundness of the ventures before they were embarked upon. In both the Kapenguria and Vihiga/Hamisi examples, one would have expected Community Development staff to take a much more active role in the organisational effort required at the field level as well as within Government bureaucracy. Social Services personnel should also play a more active role in assessing whether particular women's groups are actually capable of carrying out proposed commercial ventures. Moreover, there is of course a continuous need for D.S.S. assistance in ongoing self-help projects.

On the national level, participation from the Ministries of Agriculture, Cooperative Development and others could be encouraged through a central interministerial coordinating body. One of the urgent tasks which such a group might initially undertake is an investigation of the commercial opportunities available for women's groups. This investigation could possibly yield a set of income-generating strategies based on past experience, the potential success of specific ventures in particular agri-climatic areas and the level of group development.

A final point has already been mentioned: the merit of some group projects should be measured in more than economic terms. Such projects as vegetable growing and poultry keeping can also generate indirect benefits in the form of better nutrition. In areas where these activities do not show promise from a commercial standpoint, they may still be promoted with a view

towards subsistence objectives. In such instances, women's groups should be led to expect an improved diet rather than monetary gain.

The Women's Bureau

It is our recommendation that a Women's Bureau, as now under consideration, be designed to serve in a coordinating capacity for the Women's Programme. (See 3, p. 229.) The Bureau should be structured to include high-level representatives from all ministries and departments that have anything to do with the Programme. Besides the Department of Social Services, the Ministries of Agriculture, Cooperative Development, Health, Commerce and Industry, Labour, and Lands and Settlement should certainly be involved, and also perhaps the Ministries of Works, Tourism and Wildlife, and Broadcasting and Public Information. In order that they may effectively participate in policy formation and implementation, the ministry representatives to this body should be highly qualified and have sufficient authority to carry out decisions in their own ministries. In addition, a new and stronger spirit of commitment needs to be forthcoming from the individual ministries if the Women's Programme is to move forward. For the Ministries of Agriculture and Cooperatives in particular, there is a pressing need to review the quantity and quality of services offered to women, and to take steps to improve these services in accordance with women's actual and potential contributions to social and economic development.

Personnel Administration

The Programme has experienced severe difficulties in the area of personnel administration. Except in Kapenguria, the Community Development Assistants (CDAs), who are the key local-level staff of D.S.S., are employees of the local authorities. Most of these local **authorities** experience chronic financial difficulties. Moreover, they appear to find it possible to pay their senior officers regularly and well, while they tend to pay more junior staff such as CDAs poorly and irregularly. In some areas (e.g. Mbere, Tetu, Migori) all the locational CDAs have been dismissed. In other areas where they remain (e.g. Vihiga), irregular pay is extremely damaging to staff **morale**. It is hard to imagine how D.S.S. can continue to play a meaningful role in these circumstances. Of the six SRDP areas, only Kapenguria and Kwale (where the County Council's financial administration appears sound) are able to provide staffing arrangements which are in any sense conducive to satisfactory performance. The only solution seems to be for the central Government to take over the employment of these workers.

We would emphasise that much of the success of the Women's Programme ultimately rests with communication between local extension agents and the women. It is primarily the CDAs who fill this crucial communications link. During field investigations, it was apparent that the women's groups themselves were very concerned about the situation. The dismissal of the CDAs means more than the disappearance of an important source of practical advice for the groups. Visits by extension officers also contribute to a group's perception of itself as a significant, recognised body tied in with a larger programme. The CDA plays a crucial role in this regard.

A second problem is that women leaders at present are not paid for carrying out what is really a form of extension work. The case studies suggest that the leaders feel they should be paid something for providing these services (a sentiment frequently shared by the group members themselves). It should be possible to provide at least a small honorarium for them.²

Reporting

A fairly elaborate system for statistical reporting has been designed and is beginning to be put into operation, and quite a lot of research has been done. (See 11.) Although these are valuable efforts, there remain major problems. Many of the figures which we obtained from documents do not make sense. In Migori for example, the available figures on the number of groups are very inconsistent, and in Kapenguria, there is substantial variance in membership figures given by different **official** sources.³

PBFL, in conjunction with other personnel working in the Women's Programme, has drawn up a check list to be used by CDAs for recording the progress of groups. (See 11, pp. A6-A9.) This check list has been utilised to some extent in the field but it should become a permanent part of the monitoring and evaluating system. Through this means, annual progress reports on each group could be written and kept by **Asst.** Community Development Officers. This would be a substantial improvement over the poor quality reporting often encountered at present.

2. **The amount** of money in question is minimal. Women simply think it would be appropriate to provide group leaders with a little pocket or 'soap' money and also to compensate them for such expenses as bus fare to and from training centres.

3. In Mbere and Vihiga we tried to calculate the proportion of all female adults who belong to a women's group and found the data available suggest that 18 per cent are members in Mbere and 2 per cent in Vihiga. However, it is questionable whether these figures are correct; one would have expected Vihiga to have the higher proportion given the differences between the socio-economic and agri-climatic conditions in the two areas. All of this indicates a need for further improvements in the reporting system.

Leaders' Training

A common problem in the training of women's group leaders is the breadth of the curriculum and its relatively inadequate depth. In two to three weeks an enormous amount of material is covered. It is likely, in the circumstances, that many of the leaders end the course knowing a little about a lot of things but nothing very specific. What is required is a more precise and specific focus for the training. The best way of achieving this is to ensure that the training is geared to what is practicable or can be implemented given existing resources. A further point has to do with the phasing of the training courses. In certain instances it appears that not enough time has been allocated for follow-up exercises (to assess the impact of the first-phase training course) before the commencement of the second-phase course.

Mass Media

Most women evidently have some access to newspapers and radio. It seems, however, that the mobile cinema unit has reached few of them. The effectiveness of this unit in fostering genuine local involvement is potentially considerable. In future planning, the possibilities of making greater use of the unit should be investigated.

The Maendeleo ya Wanawake Organisation

It is surprising that this organisation plays such an insignificant role in the Programme. Few of the women's groups seem to be affiliated with it; many do not know of its existence; others know about it but are distrustful. The rhetoric suggests that Maendeleo plays a vital role in "mobilising women for development". In reality, in most of the rural areas we visited it is marginal. Assuming that an organisation like this can make a meaningful contribution to rural development, it seems necessary that steps be taken to revitalise it.

Replication

The Programme is now being replicated in various other parts of the country. One important lesson which has been learned from four years of experience is that maximum use should be made of existing resources, and the Government should make a definite financial commitment to the Programme instead of continually relying on the external resources provided by UNICEF and PBFL/FAO. Existing Government resources such as staffing and transport arrangements should be made available for the Women's Programme in all areas,

rather than special arrangements being made only for those areas where the Programme is presently being initiated. In this way Government will be able to take the Programme over should it decide to do so. Special funding can only be justified if it is made available to the Department of Social Services for its activities throughout the country, and not just for SRDP areas. For example, we recommend that the CDAs be employed by central Government, not just in SRDP areas but throughout the country.

SUMMARY OF FINDINGS AND RECOMMENDATIONS

General Findings

1. There is a need for improved cooperation among U.N. consulting and donor agencies involved in the Women's Programme and between these agencies and the Department of Social Services.
2. Other ministries, such as Agriculture, Health and Cooperative Development should be more fully involved with the Programme at the national level. It should not be assumed that this Programme is the sole responsibility of the Department of Social Services. Wider participation could be achieved through a central coordinating body with a strong interministerial structure. In this way, the ministries already mentioned, as well as the Ministries of Commerce and Industry, Labour, Lands and Settlement, Works, Tourism and Wildlife, Information and Broadcasting, and Water Development could make important contributions to the Programme. In addition to participating in this interministerial structure, there must be a strong commitment to the Women's Programme within the individual ministries.
3. We recommend that the proposed Women's Bureau should be designed to serve as the coordinator of the Women's Programme. The Bureau should be composed of ministerial representatives who are well qualified and occupy senior positions in their ministries so that their participation in the design and implementation of the Women's Programme can be effective. It is also important that the Women's Programme be fully integrated into the plans, activities and structure of the Women's Bureau.
4. At the local level, different ministries have played a more active role, especially with regard to the leaders' training courses. However, interdepartmental participation and cooperation need to be further strengthened. Follow-up and extension activities aimed at reinforcing or implementing the training courses would be much more effective if they were carried out jointly by the field staff of different ministries.
5. Several measures are recommended to facilitate wider participation of officers from different Government departments and better integration of

efforts in the field. First, since transport is scarce, more attention should be paid to possibilities for sharing vehicles among departments, with two or more workers teaming up to use one vehicle for visits to women's groups. Secondly, the idea of a newsletter circulated among SRDP and other Government staff could be used more widely to encourage communication and cooperation. Finally, as a long-term measure, field personnel in such ministries as Agriculture and Health should receive training in techniques for working with groups.

6. In view of the fact that the primary economic activity in Kenya is agricultural production, it is regrettable that the Ministries of Agriculture and Cooperative Development have not fully involved themselves in the Women's Programme. There is a particular need for these two ministries to offer greater assistance in the planning and implementation of income-generating activities for women's groups.

7. The employment and training of Community Development Assistants must be put on a sound basis. Ideally, they should remain employees of the local authorities, but if these bodies are allowed to continue to deteriorate financially, the employment of the CDAs should be taken over by central Government.

8. Reporting and monitoring of the Women's Programme needs to be improved. This can best be achieved by giving encouragement and **adequate** training to the CDAs since they have the greatest responsibilities in this important sphere.

9. The training of women's group leaders needs to be more selective and concrete. At present the tendency is to 'swamp' the women with a wider range of material than anyone could absorb or use effectively in a short time.

10. Women's group leaders should be paid a small honorarium in recognition of the important service they are providing, which is really a form of extension work.

11. The mass media could be used more fully to publicise and support the Women's Programme. At present **insufficient** use is being made of the mobile cinema unit.

12. The very small role played by Maendeleo ya Wanawake is cause for surprise and regret. It is obvious that this organisation needs to be revitalised, since its public image of active involvement in the concerns of rural women is not reflected in the actual situation in the **field**.

13. In the initial replication exercise of the Women's Programme in non-SRDP areas, care should be taken that too many resources are not allocated to a few specific areas, particularly if it would not be possible to provide a similar level of inputs in other parts of the country.

Recommendations for Income-Generating Activities

14. It is crucial that income-generating projects now become a central concern of the Women's Programme. Up until now there has been somewhat more emphasis on social welfare activities, but this imbalance should now be altered, especially since many groups have the interest, initiative and capability to engage in commercial enterprises.

15. Proposals for commercial ventures must be carefully worked out with full knowledge of local conditions and expert advice from the Ministry of Agriculture and the Department of Cooperative Development to ensure that they are well designed and economically viable before they are initiated.

16. Local D.S.S. personnel, especially the ACDOs, ought to play a more active role in organising and coordinating commercial projects, seeking outside assistance and expert advice, assessing the feasibility of projects and the capabilities of groups to carry out different types of projects and, in some cases, drawing up, submitting and following up on requests for aid. Up until now, a variety of proposals has **been** made by local officers for aid to specific commercial projects, but some have not been followed through to the implementation stage. In other cases, poor proposals have been implemented without adequate planning or organisation.

17. **Many** women's groups have tried to sell handicrafts or garden produce, but in many cases returns have been small considering the effort expended. In some areas markets are poorly organised, but in others there simply is no adequate market for these products. There seems to be little point in continuing to produce goods which can neither be sold nor used in the members' own homes, as is the case with certain handicraft items. In fact, concentration on handicrafts may be counter-productive if it slows down the pursuit of other alternatives.

18. Groups commonly earn money by working as agricultural labour teams, especially for weeding. The possibility of hiring women's groups to work on labour-intensive Government projects such as roads ought to be investigated.

19. Projects such as vegetable growing and poultry keeping must not be assessed in purely commercial terms. Provided costs are met, activities of this type which generate little profit may make valuable contributions to the diets of group members and their families. For this reason these projects should be encouraged.

Recommendations for Specific Areas

20. Kapenguria: The Kiletat organisation can potentially make a major contribution benefiting women throughout the District and should be encouraged more actively. Plans for a cooperative consumer goods shop and handicraft production should be encouraged, but the initial objectives should be modest. An assessment should be made of the local market before deciding what goods should be carried in the shop. The local Cooperatives office should be much more involved in this project.

21. Kwale: The poultry project in Bomani has clearly been a success. Steps should be taken to ascertain its potential for replication elsewhere in the area.

Handicraft sales have a fairly good potential in Kwale due to the proximity of the tourist market, but a better marketing organisation needs to be developed if this potential is to be exploited fully.

22. Mbere: It is worth considering a water project as part of the Women's Programme here since fetching water takes up so much of the women's time.

Markets for the handicrafts produced by the groups need to be exploited more fully, especially the possibility of selling craft items at the Isaac Walton Inn in Embu town.

23. Migori: The reporting system here is particularly inadequate, perhaps because PBFL's involvement in the area has been relatively slight. We feel that the PBFL team and Government officers in the Women's Programme at the national level should give more attention to this area.

Poultry production in Migori appears potentially profitable, but the one group currently engaged in poultry keeping is experiencing difficulties because inadequate attention was given to the production costs of using grade hens and commercial feeds. Ministry of Agriculture staff should assist more fully in this and future poultry projects.

24. Tetu: The women's groups in this area should be encouraged to buy grade cattle. This would be especially beneficial to low income families in improving their nutritional status, and any excess milk could be sold.

25. Vihiga/Hamisi: The MANYATIBU cooperative project, as presently conceived, faces immense practical problems. The proposal should either be dropped or pursued more vigorously in a substantially revised form.

The new papain extraction plant in the area offers an opportunity which should be investigated for women's groups to earn an income by growing papaya.

The Partnership for Productivity organisation should be used more fully to assist women's groups who wish to become involved in viable commercial enterprise.

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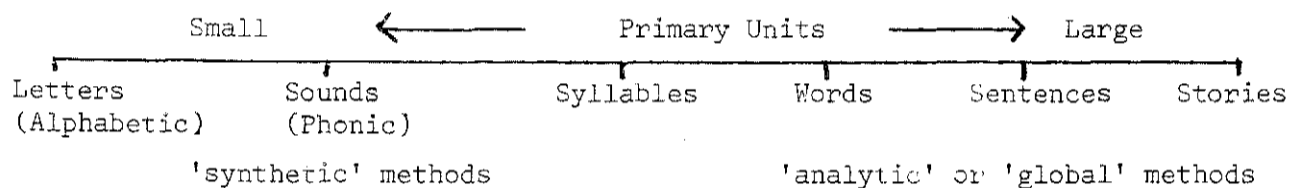
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THE KENYA FUNCTIONAL LITERACY PROGRAMME:
AN EVALUATION

This report is divided into three sections. In the first section, we shall discuss the teaching methods used in the Kenya Functional Literacy Programme. Then we shall turn our attention to the content of the literacy lessons. Finally, we shall discuss the administration of the Programme.

TEACHING METHODS

How best to teach reading is a topic which has generated a great deal of controversy over many years. Methods which have been used can be arranged along a continuum, according to the emphasis which they place on building up from small units towards larger ones ('synthetic' methods) or downwards from large units to smaller ones ('analytic' or 'global' methods).



At one extreme of the continuum is the formalistic and now superseded 'alphabetic' method. Pupils were first drilled in the names of the letters of the alphabet (ay bee see), and then taught their sounds. When these had been mastered, the sounds were built up into words (b - a - g), and these words combined into sentences. Because of the phonetic constraints, these sentences were often virtually meaningless ("The cat sat on the mat in a hat"). At the other extreme are methods in which a phrase, a sentence, or even a whole story is taken as the primary unit of meaning. When the pupils have grasped the meaning of the whole unit, they analyse it into its component parts; first the words, then the syllables, and finally, perhaps, the individual sounds and their alphabetic names.

Most practical reading methods fall somewhere along the continuum between these extremes. During the 1950s analytic methods, based on the whole word or on larger units of meaning, had a tremendous vogue. The pupil was taught to regard each word essentially as a picture; he looked at its contours and then said its meaning, without analysing it into sounds or syllables. An important advantage of this method is that by focussing on the meaning of whole words and groups of words, it arouses the learner's interest in the content of what he is reading and thus maintains his incentive to go on learning. But its more extreme proponents tended to forget that the letters and syllables from which words are made up are not arbitrary; they also convey meaning, although,

of course, of a lower order of generality. Without access to this meaning, the learner is handicapped. Even with a non-phonetic language such as English the constituent parts of a word usually convey some information as to how the word should be sounded. The information may be incomplete or faulty, but at least the range of alternatives from which the learner must choose is greatly reduced. With a fully phonetic and strongly syllabised language such as Swahili there is a great deal to be gained from teaching the sound-values of letters and syllables very early in the learning process.

But purely synthetic methods also have their disadvantages. As we have already noted, if the attention of the learner is focussed too strongly on the smallest building-units, the sounds and the syllables, he may well lose sight of the message the writer is attempting to convey. Learning tends to get bogged down in a tedious morass of drilling and repetition.

Recent attempts to devise reading schemes have for the most part avoided dogmatic adherence to either synthetic or analytic methods, but have tried instead to combine the best features of both in an eclectic approach. The balance between the two methods will depend mainly on the characteristics of the language in which the learners are to become literate. In languages such as English where the links between the written symbols and the spoken sounds are weak and irregular, the analytic or global method will play a large part. But only with those languages where the elements of the written word give no clue as to how it is spoken (Chinese is the obvious example) will a purely global approach be appropriate.

The fact that Swahili (together with most other East African languages) is both phonetic and strongly syllabic gives it an enormous advantage over English as a vehicle for a literacy programme. It means that pupils can learn to read Swahili words quickly and easily, even if their knowledge of the language is only fragmentary.¹ Swahili uses only five vowels and 25 consonants, and these 30 sounds are invariably represented by the same written symbols. Once he has mastered these basic symbols, together with their common syllabic combinations, the learner's main literacy problem has been solved. He can then concentrate on learning the language, which is likely to be much more difficult task.

1. Karen Blixen, an early settler in Kenya, recounts in her autobiography Out of Africa, (London, Putnam, 1937, paperback edition, London, Cape, 1964, pp. 132-133) how she could read her employees' Swahili letters for them soon after arriving in the colony, and before she could hold the simplest Swahili conversation. Her employees could speak the language but not read it, whereas she could read the language but not speak it!

The Kenya Functional Literacy Programme follows a mixed analytic - synthetic method which has now been tried in a number of countries. The basis of the approach is a list of key words, (sometimes called the "generative" words) which are chosen so as to cover all the sounds used in the language. The pupils learn to recognise the key words one at a time, or in small batches, first in conjunction with relevant pictures, and then on their own. As soon as a new key word has been mastered, the pupils are encouraged to break it down into syllables, and then to recombine the syllables so as to generate new words. During the first two or three lessons the possibilities for recombination are of course rather limited, but as each new generative word is learned the alternatives multiply rapidly.

The next stage in most programmes is to analyse the syllables into their component sounds. This may be started right from the first lesson, or it may be delayed until the learners have built up a stock of known syllables. Once they have mastered this step, the range of words which learners can construct from their own resources is, of course, enormously extended.

The first two key words introduced in the Kenya Functional Literacy Programme are udongo (soil) and tofauti (different). They were presumably chosen because of their relevance to the content of the course: the first book deals with types of soil, the use of fertilisers and soil erosion. The teacher introduces them during the first lesson, using flash cards. He then shows the pupils how to break the words up into syllables: u-do-ngo and to-fa-u-ti. When they have mastered this, the teacher encourages them to recombine the syllables to form different words. Some suggested new words are given in the text for each lesson: those for the first lesson are ufa (crack), ungo (joint) and uto (a kind of oil).

But there is a major difficulty here. In other countries where literacy programmes have been mounted, most learners have had a sophisticated, adult knowledge of the spoken language. They have lacked only the ability to read and write it. Thus once the recruits have learned the first few generative words, and have grasped the principles of analysing and resynthesising them, they can begin forming and reading new words for themselves, without help from the teacher. From the very first lesson they can become active participants in the learning process, and can discover as much from their own efforts as from what the teacher tells them. If the language is fully phonetic most of them should have mastered all the skills needed to read any text written within the vocabulary of the average adult within a few months.

But in Kenya the problem is more complex. Standard Swahili, the language of instruction for the Functional Literacy Programme, has an elegant grammar and a rich vocabulary, but it is spoken as a first language by only a minority of Kenyans, most of whom live along the narrow coastal strip. In up-country districts Swahili is used widely as a lingua franca, but the grammar is usually simplified and the vocabulary restricted. The typical recruit to a functional literacy class is unlikely to have a working vocabulary of more than a few hundred words. In some districts and among some groups (for example, those without experience of working in a formal job) the typical vocabulary of known words may be a good deal smaller. Most new recruits to literacy classes probably know the word *udongo*, and a smaller number probably know *tofauti*, but very few indeed are likely to have ever heard *ufa*, *ungo* or *uto*.

During the visits to literacy centres we made while carrying out the evaluation we discussed this problem with a number of the instructors. Most of them admitted freely that they themselves had not known any of these words before joining the Programme. Nor is it possible to form other, better-known words from the syllables of the first two generative words. The instructors could not remember any student coming up with a single suggestion. They had thus had to show the students how to form the new words, and, furthermore, to explain what they meant. The generative words for the second and third lessons (*aina*, *za*, *ni*, *nini* and *hizo*) were not much more fruitful. Hence, far from engendering attitudes of active participation among the learners, the opening lessons of the course had quite the opposite effect. The only response which a new recruit could make was one of passive acceptance of what his teacher told him. Progress towards gaining independent mastery over his own learning processes was virtually impossible.

It is not only the derivative words that cause problems. A high proportion of the generative words are also little known. Examples from the first reader include: *rutuba* (fertility), *kinyesi* (manure), *mkondo* (flow of water) and *mtelemko* (downward slope). We asked the students in one literacy class to explain to us the meanings of five of the more difficult words from the second reader which they had just completed. The words were *kudumu* (to last), *maradhi* (sickness), *kupalilia* (to pile in heaps), *kustahimili* (to endure), and *dhaifu* (weak, poor quality). Although they had been introduced to all these words within the past few weeks, not a single student could remember even one of them. Clearly it is unrealistic to expect new recruits, preoccupied with the task of learning to read and write, to memorise at the same time large numbers of uncommon words, well outside the range of their known vocabulary.

It may well be that the main problem with the Functional Literacy Programme is that it is too ambitious. For the Programme not only attempts to teach its recruits practical facts about farming, household management and health at the same time as it teaches them to read and write, but it also undertakes to teach them the language through which they learn the facts and express their new literacy skills. In other words, the Programme has three goals: to teach literacy, to teach the Swahili language, and to provide practical adult education. Perhaps this triple burden is too heavy for it to bear, and more modest goals need to be set up.

Nevertheless the attempt to combine the three goals in one programme is well worth making. There are obviously major savings in time and money if they can all be attained successfully. Fortunately there is one important factor which makes the task a great deal easier. As we have seen, Swahili is a fully phonetic and strongly syllabised language. Unlike English, the words are built up from the smallest sound units in an orderly, logical and entirely consistent manner. Once the system is understood, learning to read becomes a great deal easier. It should therefore be possible for recruits to become fully fluent in reading and perhaps writing Swahili within a matter of months provided that in initial stages of the programme the attainment of literacy is given priority over the other two goals. This means that in constructing the first two or three readers the vocabulary used must be confined to words which are widely understood in rural Kenya. It also means that in these introductory readers it may not be possible to orient the content so strongly towards specific, work-oriented topics as has been done in the experimental readers.

In evaluating a programme conceived and carried out by other people it is always easy to point out the shortcomings, but much more difficult to suggest alternative approaches which might work better. Very few projects indeed ever succeed in achieving fully the ambitious goals with which they started, and an evaluation which is nothing but a catalogue of criticisms is of limited use in devising future policy. For this reason we shall concentrate in the remainder of this section on suggesting some ideas as to the form which the first few lessons of a revised Functional Literacy Programme might take. It should be stressed that these ideas are tentative and only partially worked out: and we have had only limited opportunity to test them in the classroom. A great deal more effort and ingenuity would have to be expended on them before they could be developed into a usable programme. Further comments on the teaching methods used in the existing programme will take the form mainly of comparisons with our alternative proposals.

The first lesson might start by introducing the generative words kusoma (to read) and kulima (to cultivate). These two words have a number of advantages over other possible choices. In the first place, and perhaps most important of all, they are words which are widely understood all over Kenya. We do not have Swahili word frequency lists for Kenya, but in lists based on written materials used in Tanzania, kusoma is number 65 in frequency of use (that is, only 64 other words are used more commonly) and kulima is about number 160. Udongo and tofauti, the first two words in the present Functional Literacy Programme, are at about numbers 240 and 350 respectively.²

The second advantage of these words is that they are highly relevant to the lives and perceived needs of the participants. The new learners have come to the class because they want to know how to read (kusoma) and also how to be better farmers (kulima). Thus each generative word points towards a major concern of the participants and a major goal of the Programme, and by so doing should strengthen their incentive to persevere with the course.

A third point is that the words lend themselves very easily to illustration. Good, clear photographs or drawings are especially important early in the course before the pupils have learned how to analyse words into sounds, and are therefore dependent on memory. Of the six key words introduced during the first three lessons in the Kenya Functional Literacy Programme, only one (udongo) is capable of being illustrated.

Fourthly, the words break easily into syllables: ku-so-ma and ku-li-ma. Moreover, the syllables are all of a single type; **each** consists of two letters, made up of a consonant followed by a vowel. It is probably advisable to delay introducing more complex syllables - such as those in which a single consonant is represented by two letters (for example, sh in shi-ka), or in which two separate consonants precede the vowel (for example, ngo in u-do-ngo) - until a number of simple two-letter and one-letter syllables have been mastered.

2. The Tanzanian written Swahili word frequency lists were constructed by Dr. Marian Halvorson, Literacy Consultant to the National Christian Council of Kenya. We are most grateful to Dr. Halvorson for making them available to us.

It should be pointed out that the use of frequency counts from written materials has limitations. Many words, especially common nouns, are widely used in everyday spoken Swahili, but are met with less frequently in books, magazines and newspaper articles. Examples are chai (tea), kuku (hen), duka (shop) and pombe (beer). It would obviously be more satisfactory to use statistics indicating how widely the various words are known, especially by potential recruits to literacy programmes, but unfortunately such data are not available.

Fifthly, the generative words have two syllables, ku and ma, in common. Thus the amount of new learning involved in mastering the second word is reduced to one syllable only. Further, pupils are introduced to the principle that a syllable is always pronounced in the same way, no matter what word it appears in.

How much repetition is needed among the syllables and sounds of the generative words depends mainly on the level of familiarity the learners have with the spoken language. When the literacy programme is being conducted in the learner's mother tongue, systematic repetition is probably unnecessary. In Paulo Freire's programmes for native Portuguese speakers in Brazil, for instance, only about 15-17 generative words are used to cover all the sounds in the language. But when, as in Kenya, most learners have only a limited familiarity with the spoken language, some opportunity to hear the syllables and sounds in different contexts is certainly needed. No matter how commonly used the chosen generative words may be, there will always be some pupils who do not know them all. It seems likely that after the first few lessons repetition of known syllables in new generative words could be dropped, but that repetition of known sounds in new syllabic combinations would need to be more extensive. At a guess, the full list of generative words might number somewhere between 30 and 40.

The sixth and final advantage of the generative words kusoma and kulima is one of the most crucial. The syllables which make them up can be rearranged to form three simple words, all of which are widely known. Mama (mother) is one of the commonest words in Swahili; only 33 other words were ranked higher in the Tanzania written word frequency counts. Kuku (hen) ranked at about number 400, but in everyday spoken Swahili it is used more often. The third word, mali (property, wealth, goods) is also listed around number 400, but again this ranking is somewhat deceptive. The word is widely understood by rural Kenyans, especially in economically advanced areas, where the acquisition of wealth has become a major preoccupation. In most parts of the country it would probably be uncommon to find any new recruits who did not know at least one of these derivative words; a majority would probably know two of them, or perhaps even all three. Hence, if the teacher is skillful, there is no reason why most students should not return home from their first lesson with the satisfaction of having read and understood at least one word for themselves, without being helped. None of the three derivative words for the first lesson of the Kenya Functional Literacy course (ufa, ungo, and uto) are used commonly enough to appear at all among the 1,000 words covered by the Tanzania word frequency lists; and, as we have seen, none of them was known by any of the learners in the classes taught by the teachers we consulted.

Students might perhaps begin the second lesson by revising the five words learned during the first lesson, with the additional help of pictures for the three derivative words. (These pictures would not be introduced during the first lesson, because the learners should try to synthesise the **derivative** words from the syllables they already know, without extra help.) Then the new generative words would be introduced. Suitable choices might be: pesa (money), watoto, (children) and the phrase hakuna kazi (no work). Pesa and watoto are both widely known; their rankings in the word frequency lists are about numbers 160 and 100 respectively. They are both easy words to illustrate, and for most Kenyans carry heavy loads of meaning. Between them they introduce the two remaining vowels, e and o, which were not learned during the first lesson, together with the consonants p, w and t. The vowel a and the consonant s are repeated, but in different syllabic combinations.

The phrase hakuna kazi probably appears on Swahili signboards in Kenya more often than any other, with the possible exception of mbwa mkali (fierce dog). It is to be seen at factory gates, on building sites, and at the entrances of offices and shops, and is well known to anybody who has ever been a jobseeker. Its use as a generative phrase gives the teacher the opportunity to initiate a discussion of the problems of unemployment with the class. If he does not have a job (kazi) how can someone get money (pesa) and provide for his children (watoto)? One of the purposes of the Functional Literacy Programme is to help people who cannot get paid jobs to earn more money through better farming (kulima), better household management, and, perhaps, through participation in trading or business. Learning to read (kusoma) gives people access to knowledge, and this can be a powerful weapon in reducing the problems of poverty. Using the illustrations for the five generative words and phrases introduced so far, the teacher should have little difficulty in starting a lively discussion.

Phonetically, the phrase hakuna kazi is equally useful. It repeats the syllable ku, but in the middle of a word rather than as the initial syllable. It also repeats the known vowels a and i, but in new syllabic combinations: ha, na, ka, and zi.

The syllable na is especially important, for it provides the learners with a key whereby they can start reading and writing whole sentences rather than just single words. As an infix between the pronoun and stem of any verb, na denotes the present continuous tense, (for example, wa-na-soma; they are reading), which is the simplest and most useful tense for beginners to learn. Furthermore, in conjunction with a pronoun, but without a verb stem, na denotes

the present tense of the verb to have, (e.g. wana - they have); and as a single word on its own it corresponds to the English word 'and'.

Common words which can be generated from pesa, watoto and hakuna kazi include sasa (now), sawa (correct, or smooth), kutoka (to go out) and sana (very much). In combination with the two generative words from the first lesson they also give rise to: matope (mud), wali (cooked rice), mapema (early), kupewa (to receive), maziwa (milk) and kali (angry, fierce). But as well as these, there are also the verb-forms wanasoma, wanalima, wanatoka and wanapewa. And these verb-forms can be used to create simple sentences, which might be presented to the students on cards, illustrated with photographs:

mama na watoto wanasoma
(the mother and the children are reading)

sasa mama na watoto wanalima
(now the mother and the children are cultivating)

These sentences are especially important, because they provide the learners with tangible evidence of their progress. Although they have been attending classes for only a few sessions, they are already able to read simple sentences from their own resources with little or no help. Confidence in one's ability to master new skills is a powerful incentive to continued effort. From this point on, similar passages should form a part of every lesson.

The work just outlined, springing from the second batch of generative words, is probably enough to keep students busy for at least two lessons. When they finish it, perhaps by the end of the third or fourth lesson, they should be able to recognise at least ten derived words, as well as the six generative words. They will also have made their first attempts at reading simple sentences. They will have met all the five vowels (a, e, i, o, u), and ten consonants (h, k, l, m, n, p, s, t, w and z), but so far only in syllabic combinations.

The next batch of generative words to be introduced might consist of: jikoni (kitchen, literally 'at the fireplace'), duka (shop) and kulipa (to pay). These words are again widely known, easily illustrated and relevant to the lives of all rural Kenyans. They introduce two new consonants (d and j), bringing the total to twelve, and five new syllables, two of them involving the new consonants (du and ji) and three involving known consonants in new combinations (ko, ni and pa). The derivatives they give rise to include such significant words as maji (water), dudu (insect - commonly used for agricultural

and household pests), jiko (fireplace - now used often for charcoal braziers made from scrap metal), hapa (here) and hapana (literally 'here is not', commonly used to mean 'no').

At this point the learners have been introduced to seventeen syllables, set out in the following table:

		Consonants											
vowels		d	h	j	k	i	m	n	p	s	t	w	z
a			ha		ka		ma	na	pa	sa		wa	
e									pe				
i				ji		ii		ni					zi
o					ko					so	to		
u		du			ku								

It will be seen that of these seventeen known syllables, seven are from the family involving the vowel a (ha - ka - ma - na - pa - sa - wa). The i family is represented by four members (ji - ii - ni - zi); the o family by three (ko - so - to) and the u family by two (du - ku). The only vowel which has appeared so far in only one syllabic combination is e. Three pairs and one triad involving a common consonant are also represented (pa - pe, na - ni, sa - so, and ka - ko - ku). Within each group the common consonant is coupled once with the vowel a and at least once with one of the other four vowels. These consonants thus establish links between the a vowel family and each of the other four vowel families. We shall see shortly that these 'consonant links' between vowel families make it easy for learners to learn new syllables, without having to meet them first in generative words.

The learners are now ready to take a major step forward. Until now they have broken down the generative words only as far as the syllables, and then recombined these syllables to make new words. With knowledge they now command, it should be easy for them to grasp the principle that the syllables themselves can be broken down into simpler building-blocks, each composed of a single sound and represented usually by a single letter.

It should be stressed that our ideas as to the methods which teachers might use to bring their pupils to this crucial insight are tentative. They need a **great** deal of **testing** and revision. In particular we are uncertain as to how rapidly it would be feasible to make the changeover from syllabic to predominantly phonetic (single - sound) units. All told,

Swahili uses nearly 200 different syllables. Clearly, if all of these were to be introduced initially through the generative words, the acquisition of literacy would be a long, drawn-out process. But on the other hand, pupils probably need a certain amount of practice at recognising syllables before they are ready to begin tackling the building up of words from single sounds. If the changeover is made too quickly, learners are likely to lose their fluency in reading whole words and sentences.

To a certain extent we are dealing with a tradeoff situation. If we decide to concentrate on the larger units, that is the generative words and the syllables, we will place a heavy burden on the learner's capacities for memorising and recapitulation, but will make relatively light demands on his abilities to synthesise known elements into larger arrangements with new meanings. If, however, we stress the smallest units, that is the separate sounds, the balance is reversed; there will be relatively little memorisation to be done, but a great deal of synthesising. As we have seen, Swahili uses only 30 different sounds, which are always represented by the same written symbols. The choice, in other words, is between memorising a large number of big units and then learning to arrange them in relatively simple combinations, or alternatively memorising a much smaller number of small units and then learning to arrange them in more complex combinations. Thus, in deciding the teaching method to use we are at the same time largely determining the type of intellectual skills the course will demand.

In any practicable reading scheme there will obviously be some teaching at each of the three levels: the whole-word level, the syllabic level, and the phonetic (single-sound) level. But in our view there are overwhelming advantages in moving away from memorisation towards a full engagement of the pupils' capacities for synthesis as early as possible in the learning process. Memorisation is essentially a low-level activity, which requires of the learner mainly that he act as a passive recipient for information coming from an authoritative source - in this case the literacy teacher. Thus a stress on memorisation as the principal teaching method implies a prolonged period of intellectual dependency. Synthesis, by contrast, is a much more active process, and one which involves a wider spectrum of abilities. The learner starts with his elements of remembered knowledge, but must work with them to create new combinations which express new meanings. He arrives at these new meanings by his own efforts, and in so doing gradually takes charge of his own learning, and weans himself from his dependency on his teacher. The satisfaction which he experiences when he reads and understands a new word without being helped provides a powerful incentive for continued learning.

The implication is clear: the move from whole-word and syllabic teaching towards phonetic methods should be made as rapidly as is consistent with the maintenance of reading fluency. The purpose of the generative words is to introduce the full range of separate sounds in meaningful contexts, and to provide enough repetition for recognition to become easy and automatic. Once this has been achieved, generative words are no longer needed.

The first step in the changeover from syllabic to phonetic units would be perhaps to introduce single sounds in contexts where they represent whole syllables, as for example the vowel a in a - na - so - ma or the consonant m in m - to - to. All the five vowels, together with the consonants m and n, are commonly used as full syllables in Swahili. These single-sound syllables are easier to recognise when they occur at the beginning of a word (e.g. a - na - so - ma) than they are in the middle (ku - fu - a - ta) or at the end (ku - to-a), so we would introduce them first in that position. The next step might be to show pupils how to derive new syllabic combinations from known single sounds. With these two bridging steps mastered, students should be ready to tackle the sound-values of the consonants which never constitute whole syllables, and thus move towards fully phonetic reading.

The teaching outline which follows is meant simply to suggest some practical methods by which the first of these steps might be introduced in the classroom. The sequence is as follows:

1. A single vowel forming a complete syllable at the beginning of a word.
2. A single consonant forming a complete syllable at the beginning of a word.
3. A new syllabic combination, made up of known sounds.

It is difficult and cumbersome to describe teaching methods on paper, partly because of the problem of distinguishing between what the teacher says and what he writes on the blackboard, and partly because what he does depends so much on the response he gets from the learners. In the classroom, the methods would seem much more straightforward.

The teacher might start by asking his pupils to compare the known words ku - so - ma and ha - ku - na. He writes them on the board and gets the learners to say them slowly, separating the syllables. He then elicits from them the fact that the first syllable of kusoma is the same as the second syllable of hakuna, but that the other syllables are different.

Then he invites the students to look at and listen to the last two syllables, ma and na, carefully. Are they completely different, or are they alike in any way?

What the teacher does now depends on the replies he gets. If he has led up to the point well, nearly everyone will be prepared to volunteer some answer such as, "They start off differently, but they end in the same way". If he gets a response of this kind, he appeals to the rest of the class: "Is he right?" "Yes." But if most of the students seem hesitant, he goes back to the syllables and tries again. The key point is that the teacher, having assembled all the facts the learners need to solve a problem, never tells them the answer, but rather elicits the answer from them. He leaves them to close the 'insight gap' for themselves. Further, having elicited an answer from a volunteer the teacher does not confirm or reject it himself, but rather appeals to the rest of the class: "Is he right?". In this way, each learner internalises the answer; it is a solution to the problem that he and the rest of the students have worked out for themselves, not one that has been imposed.

The teacher then writes other known words containing syllables from the a vowel family on the blackboard, one at a time: pe - sa, du - ka, wa - to - to, ku - li - pa. Can the pupils find other syllables in these words which end with the same sound? As each new syllable is identified, a student adds it to a list on the blackboard:

ma
na
sa
ka
wa
pa etc.

Everyone now reads these syllables out aloud together, listening to the sounds. Teacher: "So what is the sound that they all end with?"
Students: "a".

Teacher: "Now, supposing we want to write just the sound a by itself. How do you think we could do it?" A volunteer writes his answer on the blackboard. Teacher: "Is he right?" "Yes."

The teacher moves immediately to consolidate the new knowledge by using a as a separate syllable in a meaningful context. "Here is a problem for you. We know how to write

wa - to - to wa - na - so - ma

But here is a picture of the mother reading by herself. How do you think we could write 'mama anasoma' underneath it?"

A volunteer writes his solution on the board, and the teacher confirms it from the class, as before. The teacher then writes the second sentence below the first so that the syllables can be compared, and everyone looks at them and reads them slowly:

wa - to - to	<u>wa</u> - na - so - ma
ma - ma	<u>a</u> - na - so - ma

The teacher might then introduce the following story, illustrated with photographs. The story uses only known words:

mama analipa pesa dukani
(mother is paying money at the shop)

sasa mama anapewa jiko
(now mother is receiving a charcoal brazier)

sasa mama na watoto wanatoka dukani
(now mother and the children are leaving the shop)

This story gives the learners practice in recognising the vowel-syllable a in association with two other verb stems, and further practice in differentiating a from wa. It also, of course, provides them with more evidence of their progress in learning to read.

In the next lesson the learning continues. The teacher might begin by reading the known sentences:

ma - ma	a - nasoma
wa - toto	wa - nasoma

"But here is a picture of only one child reading. So we need to write mtoto anasoma."

"We know how to write ma (ma - ma) and we know how to write a on its own (a - na - soma). So how do you think we write m on its own,³ so that we can write mtoto?"

The teacher then elicits and confirms the correct answer, using the methods already described. He continues:

3. Single consonants are, of course, much more difficult to sound than single vowels. In Swahili, however, the consonants m and n are relatively simple, because, as we have seen, they often constitute complete syllables. Sometimes these syllables even carry a stress (e.g. m - bwa, m - bu). It thus seems justified to introduce these two single consonants early in the teaching sequence.

"So now we can write:

ma - ma a - na - soma
 wa - toto wa - na - soma
 m - toto a - na - soma

"But perhaps you might want to write 'I am reading' (ni - na - so - ma). How do you think we could write that?" The syllables of ninasoma are all known, although this particular form of the verb is a new derivative. When the syllables have been correctly assembled, the teacher continues:

"But most people when they have learned to read are very happy. Suppose you want to write 'mimi ninasoma', and not just 'ninasoma' (I myself am reading, with emphasis on the personal pronoun). How do you think we could write 'mimi'?"

"We know how to write na (wanasoma, analipa) and we have written ma many times (mama, anasoma). We also know how to write ni (jikoni, dukani). So we can write ni, na, and ma. In fact there is one word we have written today where we use all three of them. Can anyone think which word it is? (Ni - na - so - ma). We can write them on the blackboard like this:

na ma
 ni

Everyone then reads the syllables aloud from the blackboard, in all possible arrangements: na - ma, na - ni, ni - na, ma - na.

Teacher: "We can read across: na - ma. If we wanted to read the next line, we would start with ni; and what would we say next? Listen: na - ma, ni - ?" If the learners seem puzzled, the teacher might recall some more known syllables from the a vowel family, for instance sa (pesa) pa (lipa) and wa (watoto), and add them to the top line:

na ma sa pa wa
 ni ?

"Starting with na, we can say ma, sa, pa, and wa. So if we start with ni, what would we say?"

The teacher thus elicits the new syllable mi from the known syllables na, ma, and ni, and the learners can now add mimi ninasoma to their list of sentences:

ma - ma a - na - soma
wa - toto wa - na - soma
 m - toto a - na - soma
mi - mi ni - na - soma

The next step might be to introduce the vowel a in contexts where it follows rather than precedes other syllables, and is thus more difficult to recognise as a separate syllable. This might be done by comparing the known word ku - to - ka with the new but commonly used ku - to - a (to give out). The single sounds a and m, and the 'derived syllable' mi, would then be used, together with the known syllables, to construct new derived words. There are many possibilities, including m - soma - ji (reader, pupil) m - kulima (farmer), ku - mi (ten), mi - a (hundred), m - ji - ni (town), m - to - ni (river), du - ni - a (world) and mi - wa (sugar cane). With the resources of generative and derivative words now available, construction of further sentences for reading practise presents little difficulty.

It will be seen that the method we used to derive the new syllable mi was to use the consonant family na - ni to establish a link between the a and i vowel families. It would be quite feasible to carry on in the same way, using the same 'consonant link' to fill in all the gaps in the two vowel families:

ha	(ja)	ka	(la)	ma	na	pa	sa	wa	(za)
					↓				
(hi)	ji	(ki)	li	(mi)	ni	(pi)	(si)	(wi)	zi

Note: The derived syllables are indicated by brackets, and the 'consonant link' by an arrow.

In fact it would not be difficult to continue, using all the consonant links (na - ni, pa - pe, sa - so, and ka - ko - ku), until all the 60 possible two-sound combinations of the 12 known consonants and the 5 vowels had been mastered. The 17 syllables introduced through the generative words would thus give rise to 43 derived syllables. These new derived syllables, in turn, would be used to construct new derived words. While this was going on, the sound-values for the individual vowels and consonants would gradually be taught, using the methods we have already outlined for a and m.

During all this work, no new generative words would in theory be needed. In practice, however, generative words would almost certainly be used from time to time, to introduce the remaining consonants and the more complex syllables, involving three or more elements.

By now the principles underlying our suggested methods should be clear, and we shall not pursue our step-by-step account any further. In any

case, as we have already said, the details are highly tentative, and are meant simply to illustrate an approach. Development of a practical course along these lines would require a great deal of experimental work in the classroom.

Let us now try to summarise our discussion. We have argued that the Kenya Functional Literacy Programme may be too ambitious, in that it attempts to achieve three separate goals at the same time. First, it tries to teach literacy. Second, it tries to teach the language, Swahili, in which literacy is to be acquired. Third, it attempts to be a programme in adult education, teaching practical facts about agriculture, health and household management in the texts which are also teaching literacy and the Swahili language. By not establishing an order of priority among these three objectives, the programme runs the risk of failing to achieve any of them.

We feel that there is a strong case to be made for tackling the teaching of reading and writing first, and for subordinating the other two objectives until this has been achieved. Teaching literacy in Swahili should be a relatively straightforward task, provided it is recognised that most rural Kenyans have only a limited knowledge of the language, and provided also that every advantage is taken of the fact that Swahili is fully phonetic. Once participants can read and write simple, everyday Swahili with fluency, they will be able to turn their attention to extending their knowledge of the language. They will also be a great deal more receptive to the adult education component of the Programme.

We have attempted to outline some methods by which participants might be taught to read and write quickly. We saw that Swahili uses only 30 different sounds, and that each sound is always represented by the same symbol, which usually consists of only one letter. Hence, in theory all a new learner needs to do in order to be able to read Swahili is to learn the sound values associated with the 30 different symbols. In practice, however, a teaching method which started by introducing these smallest sound-units would inevitably involve a great deal of repetitive and somewhat meaningless drill. The learners would probably have difficulty in acquiring the fluency needed to synthesise whole words, and there might well be problems in maintaining their motivation to continue with the course. We therefore feel that initially a whole - word approach should be used, to provide a framework from

which learners can move rapidly to phonetic reading. These whole words (the generative words) would be chosen on the following criteria:

1. They should be commonly used words, widely understood in rural Kenya.
2. They should have relevance and meaning in terms of the life - styles and perceived needs of literacy course participants.
3. They should be concrete words, capable of being illustrated with photographs or drawings.
4. They should break easily into syllables. For the first few lessons these syllables should be of the simplest type, consisting of a single consonant followed by a single vowel.
5. The constituent syllables of the generative words should be capable of rearrangement to form other derivative words. A high proportion of these derivative words should also be familiar and meaningful to the learners.
6. In the early lessons the generative words should introduce learners systematically to the five major syllable families involving the five vowels, and to consonant links from which the learners can derive new syllabic combinations inside these families. Later, the generative words should introduce the less common sounds and the more difficult syllabic combinations, such as those involving more than one consonant before the vowel.

The crucial point, however, is that the usefulness of the generative words is strictly short-lived. Their purpose is simply to provide a meaningful context from which students can deduce the sound - values of the units from which words are made up, and thus learn to read phonetically. In our illustrative lessons, students learned the sound for the vowel a because they wanted to write the sentence, mama a - nasoma, having already written watoto and kusoma as generative words, and mama as a derivative. Similarly they learned the sound for the single consonant m because they wanted to extend their writing to include m - toto anasoma, and they derived the new syllable mi so that they could write mi - mi ninasoma. In each case the new unit was the only unfamiliar element in a known context, and furthermore, the pupils had a real purpose in learning it.

Using these techniques, it should not be difficult to move quite quickly away from whole-word towards phonetic methods, teaching the learners the sound-values of the smallest units whilst preserving their fluency in reading whole words and sentences. The rather meaningless drilling usually

associated with the early stages of phonetic teaching is avoided, but at the same time pupils are not expected to go on memorising whole words for a moment past the point when they have mastered the tools they need to synthesise the words for themselves. The students' higher-level intellectual capacities are engaged as fully as possible, while the minimum use is made of rote memory and recall. The aim, in short, is to capitalise on the advantages of both methods, but to avoid their complementary disadvantages.

The suggested learning sequence is summarised in the accompanying chart. (See Figure 1.) The three main levels of analysis are listed from top to bottom: first the whole words, then the syllables, and finally the single sounds. The generative words and their component parts are listed on the left hand side of the chart; the syllables and words derived from these components on the right. The seven major activities involved in learning to read (apart from memorising the generative words) are indicated by arrows, and numbered from one to seven. Activities indicated by downward-sloping arrows are mainly analytic, whereas upward-sloping arrows indicate synthesising activities. Thus arrow number 3 indicates the breaking down of the syllables of generative words into their component sounds; while arrow number 5 indicates the building up of derived words from derived syllables. The activities are numbered roughly in the order in which they would be introduced to new learners. During the early lessons, learners would be engaged mainly in activities 1 and 2, together, of course, with memorising the generative words. Later, activities 3, 4 and 5 would become more important, as the learners begin breaking the component syllables into separate sounds, and deriving new syllables from the vowel families and consonant links. Finally, as they move towards fully phonetic reading, activities 5, 6 and 7 would predominate. It will be seen that as learning progresses, there is a change in the dominant mode of intellectual activity: at first it is memorisation, then analysis, and finally synthesis.

The chart is of course highly stylised, and learning any new word (apart from the generative words) would almost always involve more than one of the numbered activities.

It may be useful to compare briefly the teaching method proposed here with that used in the Kenya Functional Literacy Programme. The methods start off in the same way, by introducing generative words which are then broken down into component syllables and reassembled into new derivative words.

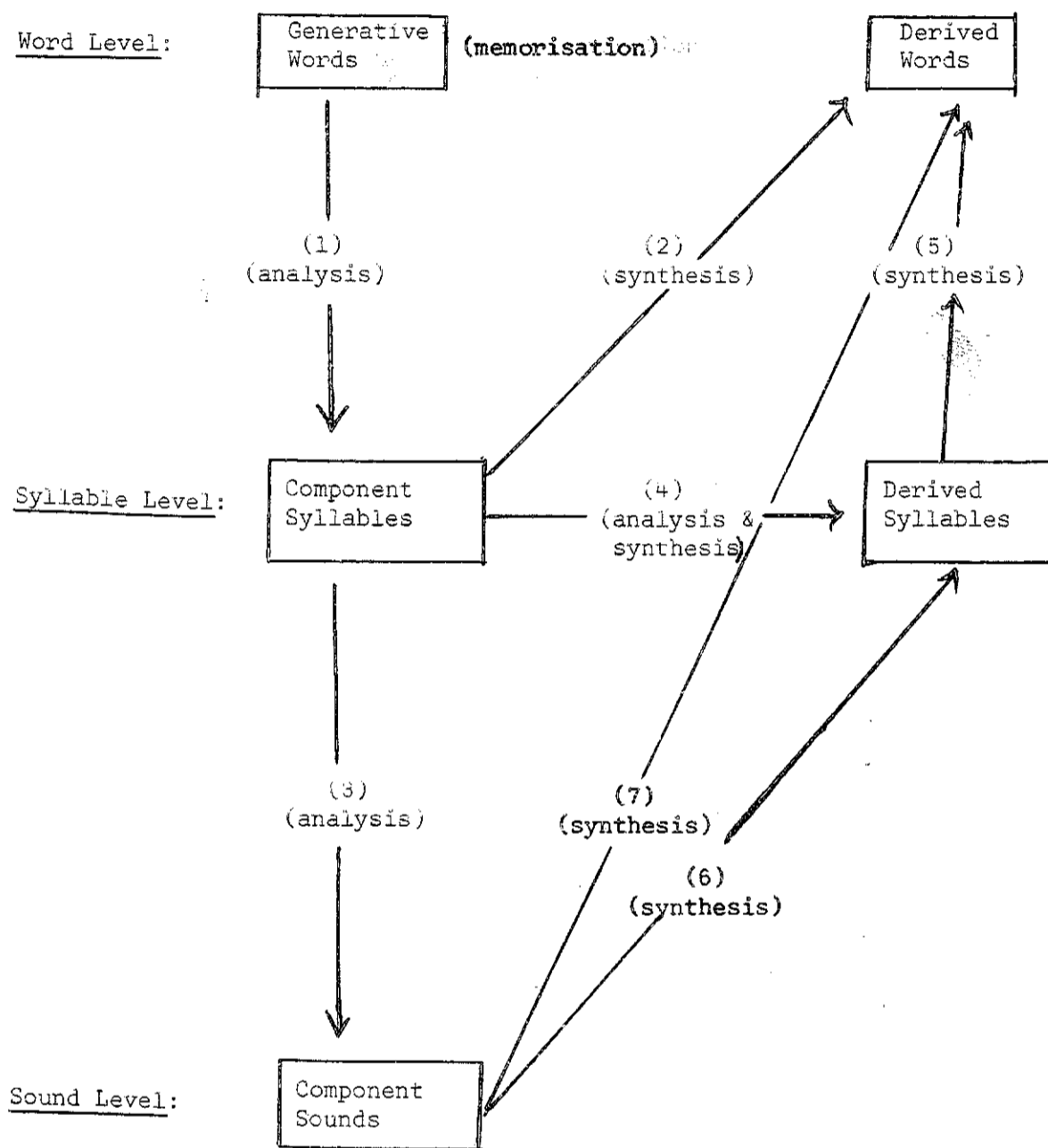


Figure 1. Suggested learning sequence.

But this is about as far as the similarities go. Perhaps the most conspicuous difference is that in the Functional Literacy Programme at present there is no attempt to phase out the generative words and move towards phonetic reading. New words are introduced throughout the 96 lessons contained in the four main readers for the programme, at the rate of about four words per lesson. These new words are printed at the beginning of each lesson, and are taught to the students before they begin reading the text which contains them. Most of the classes we visited were working on the third reader, and were in their second year of instruction. In every class, without exception, the teacher introduced the new words as if the students were complete beginners: he first read the words to them, and then gave them memorisation drill until they could repeat the words without hesitation. We never heard a teacher suggest that the students might attempt to read the words for themselves, even when the word was extremely familiar in spoken Swahili, and contained no new syllables or sounds (as, for example, sawa in Book Three, Lesson Nine, or kulala in Book Three, Lesson Twelve).

The order in which new words are introduced seems to bear little relation to their phonetic or linguistic difficulty. Many of the words which appear in the first few lessons have complex syllabic constructions (e.g. m - cha - nga, u - do - ngo, kwa - mba); others in addition are almost unknown in everyday Swahili (cha - nga - ra - we, dha - i - fu). By contrast, a number of the words introduced in the last few lessons of the final book are both commonly used and phonetically simple (te - na, ka - ri - bu, sa - na, cha - ku - la, m - bo - ga). There is no reason why words such as these, and many others like them, should need special introduction so late in the course; by this stage the learners should all have long since mastered the skills needed to read them without help.

In general, the requirements of the adult education component of the Programme seem to have determined the order in which the generative words are introduced, and how often they are repeated. Considerations arising from the other objectives of the programme - acquiring literacy and learning the Swahili language - have been almost entirely subordinated. The topic for the first reader is different types of soil. Thus among the first generative words the learner must memorise are towe (clay), matope (mud), changarawe (grit), and mchanga (sand), regardless of their phonetic characteristics or how widely they are known.

By the same token, little consideration seems to have been given to systematically repeating newly-introduced syllables in different contexts, so that the learners have a chance to consolidate their new knowledge before moving on to fresh material. Nor is any attempt made to introduce the learners to syllable families.

A final major difference is that in the Kenya Functional Literacy Programme generative words are broken down to the syllabic level only. Pupils are not systematically taught the way single sounds are represented. The underlying orderliness and rationality of the way Swahili words are built up from the simplest units thus remains inaccessible. In the classes where we were able to make a check, we found that although the students knew many syllables, they were baffled when we asked them to break them into separate sounds. A number knew the alphabetical names of the letters, but very few their sound-values. Partly for this reason and partly because of the emphasis on memorising generative words, pupils tended to have poor word-attack skills. Their characteristic expectation when a new word came up seemed to be that the teacher would tell them how to read it.

Early in this section we said that we have had only a limited opportunity for testing in the classroom our suggestions as to how Swahili literacy might be taught. We were, however, able to try them out with two classes, on occasions when the regular teachers happened to be absent on the day of our visit. In both classes the pupils were unsure as to how they should tackle the reading of new words. But they understood the principle of syllable families very quickly, and within a short time had learned the sound-values of a number of consonants. By the end of the lesson many students were able to synthesise whole words and even sentences without help. The rapidity of their progress was, of course, largely due to the amount of practice they had already had in recognising whole words and syllables in the two readers they had completed, but there seems little doubt that an early introduction of phonetic reading would greatly speed up the acquisition of literacy.

COURSE CONTENT

In a short account it is impossible to consider the content of all the readers used in the Kenya Functional Literacy Programme in any detail. We shall therefore concentrate our attention mainly on the first introductory reader, called Aina za Udongo (Types of Soil) and within that reader, on the first sequence of lessons.

The first sequence, which contains twelve lessons, introduces the learners to a classification of soil types. The text repeatedly stresses the importance of understanding the characteristics of different soils, and at one point comes close to implying that such knowledge, by itself, is enough to make someone a good farmer:

Ikiwa unajua namna za udongo utalima vizuri.	If you know the characteristics of soils you will farm (cultivate) well.
Kulima vizuri ni kujua namna ya udongo.	To farm well is to know the character of the soil.

(Page 12)

The classification which is presented to the learners can be represented schematically in the following way:

UDONGO			
(General word for soil of all types)			
TOWE	MATOPE	MCHANGA	CHANGARAWE
Clay	Fertile soil	Sand	Grit
Holds water, not air	Holds water and air	Holds air, not water	
Bad for planting	Good for planting Can be obtained by mixing towe and mchanga	Bad for planting	Good for growing trees

In the functional literacy scheme, udongo is the general word for soil. It can be of four main types: towe, matope, mchanga and changarawe. Towe is clay; it holds water but not air. Mchanga is sand; it holds air but not water. Plants need both air and water; therefore both towe and mchanga are bad for growing crops in. But the farmer can mix towe and mchanga, and get matope, which holds both air and water, and is thus good for growing crops. Furthermore, matope is fertile:

Matope ni udongo mnono na wa rutuba	Matope is rich soil, and it is fertile. (p 18)
Matope huweka maji na hewa	Matope holds water and air (p 21)

The fourth type of soil is changarawe, or grit. It is good for growing large trees:

Mimea mikubwa hupenda changarawe na mawe	Large trees like changarawe and stones (p 21)
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This 'cognitive map' of the different types of soil and their characteristics is clear and straightforward. But it has a major defect: it is not consistent with the map already in use among Kenya farmers.

In two widely separate areas (Vihiga and Tetu), we were able to talk with several farmers not attending functional literacy classes. One of the topics we discussed was how they would describe different types of soil in Swahili. Their replies were for the most part unambiguous and consistent. Schematically, they can be represented as follows:

MATOPE	UDONGO	MCHANGA
Mud: soil saturated with water	Cultivated soil prepared for planting	Uncultivated soil, requires hoeing
Used for building houses	Loose, moist, fertile	Often covered with weeds and bushes
Found on roads after rain		
Bad for planting	Good for planting	Bad for planting

There seems to be no widely-accepted Swahili word in up-country areas for soil in general, although some farmers suggested mchanga or ardhi. Towe is not known at all, and changarawe to only a few. But matope, udongo and mchanga are understood by nearly everybody. Mchanga is used with a much wider meaning than it is in the functional literacy course. It is understood as referring to uncultivated soils of all kinds; heavy, clay soils as well as light, sandy soils. Mchanga tends to be regarded as lacking in fertility, because it has been left uncultivated and is often covered by weeds or bushes.

Udongo is soil which has either been just prepared for planting, or which has crops growing in it. The word has strong connotations of friability, dampness and fertility. Hence udongo and mchanga are contrasted in meaning; they are distinctive and different types of soil. Mchanga is certainly not regarded as a variety of udongo, as it is in the functional literacy text.

Matope has an equally definite meaning. It is mud; either the type used for daubing on the walls of houses, or the type which bogs down cars on roads after heavy rain. Asked whether matope was good for planting seeds in, all our informants responded with a categorical 'no'.

Hence the classification of soils offered by the first functional literacy reader is at variance with the classification used by Kenya farmers in at least two respects. The discrepancy in the meanings given to the word mchanga is probably of only minor importance. All our informants agreed that sand was a type of mchanga; where they differed from the writers of the literacy text (and with the compilers of the standard Swahili dictionary) was in including ~~other~~ types of soil within this same 'concept boundary'. The discrepancy was thus mainly in the level of generality.

But with matope the case is different, because the two meanings are directly contradictory to each other. The functional literacy text describes matope as fertile, friable soil, able to hold both air and water and suitable for planting seeds. But for most farmers, matope has virtually the opposite characteristics: it is not friable, it does not hold air, it is not especially fertile and it is certainly not suitable for planting seeds. Farmers use udongo to refer to soil of the type called matope in the literacy readers.

A major purpose of any programme of education is to provide the learners with new and useful categories with which to order the world around them. But no learner ever comes to the classroom without an extensive series of existing categories, based on his out-of-school experience. The older the learner, the more comprehensive and more firmly entrenched his categorisation system is likely to be. Kenya farmers have been winning a living from the soil for generations, often under very difficult conditions. If they had not developed a working knowledge of the characteristics and potential of the main soil types, they would never have survived.

We investigated the effects of the 'dissonance' between the two soil classification systems during our evaluation trips. On every farm we visited we picked up a handful of prepared soil and asked the farmer what word he would use to describe it. If the farmer was not a functional literacy student his answer usually came promptly and confidently: "udongo". But literacy students were generally not so sure. Some had succeeded in mastering "teacher's Swahili" (as one of them called it), and knew that despite what they might have thought previously, and despite what they might still hear other people saying, prepared soil was really matope. But for others, the two sets of contradictory signals had apparently cancelled each other out. They would look at the soil for a few seconds, and then say "I don't know". One farmer perhaps remembered that he had been taught a different word in his literacy class, but had now forgotten what it was. After a pause he said in an apologetic voice "udongo tu" (just udongo).

Another example of dissonance between the world of the literacy classroom and the world the recruits live in may be given from Lesson Seven:

Lesson Seven

1. Towe huweka maji, haiweki hewa. Towe holds water, but not air.
2. Mchanga huweka hewa, haiweki maji. Mchanga holds air, but not water.
3. Maji na hewa ni vitu vizuri. Water and air are good things.
4. Weka maji vizuri. Keep water well.

Weka is one of the commonest verbs in Swahili, and is known to almost everyone who has acquired even a smattering of the language. Its basic meaning is 'to put'. In coastal Swahili, however, it has a wide range of other meanings, including to preserve, to look after, to delay and to hold. These alternative meanings are rarely encountered in upcountry spoken Swahili. Weka appears for the first time in Lesson Seven, but it is not used with its commonly understood meaning. Instead, it takes two separate alternative meanings. In lines 1 and 2 it means hold, and in line 4 it means keep or look after.

We asked several farmers who were literate in Swahili but who had not attended functional literacy classes to read Lesson Seven to us and explain its meaning. They were all clearly disconcerted by finding weka, a word they were all familiar with, in a context where its ~~known~~ meaning did not make sense. One farmer suggested (when we had explained the meaning of towe to him) that "towe huweka maji" might mean "towe puts water (into other, dry, soils)"; while another said, very tentatively, that "weka maji vizuri" might mean "put water (into a container) carefully (so that it does not spill)".

It should be stressed that we are not suggesting that a literacy course should teach only the commonest meanings of Swahili words, and should ignore the more subtle and less frequently heard usages. The issue is one of timing. After the learners had completed two or three readers, and had met weka in its common meaning several times, it would be quite appropriate to introduce the alternative meanings. If this were done, the new recruits' first experience of the word in the literacy programme would confirm their existing knowledge. Later on, they would find little difficulty in extending their understanding of the word to include the new meanings. In this way the new knowledge would be built on to old knowledge, and there would be no incompatibility between them. But by introducing the alternative meanings first, the programme creates unnecessary dissonance between what the students know from the world outside and what they are taught in the classroom.

It is clear that in devising any programme of adult education, especially one which is concerned with improving the daily lives of the learners, the question of how to articulate the new knowledge with existing knowledge is of central importance. In the examples we have considered so far the difficulties have been due mainly to linguistic factors. For most literacy recruits, Swahili is only a second language; and, moreover, the version they speak is a simplified and somewhat modified form of standard coastal Swahili.

But there are similar problems which spring from the content of the lessons rather than from linguistic factors, and which would thus have occurred even if the literacy programme had been conducted in vernacular languages. Consider the information given in Lesson Eight:

Lesson Eight

- | | |
|-------------------------------|--------------------------|
| 1. Fanya udongo kuwa mzuri. | Make the soil good. |
| 2. Changanya towe na mchanga. | Mix towe and mchanga. |
| 3. Udongo wa towe na mchanga | Soil of towe and mchanga |
| 4. Huweka maji na hewa. | Holds water and air. |

Lesson Eight carries the central message of the whole introductory sequence of twelve lessons. The seven lessons which precede it are concerned mainly with describing the different types of soil, and the four lessons which follow it mainly with repetition and amplification. To recapitulate the message briefly: there are four main types of soil, each with different characteristics. Matope is good for planting seeds, because it holds both air and water. Farmers should obtain matope by mixing towe (clay) and mchanga (sand).

We discussed this lesson informally with two small groups of functional literacy teachers. None of them could recall it having given any special difficulties. The Swahili was a good deal simpler than in some previous lessons, and the learners had readily understood the agricultural advice it contained. The lesson, in short, was a good one. But when we asked them whether they or their students had acted on the advice they all immediately saw where the lesson was deficient. No one had ever attempted to improve the soil in the class plot or in his own farm by mixing clay and sand. Indeed, no one could remember ever seeing this done by any farmer.

It is, of course, quite likely that many Kenya smallholdings could be improved by mixing sand with the heavier soils and clay with the lighter soils. But the costs would be high, even assuming that soils with the needed complementary characteristics could be found on the same holding. It is a great deal easier to choose the types of crop to grow according to the soil characteristics than it is to try to change the soil characteristics to suit the crops; and this, of course, is what most Kenya farmers have always done. In Central Province, for example, the traditional practice has always been to use the saturated clay soils along the bank of streams for planting arrow-root, because this crop thrives under such conditions. The land a little further away from the water, where the soil is still heavy but less saturated, was kept for crops such as sweet potatoes and sugar cane; while on the lighter, well drained soils of the hill slopes the farmers grew - and still grow - their maize and beans.

We do not mean to imply, of course, that all traditional knowledge should be treated as sacrosanct. The practice of burning long grass before the rains, for instance, is destructive of the long-term fertility of the soil, and the functional literacy text should say so. But where the advice to be given is at variance with existing practice, careful consideration needs to be given to whether the recommended practices are in fact an improvement. There may well be constraints operating which make the existing practices much more rational than they seem at first sight.

The most important point to notice from our discussion of Lesson Eight is the difficulty which our informants had in recognising that the information it transmitted was deficient. Information which comes in a well-produced book from an authoritative source carries a powerful mystique, especially to poorly educated readers. They may well be aware that the information is for some reason irrelevant to their own lives, but they will not reject it as being wrong. Just as there is 'teacher's Swahili', which is better than the Swahili of ordinary people, so also there is 'teacher's knowledge', which is superior to ordinary knowledge. When asked about Lesson Eight, everyone agreed that it contained 'good' advice. Perhaps they felt that there must be some people, living somewhere else, who act on it; maybe because they are richer or more sophisticated. Many of the literacy students we met on our visits could tell us that to get good soil, you should mix sand and clay. But not one of them had done so on his own farm.

The problem of ensuring that the new information and advice to which learners are exposed is both accurate and relevant is perhaps the most difficult that a functional literacy programme must cope with. If it is not tackled successfully very little of what is taught will be followed by permanent behaviour changes. It is not enough that the literacy readers be technically accurate in content. They must also recognise the effects of the constraints under which Kenya smallholders work - constraints such as shortage of capital, shortage of land and inadequate rainfall. The readers contain a great deal of information about the benefits to be gained by using artificial fertilisers, but nothing at all about what they cost to buy. Similarly the students are told that they should dig bench terraces to protect their land from erosion, but they are not told what they can do to improve their chances of getting a crop if they live in an area which is prone to drought.

The most striking examples of failure to take account of the circumstances in which low-income families in Kenya live are to be seen, perhaps, in Book Four. The title of the book is Kukuza Mboga (Growing Vegetables), and it discusses carrots, tomatoes, English potatoes, and onions.⁴ The book is enthusiastic as to the prospects for increasing cash incomes through growing and selling these crops. Here, for example, is the advice which it gives about marketing carrots:

Watu hupenda karati.	People like carrots.
Watu wote hawawezi kukuza karati.	Not everyone is able to grow carrots.
Lakini watu wote hula karati.	But everyone eats carrots.
Kwa hivyo wao hununua karati sokoni.	For this reason they buy carrots at the markets.
Ukiuza karati unapata pesa.	If you sell carrots you will get money.
Mnunuzi huvutiwa na karati zako zikiwa nzuri	The customer will be attracted to your carrots if they are good. (Book Four, page 11)

With minor variations, the same advice is given for each of the three other crops. For onions, it reads as follows:

4. Book Four is intended for use only in areas where the soil and climate are suited to the growing of these vegetables. Our comments are concerned only with the advice given about marketing.

Kuna nafasi nzuri ya kuuza vitunguu sokoni.	There is a good opportunity to sell onions in the market.
Karibu kila mtu hula vitunguu.	Nearly everyone eats onions.
Ni mboga inayopendwa sana.	It is a very popular vegetable.
Lakini si kila mtu hukuza vitunguu.	But not everyone grows onions.
Kwa hivyo; wewe ukikuza, utaviuza na kupata faida.	For this reason, if you grow onions you will sell them and get a profit.
Ukikuza vitunguu vikubwa; na vizuri utaviuza bila shida.	If you grow large onions, of good quality you will sell them without difficulty.
Pia utapata bei nzuri.	Also you will get a good price.
Kuza vitunguu na kuongeza mapato yako.	Grow onions and increase your earnings.
Furahia maisha na mapato zaidi.	Be happy in life with bigger earnings. (Book Four, page 52)

The assumption seems to be that there is a major irrationality in the production and marketing of these crops which is waiting to be exploited by functional literacy participants. The crops are eaten widely, even universally, but for some unexplained reason many people do not grow them and therefore must buy them. The facts of course are different. It is quite untrue to say that "everyone eats carrots" or that onions are "a very popular vegetable". The great majority of low-income rural families in Kenya eat none of the vegetables discussed in Book Four, with the partial exception, in some areas, of English potatoes. But even if they did, most families would grow the vegetables in their own gardens rather than buy them at the markets. Nearly all the customers for carrots, onions and tomatoes are in the higher income brackets, and most of them live in the cities and big towns. Even at quite large market centres such as Kakamega the turnover in these crops is very restricted. Unless they live near a big town, or can sell their produce to a vegetable processing factory or a marketing cooperative, most literacy participants could probably improve their income-earning prospects more by increasing their output of the food crops which are in strong local demand. Almost everywhere in Kenya there is a period, just before the new harvest, when prices for staple foodstuffs reach very high levels in local markets, and farmers who have managed to retain a surplus reap substantial profits.

It would be quite legitimate, of course, for the booklets to suggest that participants should grow the new vegetables on a trial basis, for their own consumption and also to test the marketing possibilities. But to assert, without any qualification, that participants can increase their incomes substantially by growing these crops for sale is counter-productive and dysfunctional.

In choosing lessons to discuss in this section, we have concentrated on those which best illustrate general themes. We have discussed, for example, some of the difficulties which arise from the fact that most Kenyans speak only a simplified and somewhat modified version of standard Swahili. Similarly we have discussed the problems of ensuring that the information given during the course supplements, rather than contradicts, the useful knowledge which participants already have. But in addition to these major issues, there are also numerous minor points of detail, often specific to one lesson, in which revision is needed. To illustrate these, we give a line-by-line critique of Lesson Nine in Book One. The text reads as follows:

- | | |
|--|---|
| 1. Udongo ule ni mzuri. | That soil is good. |
| 2. Unaweka maji na hewa. | It holds water and air. |
| 3. Matope ni namna nzuri ya udongo. | Matope is a good kind of soil. |
| 4. Matope ni namna mzuri ya udongo. | Matope is a good kind of soil. |
| 5. Ule ni udongo wa matope. | That soil is matope. |
| 6. Huweka maji na hewa. | It holds water and air. |
| 7. Udongo ule hauweki maji. | That soil does not hold water. |
| 8. Towe na mchanga huweka maji
na hewa. | Towe and mchanga hold water and air.
(Book One, page 17) |

Lines 1 and 2. The text reads "That soil is good. It holds water and air." Presumably the teacher should have an appropriate sample of soil in the classroom while teaching this lesson. But the three teachers whom we asked said that they had used the illustrations in the text, on pages 8 and 14. Neither of these illustrations, especially the one on page 8, is at all clear. When asked to identify the pictures of the four soil types on page 8, the answers of participants were almost random - although there was a tendency to identify the picture labelled changarawe as matope, and the picture labelled towe as mchanga. Clear photographs would be a marked improvement.

Line 2. The verb weka is more commonly used to mean put than to mean hold, as we have seen. In this context, it is especially ambiguous. Unaweka is obviously meant to mean it holds; the pronoun prefix u referring to udongo in the previous line. But the same prefix also denotes the second person singular; and this usage is far more widely known. Thus many new readers are likely to interpret "unaweka maji na hewa" as meaning "you put water and air". The ambiguity over the pronoun could be removed by repeating udongo ule at the beginning of line 2.

Line 3. Matope is not generally regarded as a good type of soil to plant seeds, as we have discussed.

Line 4. Repeats line 3, with one slight variation (mzuri instead of nzuri). Line 3 is grammatically correct.

Lines 3 and 4. The best translation of namna in these lines is perhaps kind (of soil). But in previous lessons the word aina has been used to refer to the four named types of soil, and namna to refer to soil characteristics (e.g. Lesson Six: udongo tofauti una namna tofauti: different soils have different characteristics). Learners have also been introduced to hali in Lesson Five (unajua hali ya udongo: you know the condition of the soil); and in Lesson Eleven, asili is used (unajua asili ya udongo: you know the nature of the soil). The distinctions between asili, hali, namna, and aina are extremely subtle, and quite beyond the capacity of beginners, especially when the contexts in which they are used give virtually no help.

Line 6. The use of the present habitual tense hu is confusing to beginners (huweka). They may easily mix it up with the present negative tense (huweki: you do not put, or you do not hold). This is especially important in this context, where the distinction is being drawn between soils which do hold water (huweka) and soils which do not hold water (hauweki).

Line 8. As it stands, the information given in this line seems directly to contradict what the learners were told in Lesson Seven (towe holds water but not air; mchanga holds air but not water). Several literacy teachers **whom** we consulted were unable to resolve the puzzle; one of them suggested that the line was not meant to convey agricultural information, but simply to give practise in reading Swahili! Clearly what is meant is that towe and mchanga, when mixed together, hold both air and water.

One final point must be made. It may have been noticed that in discussing teaching materials and methods in this and the previous section we have referred only sporadically to the progress of the programme participants in acquiring the new literacy, language and farming skills. We have not presented systematic data showing how well they have learned how to read and write, how much Swahili they have learned or how much they have modified their farming practices in response to the information and advice given in the booklets.

One reason for this is that gathering reliable data of this kind was beyond our resources. The task of carrying out a survey to measure the impact of an educational programme bristles with methodological difficulties. To mention only one: there would have been enormous problems in identifying an adequately matched control group, especially given that most of the literacy participants were self-selected. The only way in which really valid information could have been obtained would have been to have conducted a longitudinal follow-up of the participants from the time they were first recruited.

But there is a more important reason. In carrying out an evaluation of a project such as the Kenya Functional Literacy Programme, there are two main sets of questions to be asked. The first concerns the internal workings of the programme: how effective are the teaching methods used, is the course content appropriate, do the learners have an adequate grasp of the language in which they are being taught, and so on. The second group of questions concerns the 'output' effects of the programme: have its graduates learned to read and write; do they speak better Swahili; are they better farmers. Logically, the first group of questions precedes the second. If the teaching methods and materials are deficient, the programme is hardly likely to have a major impact on the knowledge, skills and behaviour of the participants. It was not necessary for us to carry out a full-scale survey to find out that participants were not carrying out the advice given in the booklets about mixing sand and clay, nor to discover the reasons why. Similarly, detailed investigation was not needed to find out that **new** recruits found difficulty with little known and phonetically complex words such as changarawe or dhaifu, and that they tended to forget them as soon as the course passed on to other topics.

But on the other hand, even if the preparation of materials and the training of teachers had been impeccable, the programme may still fail. There may well be constraints external to the programme itself which limit its effectiveness. A systematic follow-up of literacy recruits would be invaluable in helping to identify these. But the appropriate time to carry out such a survey will be when the internal problems of the project, which we have discussed in this report, have been rectified.

The main points we have made can be summarised very briefly:

1. The teaching method being used places too much emphasis on the whole-word approach. Whole words are broken into syllables, but these syllables are not broken further into separate sounds. Even at the end of the

fourth reader, the new words from each lesson are singled out and printed at the top of the page, and the learners are given memorisation drill in reading them. But by the end of the second reader at the latest, learners should have mastered all the skills they need to read any Swahili word they encounter without help from the teacher, and without recourse to memorisation. Swahili is fully phonetic; the 30 sounds used in the language are always represented by the same symbols. Once these symbols have been mastered, the learner's main literacy problem is solved, even if his knowledge of the Swahili language is still far from complete. The readers and the teaching methods should be revised to take full advantage of the phonetic character of Swahili.

2. The order in which words are introduced takes no account of their phonetic characteristics. The two words introduced in the first lesson, for example, contain complex as well as simple syllables and sounds. Similarly no attempt is made to ensure that the syllables and sounds are introduced systematically, and with adequate repetition.

3. In the same way little account has been taken of the frequency with which Swahili words are used in rural districts. Difficult, little known words are used in the introductory lessons, while simple, universally known words are introduced (with memorisation drill) towards the end of the course.

4. Familiar words which have more than one meaning are sometimes introduced with an uncommon, little known meaning first. This tends to create an unnecessary gap between classroom knowledge and everyday knowledge.

5. The advice given in the readers is quite often at variance with common practice on Kenya farms. When this happens, careful consideration needs to be given to whether the recommended practices are in fact an improvement. There may well be constraints operating which make the existing practices much more rational than they seem at first sight. Two examples are given from the text of the literacy booklets of advice which is probably counterproductive for most Kenya farmers.

In short, the booklets need to be rewritten and the teaching methods revised. Furthermore, the booklets should be written in the language in which they are to be used: they should not be translated from English. The writing should be the work of a team, which should consist of, at minimum, a literacy expert, a Swahili specialist and people with extensive fieldwork experience in agricultural education and domestic science. The first two booklets, which would be concerned mainly with teaching reading and writing, could probably be written for Kenya as a whole; but for the subsequent

booklets, in which the adult education component of the programme would become dominant, separate editions suited to local conditions of **climate** and soil, and also to local economic factors, would need to be prepared. Local fieldwork staff should be fully involved in writing these editions.

It is inevitable that a report such as this should give more attention to the weaknesses and failures of the Functional Literacy Programme than to its successes. We should therefore conclude this section by stressing that everywhere we went on our field trips we were most favourably impressed by the **enthusiasm** of the professional and administrative staff, the teachers and, above all, the learners. With these reserves of commitment and energy to draw on, there seems no reason why a revised programme, with changed teaching materials and methods, should not be a major success.

PROJECT ADMINISTRATION

The first SRDP area in which the Functional Literacy Programme was initiated was Migori, where it has now been in existence for three years. The programmes in Kwale and Mbere were started a month or so after the one in Migori. The Kakamega, Tetu and Kapenguria programmes have been in existence for just over a year. At first 15 centres were started in each area with, in principle, a maximum of 25 - 30 students. The programme staff did not have enough time to site the centres carefully. They failed to consider thoroughly the relevant factors such as population density and other local peculiarities which might affect the performance of the project. Some centres closed shortly after they had opened and were replaced with new ones elsewhere. Of late the policy has been that if average attendance falls below fifteen the centre is closed down and not replaced. In Mbere, for example, about five centres have closed. The most important justification for this measure was economic: it was argued the costs of maintaining a class with low average attendance are too high. In areas such as Tetu where there are many educated adults, this is probably justified, but in less developed areas such as Mbere the contribution of even a few successful literacy graduates as role models should not be overlooked. One of the students in a centre which closed in Mbere was a toothless old woman who had attained the status of a local legend for her competence in literacy.

Once a class has started, the teachers are not supposed to **enroll** new students. This principle has been fully observed in some SRDP areas, but not in others. It seems unrealistic to be rigid about this requirement; adult education inevitably has a floating clientele and it is surely better for the programme to adapt itself to this fact. But the classes which waived this requirement and continued to take in new illiterate adults to replace dropouts often encountered problems with streaming. We found in several classes that the adults were divided into three streams, informally labelled A, B and C. The A stream usually comprised the most advanced participants and the C stream the most recent entrants. There were cases, however, of relatively new recruits who had demonstrated superior ability in reading and writing and who for this reason were included in the A stream. Conversely some of the oldest members could not read and write and remained in the C stream.

The teachers devise their own solutions to this problem. What they do normally is to focus the lesson on the A stream. After covering the reading with these students, the teachers assign them writing and **then** turn their attention to the others.

The classes are supposed to meet six times a **week** in two-hour sessions. This regulation has been very flexibly applied. The decision as to what time of day a class should meet, and the length of the lessons, is left to the discretion of the teacher. In spite of this, the problem of attendance has continued to be quite serious, more so in some areas than in others. There are certain periods when absenteeism is so great that the centre should be closed. These periods include market days, and the busy times during sowing and harvesting. ~~But we do not have enough data to specify~~ completely the causes of irregular attendance. More information is need on this point.

All areas have experienced the phenomenon of 'dropping out'. This must always be expected to some degree in an adult education programme - some people are always likely to migrate, to experience family problems which prevent them from attending classes, etc. But dropping out cannot be explained entirely by these factors. Some indication of the extent of dropping out is given by the figures below:

1) Kwale - In January 1973 there was a total of 401 students, of whom 194 were men and 207 women. At the end of 1974 there was a total of 280 students, of whom 143 were men and 137 women.

2) Mbere - In December 1972 there was a total of 361 students, of whom 330 were women and 31 men. At the end of 1974 there were 101 students, of whom 16 were men and 85 women.

3) Migori - In early 1973 there were 349 students. By late 1974 there were 280.

4) Vihiga - At the end of 1973, there were 387 students. By late 1974 there were 352.

5) Tetu - At the end of 1973, there were 450 students. By late 1974 there were 308.

6) Kapenguria - In late 1973 there were 354 students. By late 1974 there were 334.

These figures should be interpreted cautiously. Reference will be made to the element of fabrication which can enter into reporting by the teachers. Secondly, registers seem to be kept irregularly in a number of centres. Thirdly, not all areas have followed the policy of a once-and-for-all recruitment system. Also, these total figures are affected by the policy of closing down centres when attendance drops below fifteen. Despite the effects

that continuing entry and closure of centres have on the attrition rate, it is obvious that dropping out has occurred with considerable frequency, especially in Mbere, Tetu and Kwale. In Tetu there is one centre where the total enrolment dropped from 80 to 60 in two months, to 50 in the following month and to only 30 students at the end of the fifth month. At the time of the interview, which was about eighteen months after the opening of the centre, there were only 25 left, most of whom were young mothers between the ages of 20 - 25 years.

Most of the reasons given by the project staff and by the learners themselves for dropping out involve factors which are external to the Programme. These factors include pregnancy, migration and death. But it would appear that certain factors within the programme itself are also involved. In the Mbere case, the high dropout rate is connected with:

1. The use of Swahili which is not understood by many people in **the area;**
2. The high rate of turnover of teachers. Of the original fifteen, only four now remain. This seems to be associated with the level of honoraria for these teachers. One of the teachers who deserted the project joined a teacher training college, and another became a subchief. A third took a job as an office messenger with the Ministry of Health. The new teachers lack training and are only briefed on what to do by the Adult Education Supervisor in his office. He is expected to give them on-the-job training during visits;
3. The absence of the Adult Education Supervisor from his post for a large part of 1973 while he attended a course in Europe. The other Divisional Social Services **staff do not seem to have** been able to fill the gap adequately. For instance, they **failed to keep records on** attendance, dropping out and the progress of students in **reading and** writing. Supplies of the second reader were not obtained when **the first** reader was completed, and instead a supplementary book for Unit One was **used as a primer**. It **was** only when the students complained of the **re-**petition that steps were taken to obtain Book Two, and
4. The inappropriateness of much of the material to Mbere conditions.

Conversely the low level of dropout in Kapenguria may be explained by:

1. The generally high level of acceptance of Swahili (here it should be noted that most of the students are Baluhya, not Pokot);
2. The low turnover of teachers - of the original fifteen, only two have left;
3. A flexible recruitment system; and
4. A policy of allowing non-adults to join the classes.

As far as staffing is concerned, each area has up to fifteen teachers (usually with seven years of primary education) who earn shs 150/- per month. Their work is supervised by Adult Education Supervisors (one per SRDP area). These are on a salary scale which is comparable to that of P1 teachers: 860/- to 1625/- per month. Other staff in the Department of Social Services are also associated with the Programme - Assistant Community Development Officers and Community Development Officers (where they exist) are supposed to keep in close contact with the classes. This has been of considerable importance in areas where the Adult Education Supervisors have been absent for long periods. At headquarters there is a staff of three adult education specialists, one of whom is a UNESCO adviser. They are concerned with the general administration of the Programme, its internal evaluation and the preparation of teaching materials.

Costs

Costs of the Programme for the years 1972-73 and 1973-4 are given in the following table.

Table 1. Costs of the Functional Literacy Programme.

1972-73

<u>Item</u>	<u>Cost</u>
Instructors' honoraria	shs 50,000
Equipment (non recurring)	40,000
Material production	7,000
Total	<u>97,000</u>

1973-74

<u>Item</u>	<u>Cost</u>
Instructors' honoraria	shs 162,000
Equipment (non recurring)	84,000
Materials production	60,000
Research and evaluation	18,000
Training	18,000
Total	<u>342,000</u>

For 1974-75 the allocation is 200,000/-; how this amount is to be spent has not yet been finalised.

All these figures exclude the following emoluments: Adult Education Supervisors, the Kenyan Headquarters staff and the UNESCO adviser. UNESCO's only financial commitment so far is to cover the salary of the adviser. There is a possibility of their providing some printing machinery later.

The problem of adequately monitoring the experiment has absorbed a great deal of the time of the headquarters staff in Nairobi. A number of different report and evaluation forms have been designed with this in view. The teachers and the Adult Education Supervisors have thus been able to regularly convey their views as to the progress being made. However, a fully satisfactory reporting system has not yet been evolved. Many teachers, for instance, are unclear as to the kind of information which is required of them. This was noticeable in Kapenguria where it was obvious that none of the teachers had any idea of what they should write under the headings of 'club activities' and 'adult motivation'. There have also been problems of fabrication. In Migori this went to the extent of producing attendance figures which were over 100 per cent! The difficulty of getting reliable information is compounded by the fact that the Adult Education Supervisors have very little mobility. None of them find it possible to visit all fifteen centres in their areas the requisite two times a month. Since good monitoring is vital to experimentation, it might have been better to begin with fewer centres per SRDP area - always, of course, with a view to increasing their number later.

In late 1974, each SRDP area was asked to carry out its own evaluation. Teams were to be established in each area. These were to consist of officers representing the various ministries - health, agriculture, provincial administration, etc. - which have been involved in the programme in one way or another, in addition to staff of the Department of Social Services (D.S.S.). This exercise was more successful in some areas than in others. It was sometimes difficult to get a genuinely inter-departmental team together (for example, in Mbere no officer outside D.S.S. participated). Also, in many areas the evaluators, for reasons which are not clear, seem not to have understood the purpose of the exercise and produced information which is too vague to be of much use. However, where evaluation reports make interesting points (as the Kapenguria and Mbere reports do, for example), these have been taken into account in the preparation of this chapter.

The notion of functionality required not only the preparation of teaching materials suited to the students' everyday experience, but also the involvement of local extension workers in every aspect of the Programme. These expectations, however, do not seem to have been realised to any great extent. The preparation of materials is done by the Nairobi officers with little involvement of officers or teachers in the SRDP areas. The books which have been prepared are often inappropriate and sometimes technically unsound, as has already been pointed out.

At first books were designed to serve all areas. Obviously this creates problems since the kind of agriculture found in Kwale is not the same as that of Tetu. However, the attempt is now being made to produce books which are better geared to local needs. For instance, manuscripts have now been completed on beekeeping for Mbere and Kapenguria; poultry for Migori, Kwale and Mbere; tobacco for Mbere, Kapenguria and Migori; hybrid maize for Tetu; and Katumani maize and cotton for Mbere. In producing this material close collaboration with the Ministry of Agriculture is essential.

Integration into the Programme of extension workers from other ministries has also been something of a problem. An important element to be integrated is agriculture. To link functional literacy to agriculture, demonstration plots were started and every centre should have had such a plot. Although the teacher is responsible for the general management of these plots, he obviously should involve the local agricultural extension staff in this work. The agricultural staff should also lecture to the class from time to time. The experience in Tetu seems to be satisfactory from this point of view, but Mbere has been almost a complete failure. Even in Tetu, however, teachers complained of the great **difficulty involved in arranging for extension workers from various ministries to meet their classes, either for demonstrations or to give introductory lectures on key themes introduced in the literacy texts.**

The Migori case falls somewhere in between these two. About half of the plots seem to be going concerns; the most successful tend to be at the centres where the Agricultural Assistants or Junior Agricultural Assistants take an active interest. In Kapenguria there is a danger that Ministry of Agriculture staff will fail to involve themselves sufficiently.

The Kwale and Vihiga cases seem similar to Migori. The contribution made by the Ministry of Agriculture may be described as 'patchy', but that of other agencies such as the Ministry of Health, Family Planning Association, etc. is even more marginal. This is primarily explained by the more difficult staff position of these agencies. Other suggested reasons are that the classes normally start in the afternoon when extension workers are

finishing their day's work, and that these employees of other extension services feel they already have enough work to do without getting involved in functional literacy. However, it would seem possible for them to be considerably more involved than they are at the moment. For family planning and home economics workers the functional literacy classes would seem to be ideal target groups composed as they usually are primarily of women. In some areas the Functional Literacy Programme has duplicated the services of the Home Economist employed by the Ministry of Agriculture by adding a Home Science Demonstrator, who is expected to teach the women tasks such as needlework and cookery. When literacy teachers have contacted the Home Economists they have often been told either to make use of their own staff or to advise the women students to join the demonstration groups organised by the Home Economist.

The Programme uses radio broadcasts to broaden its coverage. Topics of general interest, and others considered important to the lives of the rural communities, are selected and prepared by the Programme staff in Nairobi. This information is passed on to the Voice of Kenya and is relayed by radio to the adult students. We are not in a position to say much about this aspect of the Programme because we listened to only one broadcast during our field work. The topic was the value of water and various methods of water conservation. This is indeed an important topic and the rural population should be exposed to it. But it was somewhat discouraging to see how little adults learned on their own from the radio. One obvious problem which reduced the effectiveness of the exercise was the very complicated language used. The writers had failed to take into account the limited Swahili background of rural people. The language used was roughly at the same level of complexity as that used in the V.O.K. news bulletins. Furthermore, the broadcaster read the text very quickly. The background noise from the radio also made it difficult for the adults to follow.

After the broadcast the teacher organised a discussion, but he so monopolised it that it was difficult for the learners to participate. One woman, however, learnt something. She thought that water flows through electricity lines, and thus wondered why anyone could be electrocuted by pouring water on the lines. The teacher did not know a great deal about the subject, but nonetheless succeeded in explaining that electricity is not water even though it is generated from water.

We may now summarise the points raised in this discussion of the administration of the Functional Literacy Programme:

1. The initial selection of locations for functional literacy centres was often rather hasty, and sometimes failed to take into account whether the surrounding area contained a dense enough population to support a viable class. For this reason a number of the original centres had to be closed and relocated elsewhere.

2. Dropout rates are difficult to estimate with any accuracy, because in many centres new students have been recruited to replace leavers. Nevertheless it is clear that in some areas - especially Mbere and to a lesser extent Tetu and Kwaile - losses have been high. Some possible reasons include rapid turnover of teachers; inappropriateness of teaching materials and methods; and the use of Swahili at a level of complexity which the students find difficult to understand.

3. The policy has been to close a centre when the enrollment falls below fifteen. This is probably justified in advanced areas such as Tetu, but in Mbere and other less developed areas there is a strong case to be made for keeping small centres open provided that the participants continue to make good progress. In places where most adults never attended school, even a few successful literacy graduates can make an important contribution as role models.

4. Absenteeism has also been a problem, especially at times of the year when planting and harvesting have to be done. There is a strong case to be made for closing the centres, or at least reducing the hours of attendance, during such busy periods.

5. Local extension workers should be involved much more fully in the operation of the functional literacy centres than they have been in the past. They should participate in the writing of teaching materials suited to local conditions, they should advise as to the management of the demonstration plots attached to the centres, and they should give occasional lectures. It was noticeable that the most successful demonstration plots tended to be at centres where the local agricultural extension worker took an active interest. Because they are composed mainly of women, literacy classes would also seem to be an ideal target group for home economics and family planning workers.

RECOMMENDATIONS FOR TEACHING METHODS AND COURSE CONTENT

1. The teaching method being used at present places too much emphasis on the whole-word approach. Advantage should be taken of the phonetic nature of the Swahili language by introducing students to the sounds of individual vowels and consonants early in the learning sequence, so that after a limited number of lessons they can construct new words on their own and are no longer dependent on learning by rote memorisation.
2. The order in which words are introduced should be planned carefully. Words made up of simple syllables should be introduced before more complex words, and the syllables and sounds should be introduced systematically, and with adequate repetition.
3. Better advantage should be taken of the pupils' previous familiarity with Swahili by introducing simple, commonly used words in the introductory lessons and only later adding difficult, little known words.
4. Words with more than one meaning should first be introduced with their common everyday meaning, and other less widely known meanings introduced later.
5. The reasoning behind common farming practises in Kenya should be carefully investigated, and different practices should only be recommended in the functional literacy readers if it is quite certain that these practises would in fact represent an improvement.
6. Following these recommendations, the booklets for the Functional Literacy Programme should be rewritten and the teaching methods revised. The writing should be done by a team consisting of, at minimum, a literacy expert, a Swahili specialist and people with extensive fieldwork experience in agriculture and domestic science education. The first two booklets should be concerned mainly with teaching reading and writing, and the adult education component should largely be reserved for subsequent booklets. Separate editions of the later booklets would need to be prepared suited to local conditions of **climate and soil and local economic factors.** **Local fieldwork** staff should be fully involved in writing these editions.

RECOMMENDATIONS FOR PROGRAMME ADMINISTRATION

1. The location of functional literacy centres needs to be planned carefully taking into account the population level of the surrounding area so that centres do not have to be closed because of an insufficient number of pupils.
2. Dropout rates are difficult to estimate accurately, but in some areas they have been high. Possible reasons for high dropout rates, such as rapid teacher turnover, inappropriate teaching methods and materials, and the use of Swahili too complex for the pupils to understand, need to be investigated and corrected.
3. In less developed areas it may be advisable to keep centres open even when the number of pupils falls below fifteen because a few successful literacy graduates can make an important contribution as role models.
4. Provision should be made for closing centres or reducing the hours of attendance during periods of peak agricultural activities when absenteeism is likely to be high.
5. Local extension workers should be involved much more fully in the operation of the functional literacy centres, in such activities as writing appropriate teaching materials, supervising the centres' demonstration plots, and occasionally lecturing.

CHAPTER SEVENTEEN

THE FAMILY PLANNING PROGRAMME IN VIHIGA/HAMISI,
KAKAMEGA DISTRICT

IDS/OP 12

It is unnecessary in this report to comment on the seriousness of Kenya's population problem. The rate of population growth is now estimated at 3.5 per cent per annum and is thought to be moving up towards 4 per cent.¹ The important question is whether anything can be done about it, and specifically whether this can be done through increased expenditures on a family planning programme. Accordingly an experimental programme was initiated in the Vihiga/Hamisi Divisions of Kakamega District, the experiment consisting mainly of substantially increased expenditures in that area to finance an intensified family planning effort. Vihiga/Hamisi was an appropriate choice, having the highest population density in 1969 of any rural area in Kenya, 538 per square kilometre. The response secured in this area should therefore be an important guide to potential response elsewhere in the country, and to whether returns would be obtained from a similarly high level of expenditure made at the national level.

The special features of this programme were: (1) use of a male field educator; (2) higher numbers of field educators per Division than the other areas which have a ratio of only one per District; (3) a greater number of clinics than other similar administrative units; (4) more midwives than any other comparable unit in the district; and (5) the provision of three vehicles for transport.

The main element in this intensive programme was the provision of additional clinics. Family planning clinics were practically new to the District in February 1971, when 16 clinics were opened, 7 in Vihiga/Hamisi and 9 in other Divisions, with a further clinic in Vihiga a year or so later. This input was substantially increased in what may be called a second phase in February and July 1974, bringing the number of clinics in Vihiga/Hamisi up to 14, compared to 10 in the rest of the District.

We shall attempt here to compare the response to the expansion

1. I.L.O., Employment, Incomes and Equality, Geneva, 1972, p. 121.

of clinics and other aspects of the programme, in the 'intensive effort' area of Vihiga/Hamisi with that in the rest of the District. Kakamega District is fairly homogeneous tribally and culturally, the people in both areas being members of the Baluyia tribal group. Unfortunately from the point of view of a controlled experiment, the economic factor is not constant in the two areas: as Table 1 shows, population density in 1969 was 538 per square kilometre in Vihiga/Hamisi, and only 162 in the rest of the District. Thus the economic pressure to seek family planning advice in Vihiga would be substantially greater.

The second major difficulty is that it is too early to attempt to measure the response to the second phase of the programme. A new clinic attracts relatively few clients in its first year of operation, so that the clinics set up in 1974 would only this year be establishing a clientele.

However, we can see from Table 1 that while the number of clinics was about the same in the two areas in 1971, the average number of people served per clinic was substantially lower in Vihiga/Hamisi, 39,000 compared to 57,000. More significant, however, is the proximity to a clinic. The average number of square kilometres served per clinic was only 69 in Vihiga/Hamisi, compared with 334 in the rest of the District, a very substantial difference. While generally the furthest a client would need to travel to a clinic would be 4 or 5 kilometres in Vihiga, elsewhere it might be as much as 10 or 13. Thus even in 1971 and up to 1974, access to family planning facilities would be much greater in the test area.

The establishment of additional clinics in 1974 reduced the average number of people served per clinic to 24,000 in Vihiga compared with an essentially unchanged figure of 56,000 in the rest of the District; and the average number of square kilometres served is reduced to 39 in Vihiga, compared with 301. The impact of this further expansion cannot be gauged here, and a further statistical exercise in, say, 1977 is called for. The number of clinics is not necessarily an accurate indicator of access to services since clinics may be open on a daily basis, weekly basis or monthly basis, and for a different number of hours on days open. Table 2 shows the times at which clinics were open as of December 1974 in SRDP and non-SRDP areas. The table shows that the difference in access is actually much greater than indicated simply by the number of clinics. For example while none of the SRDP clinics were open on only a monthly basis, none of the non - SRDP clinics were open on a daily basis. For

Table 1. The expansion of the family planning service in Kakamega District, 1971-1974.

	Vihiga/ Hamisi	Rest of Kakamega	Kakamega District
Population, 1969	296,254	486,332	782,586
No. of Sq. Km.	551	3,007	3,558
Density per sq. km. in 1969	538	162	220
Estimated density per sq. km. in 1974 ^a	623	187	255
No. of clinics:			
February, 1971 ^b	8	9	17
February, 1974	11	10	21
July, 1974	14	10	24
Average no. of people served per clinic:			
February, 1971	39,287	57,328	-
February, 1974	31,222	56,379	-
July, 1974	24,531	56,379	-
Average no. of sq. km. served per clinic:			
February, 1971	69	334	-
February, 1974	50	301	-
July, 1974	39	301	-

a. Population is assumed to increase at 3 per cent per annum in this table.

b. The number of clinics assumed for 1971 includes one actually set up a year later.

illustrative purposes, if we measure access in units of one day a month, and estimate clinics open twice monthly as 2 units, weekly clinics as 4 units, and daily clinics as 8 units, then access in the SRDP area would equal 60 units and in the non-SRDP area 20 units, a ratio of 3 to 1. This is independent of the distance-from-clinic factor.

Vihiga/Hamisi was also favoured in the allocation of complementary and other resources. Seven enrolled nurses were working in the area in early 1975, and eight field educators. This compares with only two midwives working in non-SRDP health centres and one enrolled nurse operating a mobile service on a part-time basis (though assisted by an SRDP financed nurse). While the SRDP area had three vehicles, each with a driver, for the sole use of field motivators, the nurse in the non-SRDP area had partial use of one vehicle only.

The SRDP vehicles were to provide transport for a campaign which would operate through barazas, schools, film shows and the like. This campaign unfortunately appears to have been held back by delays in recruiting staff, so that the motivators are said not to have started work until early 1973. Once they were recruited, staffing was maintained at this level during 1973 and 1974. The main activities were public meetings, film shows and home visits.

The public meetings were organised by chiefs or assistant chiefs in the form of barazas where the Field Educator or any of her assistants was given time to explain the aims and objectives of family planning and to answer questions. These were held at the locational and sub-locational levels. Other public venues utilised for this purpose were adult education centres, women's groups or clubs and church meetings. The approach was to use meetings with these groups as a follow-up to the barazas, attempting to enlist the support of group leaders and use them as agents to spread information to people with whom they had contact.

About 1300 meetings were held in 1974 with an average audience of 85 and 110 film shows with an average audience of 180. A total of about 110,000 people attended the meetings (which may not have been held exclusively for family planning publicity purposes, however) and 20,000 attended the film shows. About 650 home visits were made in 1974 averaging 54 per month. This amounts to a programme of something like three public meetings and one or two home visits ~~per~~ week, and a monthly film show per educator. This

Table 2. Schedule of open days of SRDP and non-SRDP clinics.

	<u>Daily Basis</u>	<u>Once A Week</u>
SRDP	1. Mbele Health Centre	1. Vihiga Health Ctr.
	2. Ebusiratsi Health Centre	2. Hamisi Health Ctr.
	3. Kaimosi Mission Hospital	3. Lianaginga Harambee Health Centre
	4. Kima Mission Hospital	4. Tigoi Harambee Health Ctr.
		5. Fudumi Health Ctr.
		6. Emuhaya Health Ctr.
Non-		1. Kakamega District Hospital
SRDP	None	2. Matungu
		3. Malava

Note: All clinics are open from 8.00 a.m. to 4.30 p.m.

<u>Twice a Month</u>	<u>Once a Month</u>
1. Kilingili Health Ctr.	
2. Sabatia Health Ctr.	None
3. Banya Harambee Health Ctr.	

1. Butere	1. Iguhu
2. Mvihila	2. Mautuma
	3. Luma Kanda
	4. Navakholo

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suggests that the organisation of public meetings was the most time-consuming activity.

There would seem to be considerable scope for substitution between methods to increase the effectiveness of the programme, though in part the extension methods could be complementary. The present number of home visits would appear not to account for more than half a morning's work per educator weekly. At the rate of 7 home visits per day, which is not excessive, the number of home visits for the area might have been increased from 650 to 16,000.

Secondly, according to the annual report of the Senior Field Educator, film shows were "the greatest attraction and most powerful medium of effective communication". Certainly they appear to have a considerable advantage over public meetings in that they can in any case be accompanied by a public address or discussion, while attracting approximately double the audience. It is therefore unfortunate from the point of view of the SRDP experiment that only one film van was available, and this for the Province as a whole rather than the District or SRDP area.²

However contact made at public meetings and film shows is something very different from securing acceptors. The main choice is therefore between these two approaches (especially film shows) on the one side, and home visits on the other: the success rate may be higher from 16,000 home visits than from 120,000 members of public meeting audiences, particularly in view of the drop-out rate discussed elsewhere in this report. To gauge the relative effectiveness of the two alternatives, it would be necessary to interview new acceptors and re-visitors regarding the form of extension contact made. It was not possible to do this in the time available, but it is a procedure that could now be adopted as a regular part of the family planning interview. That it has not been adopted already is perhaps a weakness in the experimental approach followed.

One of our principal conclusions, to be elaborated upon in a later section, is that considerable attention should be given to experimenting with alternative techniques for diffusing family planning and related information on health and nutrition through home visits. And these experiments should be designed in such a way that it will be possible to compare the effectiveness of home visit techniques with the results

2. The single van provided by the Family Planning Association of Kenya stays approximately three months in each District, rotating between the three Districts of Kakamega, Busia and Bungoma.

obtained through public meetings.

EFFECTS OF THE PROGRAMME ON THE NUMBER OF FIRST VISITORS

Table 3. Number of first visitors in 1971-74 in Vihiga/Hamisi and the rest of Kakamega District.

	Vihiga/ Hamisi	Rest of District	Kakamega District total
1971	71	214	285
1972	483	824	1307
1973	959	862	1821
(estimate for 1974 full year*)	1142	1079	2221
1974 (to October)	952	899	1851

* Estimated as direct proportion of total for 10 months.

Table 3 shows the number of first visitors from 1971 to 1974 for Vihiga/Hamisi, for the rest of Kakamega District, and for the whole District. All show an encouraging upward trend. Figures for acceptors will not differ too much from those for first visitors.

Table 4. Percentage increases in number of first visitors for Vihiga/Hamisi, the rest of Kakamega District and Kenya.

Period	Vihiga/ Hamisi	Rest of Kakamega District	Kenya
1972 over 1971	580	285	10.0
1973 over 1972	99	5	11.0
1974 over 1973	19	25	1.5
1974 over 1972	136	31	12.0

Table 4 analyses the trends in Table 3 by calculating the percentage increases from year to year. Although most of the clinics in the District date from early 1971, we should expect some time lag before people become aware of and respond to the facilities offered. Accordingly, it is reasonable to take changes between 1972 and 1971 as measuring a response to facilities established earlier in 1971.

This first year shows an astronomic rate of increase of 580 per cent in Vihiga/Hamisi and 285 per cent in the rest of the District. While this comparison is favourable to Vihiga, these rates mainly reflect the very low initial level of visitors in 1971, and too much emphasis cannot be placed on this. On the other hand this increase suggests there could be a significant advantage in cost-benefit terms in putting clinics into receptive and previously neglected areas such as Vihiga was in 1971; that is, a significant number of births could be avoided by spreading clinics through receptive parts of the rural areas.

For assessing the possible long-run success of the programme and its impact on the population problem, however, it is more important to compare the 1972 figures, when the initial heavy response has been absorbed, with those for 1974. This will better indicate whether the clinics are likely to be able to progressively expand the number of clients and thus make some kind of dent in the population growth rate. The figures indicate significant continued expansion, by 136 per cent in Vihiga/Hamisi and 31 per cent in the rest of the District. As indicated earlier, we cannot assert categorically that this difference is due to the intensive approach used in the former area: the response could simply be due to the greater population pressure which exists. Nevertheless it is encouraging. However, the apparent slow-down during the last year, 1973-74, in Vihiga does indicate that there is still some uncertainty as to whether the momentum of recruitment will be maintained.

CHARACTERISTICS OF FAMILY PLANNING ACCEPTORS

An important question is what kind of people are responding to the facilities being made available. For example, are they merely those who already have a lot of children, or who are more educated? Accordingly, a check was made on the characteristics of first visitors in Kakamega District.

Size of Present Family

As expected, a large number of acceptors were women who already had large families in 1974. One quarter had six children or more, but 54 per cent had three children or fewer, and 42 per cent had two children or fewer. The position in Vihiga was significantly different in this respect

than in the rest of the District, though this may simply reflect the larger percentage of younger women in the area. Also significant is the increasing proportion in the 'small family' category: the proportion (with 3 children or less) increased from 44 per cent in 1971, to 46 per cent in 1972 and to 54 per cent in 1974 in the District as a whole.

Age of First Visitors

The proportion of first visitors in the younger age categories is significant in that if there is to be a widespread change in the desired family size an increasing proportion of younger women who might still be having children should be attracted to the programme.

Table 5 shows that a substantial proportion of first visitors were in the younger age group of 10 to 24 years. More significantly, the proportion in this group has increased significantly in just a few years from 34 per cent in 1971 to 48 per cent in 1974.

Table 5. Percentage of first visitors in the 10 to 24 and the 10 to 29 age groups.

	1971	1972	1973	1974
	Vihiga Rest Total	Vihiga Rest Total	Vihiga Rest Total	Vihiga Rest Total
10 to 24 years	32 34 34	44 36 39	47 40 44	52 44 48
10 to 29 years	60 48 56	66 58 61	64 60 62	72 65 69

The increase in the proportion of younger first visitors has been more rapid in Vihiga/Hamisi than in the rest of the District, though it may be somewhat optimistic to attribute this to the programme.

Education of First Visitors

According to one school of thought, a major change in desired family size can only come about through economic development affecting the level of income, education and other social factors, and in the absence of this change

Table 6. Education of first visitors to family planning clinics in Kakamega District.

Extent of Education	1972			1974		
	Vihiga %	Rest %	Total %	Vihiga %	Rest %	Total %
No education	31	42	38	23	39	31
Standard 3 or less	40	48	45	33	46	39
Standard 7 or less	93	90	91	91	90	91
Form 1 or more	7	10	9	9	10	9
Standard 1-3	9	6	7	10	7	8
Standard 4-7	53	42	46	58	44	51

family planning campaigns can have only limited success, recruiting a few acceptors from among the more educated and well-to-do. There is some evidence that family planning services affect educated and less educated population groups differently. Between 1972 and 1974, the percentage of first visitors with no education fell from 38 to 31 per cent for the District as a whole while the percentage with standard 4 to 7 schooling increased from 46 to 51 per cent. This was mainly due to changes in Vihiga/Hamisi, where the percentage without schooling fell from 31 to 23 per cent and those with standard 4 to 7 education rose from 53 to 58 per cent. This effect might therefore be associated with the special programme in Vihiga, though one should be rather cautious in coming to this conclusion.

CONTINUATION RATES IN KAKAMEGA DISTRICT

Success in recruiting acceptors does not necessarily imply similar success in avoiding births, since these clients may not continue with birth control for long. If we are concerned with population limitation or limitation of the rate of increase of population, we must look at the number of avoided births. In order to calculate the costs and benefits of the Vihiga programme, therefore, it is important to take account of continuation rates.

Accordingly, all 1972 acceptors in Kakamega adopting the pill as a contraceptive method were traced through their subsequent visits to their initial clinic until the end of November 1974. Since very few of these 1,039 clients were still attending by that date, this gave almost the equivalent number of complete 'case histories', each starting some time in 1972. Continuation rates for clients adopting the I.U.D. were not calculated, as this would have required a longer time series of data than was available.

Table 7 shows that only 28 per cent of pill adapters remained **in** the programme after 12 months, and only 3.4 per cent after 24 months. Out of the 1,039 clients, only 25 visited a clinic in the last three months of the period surveyed and might therefore reasonably be thought still to be attending. Thus extending the period surveyed beyond November 1974 would not affect these figures.

It is worth comparing these rates with similar figures for some other developing countries. After twelve months in Kakamega District the continuation rate is 28 per cent for pill users, compared to a mean of 51

Table 7. Continuation rates of family planning adopters in Kakamega District.³

Continuation rate after	Kakamega District	Vihiga/Hamisi	Rest of District	Rest of District (Rural Only)	Kakamega Township
	%	%	%	%	%
1 month	66.9	63.4	69.7	66.8	73.0
12 months	28.0	24.5	30.8	31.9	29.6
24 months	3.4	2.8	3.8	3.6	4.8
No. of clients	1039	465	574	304	270

Table 8. Comparison of family planning continuation rates in Kakamega District with rates in other developing countries.

	I.U.D. Acceptors' Continuation Rates		Pill Acceptors' Continuation Rates	
	12 months	24 months	12 months	24 months
Korea	57	38	26	-
Singapore	69	-	56	-
Taiwan	67	54	-	-
Mauritius	68	-	53	-
Hongkong	66	49	58	-
Thailand	76	56	71	-
Bangla Desh	74	66	-	-
Pakistan (West)	56	-	62	47
W. Malaysia	68	52	35	-
Ceylon	81	69	56	-
Philippines	70	55	60	38
India	76	54	32	-
Mean	69	55	51	43
Kakamega District of Kenya	-	-	28	3.5

Source: T.K. Ruprecht and Wahren, Population Programmes and Economic and Social Development, O.E.C.D., 1970.

3. For statistical purposes here, the client is said to have discontinued from the time of her last visit to a clinic. In fact three months' supply of pills may be collected on this visit so that the client may practise family planning up to three months later. At the first visit only one month's supply is given, necessitating a second visit after one month, so that a drop-out rate after one month can be measured. The statistics may underestimate continuation to the extent that clients switch clinics or leave the area. This is, however, generally reported on clients' attendance slips and perusal of these did not indicate that this factor would be significant.

per cent for the countries listed. The situation after 24 months is even more striking: 3.5 per cent continuing in Kakamega compared with 47 per cent for (West) Pakistan and 38 per cent for the Philippines. As we shall indicate presently, the probability is that a Kenya national figure would be lower than that for Kakamega, since Kakamega is not among the least responsive Districts.

More striking than these figures, however, is the drop-out rate after one month which is 33 per cent. In other words one-third of acceptors did not return to the clinic at all after the first visit. This is shown in Figure 1, which gives the continuation rate - and thus the drop-out rate - on a cumulative basis.

Figure 1 indicates the inadequacy of reliance on numbers of first visitors and re-visitors as a measure of progress in acceptance of family limitation and avoidance of births. Continuation rates are not calculated at present by the statistical unit for family planning within the Ministry of Health, although it would not be too difficult to do so on a sample basis: each client has an individual number, retained for all visits, which can be fed into the computer. Such calculations appear essential in order to monitor changing receptivity to family limitation over time and the changing effectiveness of the programme, as well as the comparative position in different **areas**.

The high drop-out rate would appear to indicate two things: (1) that there is a lack of commitment among first visitors to adopting birth control seriously. First visitors may be willing to collect an initial supply of pills without necessarily any definite intent to use them; and (2) that there is need for special tactics to prevent drop-outs, particularly among those who have paid this initial visit. The most effective deployment of field educators might be in following these particular clients rather than in attempting to make **new** converts only. This same evidence also casts doubts on the effectiveness of the field educator system, though it is still too early for a final judgement.

These data also raise questions about the practice of issuing pills as opposed to the I.U.D. The pill has always been the most widely distributed contraceptive method, accounting for 80 per cent of the total in the last quarter of 1974, compared to 9 per cent for the I.U.D. Thus pills are used nine times as often as the I.U.D. It is not obvious why this should be so, as there is no evidence on clients' forms of any widespread resistance to adoption of the I.U.D. In fact, only very occasional comments regarding a client's preferences are reported. The practice seems to be to issue pills more or less automatically in the absence of specific objections based on high blood pressure or such

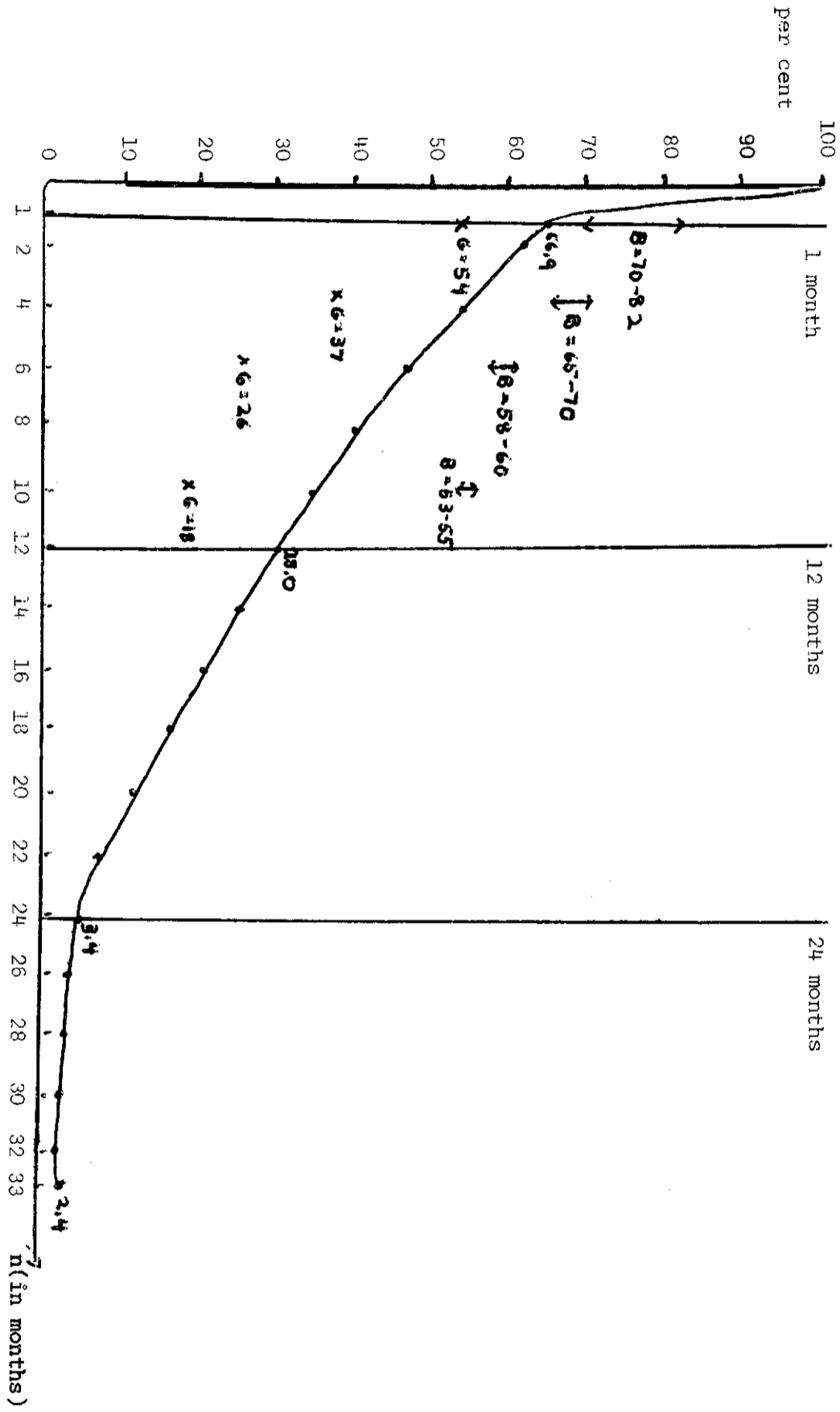


Figure 1. Percentage of clients attending clinics n months after first visit, Kakamega District.

B = estimates by Bondestam for Kenya, 1970-71; G = estimates by Gachuhi for Nyeri District, 1970.

factors. Yet pills cost considerably more than the I.U.D.; women in rural areas are much more likely to take the pills erratically reducing the actual effectiveness of the method in preventing pregnancies, perhaps considerably; and it appears that nurses are just as competent as doctors in making the insertions, so that there is no staffing problem in recommending the I.U.D.⁴ In contrast the advantages of the I.U.D., given the alarming drop-out rate mentioned, are that a positive effort on the part of the client to discontinue participation is required - the client cannot discontinue without returning to the clinic; secondly, the clinic staff have an opportunity to persuade the client not to discontinue; and thirdly, despite the lack of a commitment among first visitors, acceptance of the I.U.D. guarantees a minimum participation of two years if there is no positive decision for removal. The effect, measured in numbers of avoided births, could be substantial.

We may now turn to consider whether there is any evidence of better performance in Vihiga/Hamisi in respect to the continuation rate. As already pointed out, the programme has not been fully operative for long enough to permit a proper evaluation of its impact; this is even more true with respect to the continuation rate, as an initial impact on the number of first visitors is presumably easier to achieve than a large number of fully-committed acceptors. As Table 7 shows, the continuation rate in Vihiga/Hamisi after 12 months was 24.5 per cent, compared to 31 per cent for the rest of the District. The drop-out rate after one month was 36.6 per cent, compared with 30.3 per cent for the rest of the District. One would expect a lower drop-out rate in Kakamega **Township** since the clientele might be more sophisticated and the clinics more convenient. The drop-out rate after one month is indeed significantly less, 27 per cent. The explanation for the high drop-out rate in Vihiga/Hamisi may be that the larger the increase in the number of acceptors, the higher the proportion of the less committed.

At any rate we may conclude that the programme has so far had no impact as far as the continuation rate is concerned; but this needs to be checked by a re-calculation of continuation rates, say early in 1976, taking a cohort of 1975 acceptors, and repeating this exercise annually. The location

4. J. Mugo Gachuhi states that 'oral contraceptives are the most problematical methods of fertility control that have been introduced to African women', in *Who Needs Family Planning?*, Staff Paper No. 115, Institute for Development Studies, University of Nairobi, 1970.

and follow-up of first acceptors and other clients has been made difficult by the fact that complete information is not always recorded at the first visit. A new coupon is proposed for recording fuller information.

ATTITUDES TO FAMILY PLANNING

This evaluation cannot be expected to incorporate any thorough-going investigation of the attitudes to family planning in the area affecting receptiveness to and the success of the programme. There have already been studies on this subject, though they are not conclusive. Some impressions may however be given.

The general predisposition of women is towards a large number of children, with six or more being a commonly desired family size. Many women only seek family planning advice when it would be inconvenient to bear a child, as for instance during a period of separation from their husbands.

Male attitudes are well known to be a major obstacle to successful family planning in Kenya, and this is the opinion in Kakamega. There is strong personal resistance to the use of the condom (except by schoolboys and some married men, who provide the main market for these). Men feel that family planning is the responsibility of the women, and that their cooperation is not required; at the same time it is estimated that because of male disapproval some 20 per cent of the women who come to clinics do so without letting their husbands know. A common feeling among men is that there is enough land to support additional children.

In this connection, the experience of the male educator is interesting, although the provision of one male field educator can only be considered as an experiment and cannot be expected to make a significant impact by itself in such a large area. To our knowledge, this experiment is not at present being watched closely or systematically enough to learn as much as possible from it. However, the local staff consider that the work of the male field educator has had a positive effect.

There is a general feeling that family planning knowledge may corrupt women and girls. Even the Family Planning Association of Kenya **takes** the unrealistic and unhelpful attitude that family planning advice and assistance should be offered only to ~~these~~ unmarried women who already have

one child. Further, the attitude of local politicians has frequently been unhelpful, and family planning, like many other sound items of policy, has sometimes been exploited as a useful political campaign target.

There is a strong local feeling, which is perfectly understandable, that family planning facilities should not be considered a priority in an area in which basic medical facilities are still lacking. This may itself engender a negative attitude towards family planning. More important, perhaps, is that first acceptance can much more effectively be achieved where advice is offered through general medical facilities. There is an opportunity for medical staff to raise the question of family planning and those women who would feel embarrassed to visit family planning clinics can seek advice. Attempts to prevent drop-outs can be facilitated by maintaining periodic contact with clients on other matters. Two conclusions might be drawn from this: opportunities to offer family planning advice wherever curative facilities exist should not be missed; and the possibility of providing other kinds of medical advice at family planning clinics (perhaps those newly established and open on a periodic basis only) as a means of facilitating acceptance might be investigated.

THE CONDUCT OF THE VIHIGA/HAMISI EXPERIMENT

The volume of resources allocated to the programme, and the preference given to this particular area in this allocation as compared to other areas, means that the programme in Vihiga/Hamisi must be seen as an experimental one aimed at gauging the possible response to a more intensified approach. Despite this fact, no statistical monitoring of the programme has been instituted or is currently planned, even though there is of a well-staffed statistical division with which all the necessary data have been lodged. In this respect one may also mention the lack of interest to date in calculating a continuation rate and apparent lack of awareness of its importance. In addition, there seems to have been some bias in the allocation of finance towards the establishment of additional 'static points' in the form of rural clinics rather than the more experimental field campaign, and finally this campaign could have been better planned and monitored as an experiment.

As it happens this apparent absence of monitoring was part of the reason for the recent extraordinary decision of the American donors to terminate financial support for the programme from the end of June 1975, and

to end the employment of the eight field educators from that time. While it is true that the field education campaign was slow in being established, this is not exceptional for development projects, and just when the campaign could be said to be in full swing, it has had to be discontinued. The decision to end the services of the **eight field educators** is particularly unfortunate at a time when the Kenya Government has received the sum of \$30 million for the specific purpose of training 800 field educators over the next five years. In any case the field educators constitute only a part of the programme, the other aspect being the opening of additional clinics, which we have seen were functioning from the beginning of 1971, and with apparently some encouraging effect. Especially, however, the decision is unfortunate because this was an experimental scheme, and the statistical testing of the results would necessarily require pursuit of the programme for a minimum number of years. Discontinuation of this project will only lead to the need to renew the attempt elsewhere, given the urgency of the population problem. As we have indicated, it is important that the project be continued for at least three more years so that the possible impact of increased effort in family planning in Kenya can be statistically assessed.

THE APPLICABILITY AND RELEVANCE OF THE KAKAMEGA EXPERIENCE FOR OTHER DISTRICTS OF KENYA

Is the Vihiga experience replicable in other areas? Clearly not in all other areas. We can certainly exclude the pastoral areas: the social and cultural system is very different in these areas, the population density is low and economic pressures for limiting population are different and the present number of acceptors is negligible in relation to numbers of population. If we select Districts on the basis of a high level of acceptors in 1974 (2193 in Kakamega District), we have Uasin Gishu (1293), Kirinyaga (1287), Embu (1364), Meru (4328), Nakuru (1594), Kiambu (3613), Nyeri (3553), Muranga (1308) and Machakos (1378), excluding major towns. However it might be expected that similar results to those in Kakamega might be obtainable only where the trend in the number of acceptors was significantly higher in 1974 than 1972, as it was in Kakamega by 73 per cent. Of the group listed, only Uasin Gishu (129 per cent) showed a higher rate of increase, while in Embu the increase was 41 per cent and in Meru 19 per cent. In Nakuru (3.1), Kiambu (4.4), Nyeri (4.2), Muranga (2.2) and Machakos (-19), the increases were very low or negative. Of the Districts listed Kakamega had the highest population density per square kilometre in 1969 (220), compared to Kiambu (184), Muranga (176) and Kirinyaga (146).

We can therefore conclude that Kakamega District is one of the most 'favourable' districts for intensification of the family planning effort in terms of population pressure, of a high current level of acceptors and of a trend of increasing numbers of acceptors. On the basis of very limited evidence, we should not expect expenditures in other districts to yield particularly higher returns than those in Vihiga/Hamisi.

CONCLUSIONS

The upward trend in the number of first visitors/acceptors in Kakamega District is encouraging, as is the differential rate of increase in this number in the 'test area' as compared to the rest of the District. The characteristics of new acceptors in Vihiga/Hamisi are not discouraging. They are not merely women with very large families already: the proportion with smaller families seems to be increasing. They are also not only people from the older age groups: the proportion from the younger age groups is increasing, especially in Vihiga/Hamisi. Nor are they only women with more education.

However the continuation rates of family planning clients are very low: 33 per cent never return to the clinic after the initial visit. The number of avoided births achieved and the actual impact on the numbers of babies being born and on the size of the population is so far probably quite limited as a result. The test area has not performed any better in this respect than the rest of the District. If anything it has done worse. Perhaps an increase in the number of acceptors means an increase in the proportion of less committed acceptors. This may reflect an inadequate effort in experimentation with techniques of persuasion and a concentration on merely setting up clinics.

The extent to which the Kakamega experience is replicable for other districts is highly uncertain; the probability, however, is that substantially better results would not be forthcoming elsewhere.

From the point of view of population policy in Kenya, the overall conclusion should be not the abandonment of the programme despite the difficulty of demonstrating a substantial impact but, first, a reformulation of the programme to attack the problem of drop-outs and more experimentation with alternative ways of making family planning activities more effective; and second, in the face of the increasingly serious population situation, the

acceptance of the hopeful indicators referred to, and of the fact that controlling population growth is a long-range task and the problem will become worse the longer the delay in coming to grips with it.

As noted earlier, we believe that there are cogent reasons for experimenting with alternative techniques for diffusing family planning and related information on health and nutrition through home visits. The strong local feeling that family planning facilities should not be given exclusive priority in a situation in which other services for improving family health are being neglected is not only a very understandable reaction but a viewpoint that should be recognised explicitly in devising alternative methods. There is considerable evidence that confidence on the part of parents that the children that they already have will survive increases their receptivity to family planning. More generally, there is reason to believe that linking health, nutritional and family planning services is likely to increase the attractiveness and effectiveness of each. In particular, a programme using village workers trained to carry out case finding to screen for protein-calorie malnutrition among infants and small children could be combined effectively with the diffusion of information about simple health practices, nutrition, and the importance of child spacing for the health of mother and child, along with the diffusion of information about the possibilities for controlling births.

RECOMMENDATIONS

1. The intensive programme should be continued for at least a few more years to permit fuller evaluation of the effects.
2. More mobile film units should be provided, to permit substitution of film shows for ordinary public meetings.
3. The relative effectiveness of home visits in securing re-visitors and of film shows and public meetings in obtaining first and re-visitors should be investigated with a survey of present clients and in future by regular client records.
4. In the meanwhile, home visits directed at potential drop-outs should be increased.
5. Better information should be recorded regarding the location of clients' homes and the possibilities of contacting them.
6. Special efforts should be made to check the rate of first visitors who drop out after one month.
7. New efforts should be made to substitute the I.U.D. for the pill as a contraceptive. Success in this direction should be monitored.
8. The experience and success of the male educator should be more systematically monitored, and much more attention given to male education in family planning.
9. Possibilities for the association of family planning services with curative medical services should be maximised, including the introduction of limited medical advice in presently full-time clinics.
10. Data regarding the continuation rate in different parts of Kenya should be computed systematically by the Family Planning Statistical Unit in Nairobi. A re-calculation of the continuation rate in Kakamega District should be made in early 1976, taking a cohort of 1975 acceptors.
11. Financing for the experimental programme as a whole should be re-assessed, the field educators involved re-engaged, and the programme carried on in experimental fashion for at least three more years as a matter of priority.

CHAPTER EIGHTEEN
CO-OPERATIVE DEVELOPMENT IN KENYA -
SOME GENERAL CONSIDERATIONS

INTRODUCTION

This discussion of co-operative development is divided into three parts. In the first, a general account of the co-operative movement in Kenya is given, and certain major issues and problems reviewed. The focus of attention is on the rural marketing co-operatives (primary societies) and the district-based co-operative unions (secondary societies) into which many of the co-operatives have been amalgamated.¹ The problems of co-operative development in Kenya and elsewhere in East Africa have been examined in a number of studies, and some of these provide a basis for discussion here. The work of Hyden in particular has been used for reference. The attempt has been to draw out of previous studies some central issues relating to co-operative development problems and possible ways of dealing with them. This exercise seems warranted on several grounds. The recent Sessional Paper on co-operative development policy (10) must be viewed against the background of earlier critical **appraisals**; planning for the Integrated Agricultural Programme, to be instituted in the near future, should take into account past experiences, as co-ops are to play a major role in this programme; and finally, co-operative development activity within the SRDP should be set within the larger national context.

In the second part, some experiences with co-operative development within the SRDP areas are considered. The treatment given is perforce a summary one. Most attention is paid to the case of Kapenguria, and shorter comments are made on the situations in Vihiga/Hamisi, Migori/Kihancha, and South Kwale.

The third part consists of a summary of findings and recommendations.

It hardly needs emphasising that the field of co-operative development presents researchers, planners and administrators alike with an exceedingly complex and difficult array of issues and problems. Any summary account such as **this one risks** being overly general and simplistic. Although it has not been possible here to consider co-operative development in as great a depth as would be desirable, still a number of critical issues have been pointed out, and hopefully further research will be carried out in this very important area in the future.

1. The nation-wide co-operative organisations such as the Kenya Planters' Co-operative Union (KPCU), Kenya Farmers' Association (KFA) or the Horticultural Co-operative Union (HCU), the farm purchase societies, and the urban-based savings and housing societies are not dealt with here.

PART I: CO-OPERATIVE DEVELOPMENT IN KENYA -- SOME GENERAL CONSIDERATIONS

The course of co-operative development in Kenya has not been an easy one: it has in fact been fraught with major difficulties. As Hyden has shown in his study of the co-operative movement, development has been impeded partly by difficulties which were a product of the colonial era, and partly by difficulties inherent in the post-independence era, namely the social, political, and economic conditions in rural Kenya, and Government policy towards the movement. The course of the co-operative movement may be briefly summarised as follows²:

1. The circumstances in which marketing co-ops were introduced among the African population in the colonial period militated against the smooth and straightforward development of the movement from the **outset**. As something sponsored by a colonial administration with an obvious concern for tempering political grievances while preserving "establishment" interests, co-operative schemes were not unnaturally regarded with some scepticism by the target population. The emerging African elite took an unfavourable view of co-ops as an expression of continued economic dominance by foreign parties who were themselves participating in a strong capitalist system.

2. As independence approached, co-ops began to assume a new significance as arenas for political activity. In a broad sense, co-ops developed a political aspect insofar as they functioned as mechanisms to redress inequities of resource distribution between the African and non-African populations, particularly in the area of land distribution. More specifically, co-ops became political as local and national leaders increasingly involved themselves in co-op activities, mostly with a view towards building their constituencies rather than out of genuine primary interest in the organisations as such.

3. Although emphasis after independence was placed initially on the social and ideological side of co-operative development - co-ops were represented as especially important and appropriate agencies for economic development in the rural areas - the tendency over the last decade or so has been for the Government to become increasingly pre-occupied with practical issues. A more reserved attitude towards the movement has come to prevail: the role co-operatives have to play in development is **still** regarded as

2. See Hyden (4, pp.17-32) or Hyden and Karanja (5, pp.167-188) for a more complete account.

important, but the chief concern is for better, more 'efficient' performance of existing societies and unions rather than for further expansion of the movement. This attitude is reflected in Sessional Paper No. 8 of 1970 (8), Sessional Paper No. 14 of 1975(10) and in both second and third Development Plans. (7, p.277; 9, pp.209-10)

The priority given to improving current operations rather than expansion has been justified by the Government on the basis of negative experiences with the movement. It is recognised that many serious problems have been encountered. A number of these were frankly spelled out in the 1970-1974 Development Plan:-

Within the co-operative movement,there has been considerable variability between the performances of individual organizations. However, while some co-operatives have been efficiently managed, too often the reverse has been the case. There have been numerous cases of fraud and dishonesty or favouritism to committee members. Due to poor management, many of the marketing societies have been paying out to their members too low a proportion of the proceeds realised from products sold. Just as important, inefficient societies have not been able to perform certain valuable services, such as the supply of credit, for their members. Probably the most important factors contributing to the inefficient management of societies have been the lack of understanding of business principles on the part of co-operative committee members and staff and the inability or unwillingness of societies to hire experienced staff at competitive salaries. The standard of book-keeping has been especially poor, yet a well kept set of records and accounts should be one of the most valuable aids to efficient management. Partly because inadequate records have been kept by many of the societies it has been difficult for the Department of Co-operative Development to audit the societies' accounts. A shortage of audit staff within the Department has aggravated this situation. For these reasons, a large number of societies had their audits substantially in arrears The lack of good records and accounts also made it difficult for the staff of the [Department] to assist many societies to improve efficiency, for co-operative staff must base much of their advice on their interpretation of the societies' records and accounts. Other factors have also made it difficult for the Department of Co-operative Development to provide adequate field services to the co-operative societies. Especially important have been shortages of money for meeting the travelling expenses of staff and difficulties experienced by the Department in recruiting staff of a suitable calibre. (7, pp.276-7)

The problems which confront small-holder co-ops, such as those outlined in the above passage, have mostly been interpreted by Government policy-makers as administrative-technical in nature, to be met with administrative-technical measures. Thus, such tactics as stricter Government supervision of the movement, education programmes for co-op staff and management committee members, staffing increases within the Co-operative Development

Agency (now a separate ministry), and attempts to improve recording and accounting practices are all indicative of a strategy to discipline the movement along the lines of good business and sound management principles. The aim is to increase technical proficiency through technical means.

Rather less attention has been directed towards factors of a socio-politico-economic nature which are active in the environment in which co-ops are expected to operate, and which often underlie managerial and technical problems. The importance of taking such factors into account when examining problems of co-operative development is a familiar theme, having been stressed for example by Karanja (6), Migot-Adholla (11, 12) and Widstrand (14). In particular, the paramount role of these societal factors in influencing the course of the co-op movement in Kenya is the main theme of Hyden's study (4), and he rightly argues that they demand fuller consideration since the persistence of many of the critical difficulties experienced by the movement traces back to them. In the following sections, attention will be given first to the question of local environment and the features which act as constraints on co-operative development. Next, the negative impact of certain Government policies themselves will be considered. Finally, certain problems in co-operative management which derive both from the local situation and Government policy will be reviewed more specifically.

THE LOCAL SETTING

Although circumstances vary somewhat from place to place, it can be broadly stated that rural Kenyan society is characterised by the existence of local solidarity groups based on ethnic, residential or other ascriptive criteria. Competition for available resources tends to take place in terms of these groupings. As several observers have noted, for example, local self-help activities are widely and strongly distinguished by just such a pattern. In what has been termed the "pre-emptive strategy of development", each group attempts to manipulate the situation to its own advantage: "In view of the scarce resources available these local groups or cliques act in such a way as to make it impossible for other contending groups to obtain the same benefits". (4, p.208; also see 1, p.222)

This pattern can sustain a system of marked social differentiation in rural communities, for the leaders or would-be leaders of these local interest groups gain access to the prerogatives of leadership -- wealth, prestige, power -- on the basis of their ability to represent group interests effectively. Indeed, primary group segmentation and social differentiation can be seen as mutually reinforcing elements: each encourages the other. (See 11, p.33.)

Such a state of affairs does not make for a very congenial environment for co-operative development. The rational and efficient operation of co-operative activity requires a radically different basis of interaction in which local solidarity group interests are subordinated to those of the co-op organisation as a whole. Segmentary organisation and the dominance of the underprivileged majority by the elite, which are the dominant patterns in the local areas, are incompatible with the emergence of a common collective interest. When co-operative societies are initiated locally, they can easily be turned into new arenas for competition between groups, and "serve as stepping-stones for more ambitious persons". (3, p.304)³ In this way, the objectives of co-operative organisation per se are quickly frustrated. As one writer has phrased it, co-op organisations can be altered by forces in their local environments so that their originally intended purposes, the "formal and manifest goals", are eclipsed by "informal or latent goals". (12, p.91) The co-operative ideal of a collection of individuals interacting on a contractual basis founded on perceived common interest deriving from common economic/occupational status and aspiration, yields to a situation in which there is a collection of individuals only nominally related who are clustered into constituent and contending groups.

	<u>Local Model</u>	<u>Co-operative Model</u>
Criteria of interaction	Ethnic, residential, etc.	Economic/occupational
Mode of interaction	Primary group segmentation and conflict	Contractual agreements between individuals
Relevant qualities for leadership/management	Social standing, political competence	Business competence

This fundamental incompatibility accounts for many of the management problems which have hindered co-operative development in Kenya. Effective co-op organisation calls for certain bureaucratic prerequisites, but the context in which co-ops are expected to function is to a marked degree "debureaucratized".

3. Hyden comments that:-

Almost everywhere in Kenya, co-operative leaders are drawn from the economically stronger members of local communities. Ordinary peasants are under the domination of more successful villagers, some of whom are deeply involved in non-agricultural activities. Besides individuals with large holdings, teachers and traders frequently perform leadership roles in rural co-operatives. (3, p. 304)

Similarly, Karanja speaks of the control of rural co-ops by the "rural bourgeoisie" and of committee members' accountability to "political constituencies". (6, p.108) Also see Widstrand (14, pp. 18-19).

Holmquist, in discussing the organisation of self-help activity for the construction of cattle dips in Kisii, draws attention to this kind of disjunction:-

.... local communities are by no means co-equal to modern bureaucratic organizations which can establish authorities, regulate behaviour, hire and fire, all without great regard for extra-organizational considerations. Local communities, such as those in Kisii, with decentralized authority roles and a premise of equality between lineage segments of equal rank, may be quite antithetical to bureaucratic behaviour. Organizations within these communities are required to carry a host of what might be called 'sociological burdens'. They must operate in a context of numerous historical feuds; a local status system which may not be compatible with the organization's leadership requirements; an environment of poverty which encourages corruption; lack of opportunities for wage employment which, coupled with the local power structure, is unlikely to encourage employment (for example of dip attendants) according to achievement norms A radical breakdown of present principles of community interaction may in fact be a prerequisite for the creation of modern community activities based on bureaucratic principles. (1, pp.223-4)

The prevalence of external concerns in the decision and management process of primary co-op societies and co-op unions likewise militates against the implementation of measures designed to benefit the co-op organisations as such. Hyden has described the behaviour of management committee members as being almost wholly conditioned by the segmentary nature of the local community:-

.... their views on policy questions usually reflect the 'traditional' interest they represent; rarely do they take an independent view of financial matters, and these as well as other issues are perceived in terms of how they might benefit or be of advantage to the committee member and his constituents. Thus, most decisions are highly particularistic and 'political' and few, if any, are influenced by technical considerations or concern for economy and efficiency. For instance, if a co-operative union wishes to devise its own transport system, probably the most important consideration will be the stipulation-democratically advanced- that each member society be allocated its own lorry, quite apart from any considerations of the diseconomies that might result.

Such strong emphasis upon distributive equity between various local communities and the concern of committee members to influence the distributive process in such a way as to favour their own constituents renders the introduction of technical-economic allocative criteria, and administrative reforms, most difficult to realize. The amalgamation of uneconomic and non-viable co-operative societies invariably meets with resistance due to the common apprehension among members that their society will be disadvantaged, and the same is true of proposals to reduce the number of committee members for the sake of managerial efficiency. (3, p.309; also see 4, pp.89-90, p.106; 6, p.108; 14, pp.18, 24)

There is obviously a need to counter those influences in the local environment which now impede co-op operations and objectives. But this cannot be achieved merely through the provision of what are essentially administrative-technical inputs -- that is, education of management in better business practices, closer Government supervision, and the like. These may be necessary measures, but they are not sufficient in themselves.

As others have previously remarked, the really crucial ingredient for promoting business efficiency, an ingredient now largely absent from the co-op movement, is 'pressure from below'. (6, p.109; 11, p.238) In other words, the task of securing efficient operations can hardly be achieved without a far greater degree of participation by rank and file membership than has heretofore been the case. Ordinary members need to become much more actively involved in their own organisations. Indeed, they must develop a sense that these organisations are their own.

The problem, then, is to foster a stronger sense of loyalty to co-operative organisations themselves, in place of loyalty to the various interest groups of which they are composed. A new kind of solidarity needs to be encouraged, whereby members interact as "a functional group, based on shared economic interests" (4, p.218), and are willing to comply with organisational objectives because they have a strong moral and ideological commitment to these objectives. Members must be convinced about "the superiority of co-operative action". (4, p.222) This kind of conviction is not likely to emerge in the present situation in which co-ops are expected to cater for the interests of both the 'haves' and the 'have nots' in rural society; this is supportive of a commitment to segmentary groups rather than a functional co-operative organisation. If co-ops were to become more the province of the ordinary, less prosperous smallholders, on the other hand, the chances for the development of **loyalty** to co-operative organisations per se could be enhanced. This argues for a policy of aiming co-operative development activities and opportunities towards the less privileged members of rural society. Such a policy would not only help alleviate the most severe management problems experienced by co-operatives, but would also serve to promote social equity.

THE INSTITUTIONAL SETTING

The co-operative movement has had to contend with a hostile local environment; it has also had to contend with hostile features in the institutional framework provided by the Government and its policies. This is ironical, as the co-operative movement has been much less a movement from below than a programme sponsored by Government from above.

The Intervention Strategy

The widespread shortcomings in the performance of co-ops have been used to justify the appropriation by Government of extensive supervisory powers over the movement, as exercised by the Co-operative Development agency. Indeed, Hyden goes so far as to say that "whenever co-operatives have shown signs of failure or ineptitude, government has restricted their legitimate sphere of action and increased its control over them". (3, p.315) The tightening of Government control has had clear benefits in some areas, as for example in regularising the arrangements by which co-operative unions and societies grant "loans" to individuals, some not even co-operative members, who then use the money for a wide variety of purposes often unrelated to the business interests of the co-operatives. (4, pp.103-5) In Sessional Paper No. 14 of 1975, the results of stricter Government supervision are characterised in the most encouraging of terms:-

The stage where co-operatives were rendered static by rampant embezzlements and financial mismanagement is over. Co-operatives are now dynamic organizations with a much wider horizon, as a result of improved control systems and constant surveillance and guidance. (10, p. 25)

This is decidedly an over-optimistic view⁴ which ignores the costs associated with a strong intervention strategy, although these have been pointed out in a variety of earlier writings.

4. Grounds for this assertion are provided by Sessional Paper No. 14 itself. In the very next paragraph following the one just cited, for instance, the policy of 'strengthening Government supervisory services' is reaffirmed. If it is indeed the case that co-operatives have become the successful organisations just described, it is questionable whether still more Government control is necessary. It is recognised elsewhere in the document that co-operative development, to be successful, cannot be simply imposed but must involve the partnership of the Government and the participants. (See p.23.) Also, as was seen from the passage cited earlier from 1970-1974 Development Plan, improvement of efficiency is thought to have been hindered by the problem of audit arrears. The latest Sessional Paper states that this problem has not been entirely overcome as yet. (10, p.20) Finally, it is reported that "The number of dormant and inactive co-operative societies ... has increased". (10, p.21) It would therefore seem that an unqualified positive appraisal of the effects of strong intervention does not accord well with other statements made in the document.

To begin with, increased Government supervision and penetration of co-operative organisations obviously requires concomitant increases in Co-operative Development staff, and in the resources, such as training and transport, which will allow them to carry out their work effectively. It is well known that the Co-operative Development agency has been plagued by shortages of qualified staff and supportive services, and this means that the expectations created by a sophisticated administrative structure have been exceedingly difficult to fulfil. The result has been what could be termed "administrative overload" (See 2, p.74.) for the Department. The strategy of strong intervention has not been adequately backed up with the means of implementation. This problem and its remedy - i.e. more inputs of personnel and material - have been a chief concern of past and present policy and planning documents.

Until very recently, the Government agency charged with the task of overseeing and aiding co-operative development has for the most part been assigned a junior status in the ministerial structure. Details of the "shifting institutional affiliations" of the Department of Co-operative Development are given by Hyden. (4, pp.59-60) This lack of a strong position has put Co-operative Development at a disadvantage in commanding adequate resources for its task. Now that Co-operative Development has been accorded full ministerial status, a move which hopefully reflects a renewed and stronger Government commitment to co-operatives, the situation could improve.

The problem of "administrative overload" has also been acute within the co-operative organisations themselves. The introduction of such improved techniques for management as standardised accounting systems or monthly trial balances, and in general the increasing extent to which local co-ops are held accountable to Government regulations and policies, has meant that a greater burden has been placed on the shoulders of the co-operative managers. Despite emphasis on technical training, local co-op staff and management committee members do not always have the expertise necessary to implement new measures demanded by Government. Also, there is the risk of glutting the management process with bureaucratic details, leading to a pre-occupation with routine. This can have a detrimental effect on the "learning capability" of the local organisations. A situation can develop in which "Routine activities take precedence over creative thinking. The co-operatives become bureaucratic and inflexible - organizational cripples". (2, p.76; also see 4, p.171)

Restrictions on the ability of co-op societies to adopt organisational structures to local conditions are apparent in another area. The Government has placed strong emphasis on the centralisation of certain activities in an effort to promote better management and overall efficiency. Such services as book-keeping, bulk purchasing of agricultural inputs, transport, and savings and credit facilities have therefore been consolidated into the district co-operative unions. The attempt is to achieve economies of scale, but obstacles have been encountered. Frequently, the unions have not enjoyed the confidence of their constituent societies. Mismanagement, poor service and high overhead costs at the union level have sometimes made primary societies' membership in the union more of a burden than a benefit. The larger-scale organisations may reduce members' sense of effective participation. Moreover, those in primary societies may be suspicious of the union committee members, who are liable to respond to pressures from their own constituencies in making decisions as to how union resources should be distributed. (4, pp.97-101) Amalgamation of smaller single-purpose societies into larger societies is also not automatically a good thing. As Karanja has noted:-

If an amalgamation is carried out because it would look tidy on the chart of the co-operative movement, such a merger will not go very far. Such a type of amalgamation only causes unrest among the members and the committees and also destroys the much-needed co-operative spirit. (6, p.130)

A more comprehensive Government authority over the movement together with increased workloads for Co-operative Development staff create conditions which foster a "bureaucratic mentality". The danger is one of staff insisting on adherence to bureaucratic strictures for their own sake, without giving due attention to local conditions which may sometimes make such an inflexible attitude dysfunctional. There are times when rules must be tailored to fit the circumstances. Blind obedience to bureaucratic ritual, an obsession with proper form, can be as counter-productive as disregard for rules, from the point of view of the smooth functioning of an organisation. Hyden cites a case, for example, for example, in which a Co-operatives Assistant strongly and publically criticised the committee members of a primary society for announcing a general meeting without allowing for the full interval of time which the Rules stipulate should elapse between the announcement and the meeting proper, when the difference was only a matter of a few days. (4, pp.153-4) Doubtless such a rule is a good one, and ought to be followed whenever possible. But the more effective way to gain compliance is by quiet

persuasion that the rule in fact makes sense. Officers in the field who harangue co-operative society members about not following Government regulations to the letter, when the issues involved could be settled more tactfully, only invite the hostility of the members.

In general, the build-up of an extensive bureaucratic structure to control the co-operative organisations can have an alienating effect on the membership insofar as it is perceived as coercive in nature. The curtailment of local initiative and autonomy in the name of efficient business practices or organisational principles, the importance of which is not always appreciated by the local co-op members, reduces the chances that the members will really identify with their organisations, and thus feel a strong commitment to them. (See 14, pp.29-30.)

Other Influences

Certain other circumstances in the institutional setting have not been complementary to co-operative development efforts. For instance, the fact that the County Councils have been stripped of much of their political significance, and that the formal political party organisation is often very weak at the local level, would seem to contribute to the tendency for co-operative organisations to serve as political arenas. As discussed earlier, when co-operatives become politicised, the objectives of co-operative organisation are subordinated to the objectives of competing interest groups. (4, p.66)

Lack of co-ordination and agreement on policy issues between the Department of Co-operatives and the Ministry of Agriculture are also reported to have caused difficulties in the past. (4, pp.60-1; 3, pp.310-11) At the local level, more Government supervision and guidance translates into a need for more extension workers. However, "in the realm of agricultural extension work the Ministry of Agriculture objects to the idea of co-operatives employing their own field personnel". (3, p.311)

An even more critical problem-area, **one that** does not admit of easy solutions since major policy issues are involved, is that of the marketing of agricultural products. Local co-operatives in Kenya have had to face severe competition from private traders, and they have proved by and large unequal to the task. The Government has not deemed it necessary to heavily curtail the activities of private traders for the benefit of co-operatives, as has been done in neighbouring Tanzania, for example. Frequently in Kenya, the private traders operate from such a strong position and so effectively that

local co-ops experience difficulties getting their own members to sell through the organisation. (See 13, p.150.) Government has justified its position of not giving co-operatives a more responsible role in marketing activities e.g. by fuller representation on the statutory marketing boards or more liberal licensing arrangements allowing co-ops wider buying rights for certain products, with the argument that they are ill-prepared to assume such responsibility.⁵ While it is clear that co-ops suffer from many operational deficiencies and that perhaps "... the cooperative call for monopoly in marketing reflects more an intra-elite struggle over the allocation of resources than a genuine concern to improve the situation of the ordinary farmers" (4, p.63), it may also be true that the lack of prospects for a fuller role in the marketing process provides little incentive for co-operatives to improve their operations. Hyden **observes** that: "The leadership of the cooperative movement in Kenya naturally tends to adopt a rather passive attitude towards the development of their organisations realizing that there is little room for expansion of cooperative marketing responsibilities". (4, p.63; also see 3, p.312)

CO-OPERATIVE MANAGEMENT

A number of management problems have been mentioned in the earlier discussion. In this section, a few of these are singled out for more specific consideration.

The fact that the co-operative management process at both primary society and union levels tends to be heavily influenced by external concerns has had a direct consequence for the relationship between co-operative society and union committee members on the one hand and the staff of these organisations on the other. There is often a marked conflict of interest between committee members and their executive staff.

Committee members commonly regard co-operative organizations as their own instrumentalities and fully expect to control the decision-making process. Consequently such members, especially chairmen, frequently **interfere** in the day-to-day management of the organization. Interference of this nature is most frequent in those societies and unions where the secretary or manager is independent-minded and concerned with exercising executive

5. At present, the interests of small-holder marketing co-ops are represented by the Commissioner for Co-operatives, who is a member of all the agricultural boards. Co-operatives are given buying monopolies for specific agricultural products in areas where they handle over 60 per cent of those products. The recent Sessional Paper indicates that there will be no fundamental change in Government policy on the question of marketing, although the possibility of wider representation on marketing boards is held open.

authority, particularly in respect to financial matters. Thus, co-operatives in Kenya are frequently characterized by a persistent tension between committee members (including chairmen) and executive staff concerning management matters, especially in the financial sphere. (3, pp.309-10)

Insistence by committee members on close supervision of management **affairs** may sometimes be motivated out of a concern to prevent fraudulent practices on the part of executive staff, something which is not unknown. However, as Hyden goes on to point out:-

.... the most unfortunate aspect of such tension and mistrust is not the occasional impropriety of secretaries and managers, but rather the fact that it makes effective management of co-operatives so much more difficult to achieve and tends to drive the best managers to leave the co-operatives for better-paid jobs in the private sector. (3, p. 310)

Besides this lack of autonomy in carrying out tasks, cooperative staff have found other conditions of employment unsatisfactory. In a survey of one group of cooperative employees, it was found that many feel that the co-operative movement does not offer good career prospects, or even job security:-

A position as clerk or book-keeper in the cooperative movement is for the majority of staff only a way of gaining some experience before joining a private company or the civil service. They do not join the cooperative movement for a life career. This attitude can be found also at the more senior ranks in the cooperative unions. Many report that they do not feel secure in their positions in the cooperative movement. The union committee can dismiss them at any time, they say. The 1969 (Co-operative Societies) Rules do not give the Commissioner the same power to prevent arbitrary dismissals as he has regarding appointments of graded staff. (4, pp.84-5; also see 6, pp. 108-9.)

Another factor that helps to account for staff dissatisfaction and high turnover in the movement is that irrelevant criteria are often employed by co-operative union officials in the selection of staff. Hyden observes that preference may be shown those who come from committee members' home areas: "The committee member whose 'constituency' has several employees in the union is in a strong position. He has proved his service to those who elected him". (4, p. 85)

One further area of management-related problems, or potential problems, may be identified. Government has tried to promote diversification of activities within cooperatives as part of its strategy to strengthen the movement. However, new schemes for multi-commodity, multi-purpose operations through provision of credit, improvements in the standard of bookkeeping, or the supply of agricultural inputs, place an emphasis on further training for

co-operative leaders, as distinct from ordinary members. While the leaders acquire more proficiency, the bulk of co-operative participants are left behind.

This reduces the effectiveness of general meetings as arenas for membership participation and control, since discussions tend to focus on matters which are easily understood by the rank-and-file such as the size of committee members' allowances and the like. Moreover, the increased complexity of co-operative activities together with the inadequate supervision of Co-operative Development staff might increase the opportunities for committee members to abuse their position. Though certainly unintended, such a consequence of government policy does not appear improbable. (3, p.312; also see 4, p.163)

CO-OPERATIVE DEVELOPMENT AND PRESENT GOVERNMENT POLICY

The foregoing discussion has dealt with a number of problems which have been recognised by various observers as obstacles to co-operative development in Kenya. In what ways, and how effectively, does present Government policy, particularly as set forth in Sessional Paper No. 14 of 1975, address these problems? A very welcome development in the Sessional Paper is the recognition of the importance of more meaningful involvement of the general membership in the movement, and emphasis is laid on expanding educational efforts to include the ordinary members. This is to be achieved through educational centres established at the provincial level and through the posting of District Co-operative Officers (Education).

Attempts to reduce the 'education gap' between leaders and members is certainly a step in the right direction. Much more remains to be done, however, in order that co-operatives may cater to the interests of the average - i.e. less privileged - farmer. Although the smallholder agricultural sector is supposed to receive priority attention, no specific measures are outlined in the Sessional Paper as to how regulatory and supportive services, such as the provision of credit arrangements, will be structured to guarantee that the genuine smallholder (i.e. not the trader- or teacher-cum-farmer, but the peasant) will benefit from these services. This is a most critical issue. The Co-operative Development Council which is now proposed "as a consultative forum between the Government and the movement, whose objectives, in particular, will be to advise the Minister and the movement on the strategies for co-operative development, especially on fields where priorities should be placed" (10, p.23), could most appropriately concern itself as a first priority with making the co-operatives more relevant to the smallholders. It might also be observed here that the Integrated Agricultural Development Programme now being put into operation and involving the Ministry for Co-operative Development

is to have as one component the provision of credit and agricultural inputs to smallholders. The distribution of credit and services should be closely monitored to ensure that it is indeed the smallholder who is the beneficiary.

Recognising that it is not desirable for Government to simply impose plans on the movement, the Sessional Paper calls for fuller participation of the membership in the planning process. As just indicated, the Co-operative Development Council is to serve the function of bringing representatives of the Government and the movement together to jointly work on planning and policy. The extent to which this body will be effective in achieving greater integration of Government and membership remains to be seen. Certainly the problem of attaining effective membership participation, in other words of achieving a true co-operative movement, is one that must be tackled on several fronts. In addition to opening educational opportunities for the rank and file, and aiming development efforts at poorer farmers in order to create a new solidarity amongst co-operative members based on common economic conditions and aspirations, other measures are necessary.

Hyden has pointed out that the system of electing committee members could be modified in an effort to reduce the influence of solidarity groups in determining committee structure and the tendency of committee members to serve their own 'constituencies'. As a minimum step, committee size could be allowed to be variable, so that in any particular area all local solidarity groups are represented and the power struggle between them made less intense. (4, p.228) However, committees should not be allowed to become so large that they are unwieldy and ineffective as decision-making bodies.

Great care should be taken in regard to the centralisation of co-operative activities within the unions as well as the amalgamation of smaller societies into larger ones. The membership must be provided with more opportunities to decide on questions of consolidation. They must be given the chance to fully appreciate the disadvantages as well as the advantages which will accrue from participation in a larger unit. The larger the scale of organisation, the greater the chances for members to feel alienated. If participation in a large-scale organisation is compulsory, this only aggravates the situation. A further point is that centralisation of services should only be instituted in cases where there is assurance that the larger body has the administrative competence to perform its functions effectively. Especially in the case of the district unions, this competence has too often been lacking.

There is also the matter of the attitude of Government personnel towards

co-operatives. The training of Co-operative Department staff should be geared to making them more aware of the alienating effects of extensive Government control, and why bureaucratic inflexibility is counterproductive.

The recent Sessional Paper proposes several measures relevant to the problems of "administrative overload" and high staff turnover. Further intensive education and training will be directed towards Department staff and the staff and leadership of the co-operatives. To improve the **capacity** of the Department's auditing section, staffing increases are planned. For both Department and co-operatives staff, the necessity of designing better terms of service, and making employment in the co-operative sector more attractive as a career, is recognised. One new development in the effort to deal with the "administrative overload" problem is a plan to establish a management pool which will supply expertise in cases where co-ops are suffering from management problems or where special personnel are required to help get new projects off the ground. There is still the danger of giving co-ops too great a burden of administrative detail, with the result that they get bogged down and are unable to adapt or readjust themselves to special or changing circumstances in their local environments.

One aspect of management not dealt with directly in the Sessional Paper is the existence of conflict between the staff of co-operatives and management committee members discussed earlier. It has been suggested elsewhere (4, pp.228-9) that management staff should be allowed to become committee members themselves. In this way, the technical considerations of management would be given more weight and the now common divergence of interest between committee members and executive staff would be lessened.

With reference to the question of co-operatives and the marketing of agricultural products, the Sessional Paper indicates there will be no **fundamental** change in Government policy. The marketing agencies will carry on as before and co-operatives will be encouraged to direct their activities towards "the mobilization and education of the small-scale farmers, and assisting them in the production and collection of produce for eventual delivery to the marketing agencies". (10, p.7) However, the possibility for wider representation of smallholder co-ops on the marketing boards is held open. "Continuous consultations" between the Ministries of Agriculture and Co-operatives are called for concerning the relationship between co-ops and marketing agencies, and the Co-operative Development Council will provide a forum for these consultations at the national level. This is an indication that the Government is at least concerned with the question of how fully the co-operatives should participate in marketing and hopefully a more thorough investigation

can be made of this important issue, so that appropriate policies can be formulated.

As a final and general point, it should be noted that setting forth intentions in Sessional Papers is one thing, and putting intentions into practice quite another. While Sessional Paper No. 14 outlines some promising measures, in the last analysis judgement of their effectiveness has to be reserved until they are put in operation.

PART II: CO-OPERATIVES IN THE SRDP

CASE STUDY: CO-OPERATIVE DEVELOPMENT IN KAPENGURIA

The budget allocation for co-operative development in the Kapenguria SRDP is as follows:

<u>YEAR</u>	<u>DEVELOPMENT COSTS (Kf)</u>	<u>OVERHEAD COSTS (Kf)</u>
72/73	-	1802
73/74	2500	1180
74/75	4000	838
75/76	4500	920
76/77	(No allocation. Estimates not yet submitted)	--

The 73/74 allocation was channelled through the Co-operative Production Credit Scheme (SRDP Project CO-OP 1: selected members of a dairy co-op were granted loans to purchase grade cattle. In the financial year 74/75, £1000 has been used for construction of a maize store (SRDP project CO-OP 2). The balance is to be used in conjunction with the Co-operative Production Credit Scheme (CPCS), this time for: (a) sheep, pyrethrum or English potato development, loaning a total of £2500 to members of a recently formed co-op in Lelan Location; and (b) sunflower development, with a loan of £500 to a co-op society in Mnagei Location. Except for £1500 earmarked for SRDP CO-OP 2 in 75/76, there are no firm plans for the use of the 75/76 or 76/77 funds as yet, though several possibilities are being considered. These include further loans to existing co-ops, starting a consumers' co-op shop in Makutano trading centre to be run by a women's organisation, and developing a livestock marketing co-op. The state of co-operative development in Kapenguria will now be discussed in more detail.

The Teleu Dairy Co-operative

CPCS: The 73/74 CPCS loan was given to a group of farmers belonging to the Teleu Farmers' Co-operative Society. The loan was innovative in several respects: (a) the requirement that a co-op has to be in existence for at least

three years to be eligible for credit was waived; (b) in the selection of loan recipients, primary emphasis was placed on farm management ability rather than on security offered; and (c) the credit was designed to be a revolving kind, so that as the first set of recipients pay back their loans, other society members will **be able** to borrow from the same pool of funds. According to the Assistant Co-operative Officer, Kapenguria, the objectives of the project are the following: (a) the education of farmers in the mechanics of credit arrangements and the benefits which accrue; (b) the improvement of local welfare by increasing local incomes; and (c) promoting a process of self-generating improvement by initially providing a boost of external aid.

When this first CPCS project was being planned, there were only two co-op societies within the Kapenguria area. One was the Pokot Farmers' Co-operative Society (discussed below), which had been in existence for some years; the other was the newly formed Teleu group. Teleu first started its activities in September 1973, and received its registration certificate in January 1974. This group was reportedly chosen to receive the loan instead of Pokot F.C.S. because the latter society would have required loans of longer duration and was also suffering from a number of management and crop production problems.

At the time that the loan was being arranged, the Teleu F.C.S. had 52 members. Of the 25 or so members who made applications for credit (For some reason a number of people who were not members of the society also tried to apply), 14 were approved. Participants in the scheme were supposed to be chosen on the basis of: (a) farm management expertise, as determined by a study team who visited the farm of each applicant (composed of the SRDP Area Co-ordinator, the Assistant Co-operatives Officer, the Animal Husbandry Officer, the Crops Officer and members of the Teleu society including the Chairman and Treasurer); (b) the security offered (land and livestock); and (c) whether the applicant was a fully paid-up member of the **Society** (10/- entrance fee; 100/- per share, minimum one share). Of the 14 loan recipients, 9 received loans of 3000/-, and 5 loans of 4500/-. A loan of 3000/- covered the cost of two cows, with 400/- remaining for fencing, feed or milk cans; a loan of 4500/- bought **three** cows, with 600/- left over. A total of 34 cattle were purchased (One farmer elected to add another 900/- to his 600/- balance and purchase an additional animal.).

Problems: Some problems were encountered as the project got underway, but these have now been settled. According to the original agreement, repayment was to commence immediately in the form of deductions from milk sales to the K.C.C. in Kitale (terms: 18 months, 7%). There were complaints that repayment

deductions initially agreed upon were too large to be taken out immediately because the new cows would take time to begin milk production (Most of the new stock were in-calf heifers.). Also, there was a problem that all Society members were subjected to **deductions**, even though most were not participating in the scheme. A delegation composed of the Area Co-ordinator, Project Adviser and the Assistant Co-operatives Officer (ACO) visited the Co-operative Bank and succeeded in working these problems out. A refund was negotiated and forwarded to those who had been subjected to wrongful **deductions**, and new terms were arranged (a one year grace period, and an 18-36 month repayment period).

The success of the Teleu CPCS project depends to some extent on the provision of services through other SRDP projects. The SRDP roads improvement project has contributed by up-grading the Teleu area roads; in the past regular lorry runs to and from the delivery depot in Kitale were not possible.

It was reported to members of the I.D.S. study team in late 1974 that an artificial insemination service was to be started in the Teleu area in the near future (Teleu was to be the first area in the District to receive A.I. service.) The ACO reported that members of the society were very interested in **artificial** insemination, and had contributed labour and money for the construction of a building to be used for a cattle feed store, the society's headquarters, and an A.I. station. In checking back on the situation in October 1975, it was learned that the A.I. programme was not yet started, and that furthermore it had been **decided** that A.I. would be carried out on the basis of individual farm visits rather than roadside crushes. The bottleneck is apparently lack of a vehicle for the A.I. personnel. In the meantime, eight society members have sold their bulls in anticipation of A.I., and this has caused a decline in milk production. Some of those who sold their bulls are now thinking of buying new ones.

Dip construction obviously has a part to play in the project as well, and there have also been problems here. The Teleu area is served by three **dips**, all built with SRDP funds. As of the end of October 1975, only one of these is operating properly. One of the dips has had a water supply problem. Another was constructed on land adjudicated for this purpose, but lying inside a private holding. This dip was first constructed in 1973 and used for a **year**, but now the owner of the surrounding land (who also happens to be a society member and a loan recipient) is refusing the public access to the dip. The dip supervisor for the District is supposed to be looking into the situation. As SRDP funds were used to build the dip, either the farmer should reimburse SRDP or a road giving access to the site should be gazetted.

Over the last year, six of the grade animals purchased **through** loan **arrangements** have died due to East Coast Fever. This of course represents a loss of means for loan repayment. It is the view of the Project Adviser that cattle losses have been caused not only by lack of sufficient dips and understrength mixtures in existing dips, but by lack of proper management as well. This points to a problem with extension services. Farmers are not being made aware that dipping frequency should be determined by fluctuations in the tick population, rather than timetabled rigidly.

At the close of October 1975, loan recipients had paid back four instalments, and **there** has been no problem so far in meeting the payments. However, milk production has not been as high as expected from the new stock for reasons already alluded to and also because of an outbreak of Foot and Mouth Disease in the area in February 1975, **which** temporarily stopped milk deliveries.

Two members of the Teleu society attended a short course on dairying at the Kaimosi Farmers' Training Centre in October 1975, and are so far the only members of the group who have received any special training. Steps should be taken to broaden training opportunities so that a nucleus of farmers can be formed **who** can advise fellow co-operative members on proper farm management. The success of the scheme demands that the new stock be kept in the best possible condition, yielding maximum returns. Already some stock acquired through **loans** has been lost, and further attrition may impose severe handicaps on members of the Society.

The Project Adviser arranged for the Society to receive two milk separators from the F.A.O. These were delivered about six months ago but so far have not been installed.

Equity: According to the information available from the loan applications, the loan recipients tend to be younger farmers (age range: 29-50; average: 38) with considerable land holdings (range: 20-80 acres; average: 42). In terms of ownership of grade or improved stock at the time of loan application, the recipients averaged **almost** 14 animals. **Although** it was not possible to obtain a great deal of additional background information on the recipients, it was learned that about half of them have primary sources of income besides farming, e.g. as teachers or Government employees. More information would be needed on the loan applicants, the Teleu F.C.S. members, and Kapenguria area farmers in general, but the question is at least raised as to whether the credit is being provided to those who stand most in need of it - i.e. those

who primarily rely on farming for their incomes but have fewer assets in land and livestock, etc.

Although the idea of giving relatively more weight to farm management ability when considering CPCS loan applications may have been adopted with the intention of encouraging more equitable distribution of credit, it is doubtful whether such an objective can be realised in this way. Farm management ability will obviously be greater amongst the more progressive farmers, and these by and large are not the ones who need assistance. It may be argued that for a grade cattle project, it is mandatory to require management expertise lest the investment be wasted. The experience with dairy production in the Tetu SRDP, however, where provision for training was made as part of the credit scheme, indicates that other options might be available which do not favour the better-off farmer (See Chapter 9 of this Report).

The Muruny Co-operative

The Muruny F.C.S. is a very recently organised Society in Lelan Location, having registered late in 1974. It has a membership of over 200 farmers who are primarily engaged in wool and pyrethrum production. Farmers in the Lelan area were formerly affiliated with the Pokot F.C.S. It appears that a strong motivation in forming the **Muruny group** was dissatisfaction with the Pokot F.C.S. The Lelan farmers were not happy with the amount deducted by the older Society for handling their wool and pyrethrum shipments, or with the services which the Pokot F.C.S. provided.

CPCS: In 74/75, a total of £2500 was to be made available to members of the Muruny society through the CPCS. The original intention was to provide loans for any of three types of production: wool, pyrethrum or English potatoes. The members seem to prefer to concentrate on sheep. By **October** 1975, a total of 247 Corriedale sheep had been purchased by 25 farmers - 24 farmers received 10 ewes each, one farmer received 4 ewes, and 3 rams were distributed to farmers in different sub-locations. CPCS funds amounting to about £1550 were used for this purpose. As in the case of Teleu, the credit will be revolving. Decisions as to who will receive loans are made by a loans committee within the Society. It is not clear to what extent, if any, the new CPCS project is being co-ordinated with the Ministry of Agriculture's Smallholders' Credit Scheme, or with a grade sheep development project which has been operating in the area since 1972. (See Chapter 9 of this Report.)

Pyrethrum: Pyrethrum has been promoted in Lelan for many years. Since the SRDP started, £800 has been set aside for pyrethrum development. To the knowledge of the Project Adviser, there has been no official assessment of the

effectiveness of the effort. In 1973, a lorry-load of splits was ordered and sent to Lelan. There was insufficient prior consultation with the farmers who were supposed to receive the splits, and few had plots properly prepared. As an emergency measure, a pyrethrum plot was quickly made ready near Kabichbich Chief's Centre in order to salvage the shipment. A member of the I.D.S. study team visited this plot in December 1974, and found that it was badly maintained and had not been properly planted in the first place. Currently the plot supplies some plants to local people, but a fee is charged. It is surprising that the plants should be sold rather than given away, as the original intention was to provide them free to farmers. Several farmers have now started their own small nurseries, growing pyrethrum from seed rather than waiting to receive splits. This development should be encouraged as much as possible, as it is a faster and more economical method for promoting the crop. More needs to be done to show Lelan farmers the advantages of pyrethrum growing, and to train them in proper cultivation practices. Such education and training could easily be carried out through the Society.

Potatoes. Although English **potato** bulking has been carried out in the area by the Ministry of Agriculture (A total of £1050 has been spent on this since the start of the SRDP.), the Muruny Society so far has no role in the project. Currently, bulking is being carried out by the MOA on its own plot, using hired labour. All profit, if any, from the sale of seed potatoes is returned to the Ministry. This appears to be a good project for the co-op; members could carry out bulking on their own plots, and the co-op itself could buy, store and sell the seed potatoes. There seems little reason why the MOA should carry out this project on its own when the Society could profit from it.

Transport: Transportation to markets has been a chronic problem for farmers in the Lelan area. As part of the forthcoming Integrated Agricultural Programme, it has been suggested that a lorry be purchased for the use of all co-op societies in the District. This appears to be a good proposal, although the economics must be investigated further. One condition that ought to be made, should the lorry be purchased, is that it be under the sole control of the Co-operative Department, and not subject to commandeering for non-co-operative business by any other Government officers. Such "re-directing" of Government department vehicles has been something of a problem in the Kapenguria area, as elsewhere.

The Pokot Farmers' Co-operative

The Society is headquartered in Makutano trading centre, and has a membership of approximately 300 individuals. From what can be learned, the

society has suffered almost from the beginning from several of the problems, especially difficulties in management which have commonly been identified in primary societies elsewhere. Information on the background of Pokot F.C.S. was obtained from Government documents on file in Kapenguria, and through interviews with Government and Society personnel. The situation is a very confused one. Accounts of the Society's history given in records and interviews vary in detail and are incomplete. As far as we can determine, the course of events has been as follows.

The Pokot F.C.S. was started in the early 1960s. For a time it functioned under two names: West Pokot Pyrethrum Growers and West Pokot Coffee Growers. This was a reflection of the fact that the Society served both pyrethrum farmers in Lelan and coffee growers in Mnagei. Both "branches" were under the same officers and management. In 1966 there was an official change of name to the Pokot F.C.S. At present, the Society handles sunflower in addition to coffee, and also supplies fertiliser, seed and other farm inputs (It is the local agent for Kenya Farmers Association.). Wool and pyrethrum from Lelan farmers are no longer marketed through Pokot F.C.S., as the Lelan area now has its own society.

Agricultural Finance Corporation Loan: After pyrethrum had been experimented with unsuccessfully in Mnagei Location, the emphasis there shifted to coffee. In the financial year 63/64, the AFC granted a loan of 84,000/- to the Society. Of this amount, 44,000/- was used to buy coffee seedlings and establish a coffee nursery, and 40,000/- was used to build a coffee factory near Tartar. The society has re-paid part of this loan, although accounts differ as to how much.⁶ It is definitely known that problems arose with the coffee seedlings. Originally the coffee nursery was to produce enough seedlings to plant about 600 acres of coffee, the 44,000/- loan to be repaid by sales of seedlings to farmers. But when the seedlings were ready to be transplanted, there was a period of drought and the equivalent of around 400 acres of plantings was destroyed. This severely hampered the Society's ability to repay. To compound the difficulties, in 1967 a change of policy resulted in planting restrictions, and infilling only was allowed. In 67/68 the Society received about 13,000/- from the Coffee Board as compensation in view of the restrictions, and this money went for loan repayment. A case for writing off the remaining 31,000/-

6. According to the Society's Treasurer, about half of the total loan has been repaid. This is not clear from records available in Kapenguria. The Provincial Coffee Officer (interviewed in December 1974) had the impression that the society has only been able to repay 25,000/-.

was made to the Treasury in 1968. According to correspondence from the Provincial Director of Agriculture (R.V.P.) to the Assistant Commissioner for Co-operatives (R.V.P.) in December 1974, this application had not yet been approved. Various sources, including the Pokot F.C.S. Treasurer and the SRDP Project Adviser, say they have heard that the loan has been written off, but there is no evidence in the records available. The ACO himself is not sure of the situation.

An additional and confusing point is that in 1970 the Assistant Minister for Agriculture visited the Kapenguria area, toured the coffee factory and some coffee shambas, interviewed Society officials and addressed a large baraza in Makutano. Reportedly, the Society was informed by this official that the loan would be waived, provided the Society would offer as much as it could at the time toward repayment. The Society provided 6,000/- for the purpose.

It can be seen that the whole AFC loan question is in urgent need of clarification and resolution. The Society has found itself in a difficult situation which is not entirely its own fault, and there is a strong case for waiving the outstanding amount.

Society Management: The management of the Pokot F.C.S. is exceedingly weak, with the possible exception of the Treasurer, who in the opinion of the ACO is the only person who keeps things going. The Chairman is not very active. He has himself neglected his coffee trees. Despite his poor to indifferent leadership, the Chairman has held his position since the founding of the Society. The same is true of several other members of the management committee. It has been observed in other parts of the country that members withdraw from active participation in their society when it is faring badly or there is great dissatisfaction with it, and this pattern is very evident here. Meetings are rarely held and poorly attended. There have been complaints in the past of favouritism and misuse of privilege amongst the society's officials. It has been alleged that officials obtain credit or crop advances for themselves when such arrangements are not available to the general membership, for instance. Such allegations do not help to build members' trust and confidence in the Society. Also, for a very long period members could not be at all sure of the financial position of the Society since between 1964 and 1972 the Society's books were not audited.

The coffee factory has been mismanaged and badly maintained almost from the time it was built, judging from reports of various inspection teams.

Until mid-1973, the Society had a Secretary/Manager who acted both as bookkeeper and factory manager. This person reportedly received some training through the Co-operative College and at Njoro, but he left his job soon after appointment complaining of the low salary and poor working conditions. His relationship with the Society officials was very poor, characterised by mutual ill-feeling and mistrust. Management of the factory reverted to the former assistant factory manager, and bookkeeping is now being carried out by an entirely new employee. Currently the factory is in an extreme state of disrepair and competent management is urgently required. The pulpers are worn out and need immediate attention, which even the present manager did not seem to realise when interviewed at the site. The tanks and drying tables are also in bad condition. The berries are not always fermented properly, sometimes being allowed to soak in the tanks up to 3 days, when 48 hours is the standard time. The consequence is that the coffee supplied by the members is down-graded because of poor processing at the factory. Hiring of an untrained person to run the factory and neglect of upkeep is obviously false economy.

Decline in Coffee Production: Over the years, coffee acreage in the Kapenguria area has dwindled substantially. For example, 131 farmers made deliveries for the 70/71 crop. This level of participation was low enough, but now only about 60 farmers are active as coffee producers. Moreover, a mere 30 are said to be tending their trees in a satisfactory manner. The evidence of neglect is not hard to find: one sees former coffee shambas now returned to bush, or unpruned trees standing double-cropped with maize.

There are several reasons why Society members have neglected their coffee. Undoubtedly the most important factor has been delays in payments for crop deliveries. One extension worker summed up the attitude of reluctant coffee growers by saying their response to him was: "If you want us to grow coffee, tell those who keep our money to come."

The Pokot F.C.S. is a member of the Sirikwa Farmers' Co-operative Union, a multi-purpose Union in Eldoret. The society joined Sirikwa in 1968, and has not found its membership at all advantageous.⁷ About 4000/- (or 4 per cent of annual turnover) is paid to the Union each year for bookkeeping services which have been performed poorly and slowly. Unnecessary delays at the Union

7. As a union member, the society is eligible to buy certain supplies at discount, but transport costs to Kapenguria offset this advantage. A few years back, the union supposedly promised to provide a bookkeeper for the society, hired at union expense. So far, nothing has come of this.

level are the main reason why coffee farmers receive their payments so late. Local feeling against the Union runs high; people see little point in belonging to it.

Another reason for the delay in payments is that the Society does not produce enough coffee to make up a full consignment for auction. The annual shipments to the Kenya Planters' Co-operative Union must wait to be augmented by other shipments of similar grade to form a whole consignment.

When coffee was being introduced into the Kapenguria area, land adjudication had not yet commenced. Apparently the motive of many farmers in planting coffee was to buttress their claims of access to parcels of land. Some of these farmers had migrated to the area from elsewhere and may have felt their land tenure was especially insecure. Those who had planted coffee were later able to point to it as a token of land ownership. Having served this purpose, the coffee trees could then be neglected and the land turned to other uses.

A final point concerning the neglect of coffee relates to the way it was promoted by some Government officials. Sometimes farmers who were not convinced of the advantages of coffee were persuaded to grow the crop. Their lack of commitment to coffee later became apparent in abandoned, double-cropped or badly maintained coffee fields.

In summary, the decline in coffee production in Kapenguria is explained by the conjunction of a variety of factors. The strategy which has been used to promote production, the SRDP spraying demonstrations (against C.B.D.) coupled with visits by extension personnel to coffee farmers, in no wise meet the problem. Farmers in the area are not particularly interested in coffee growing, especially since they can get immediate cash returns for maize or sunflower. Even when farmers can have their trees sprayed free during the SRDP demonstrations, they are generally unwilling to take part because they will later be expected to keep the demonstration plot properly maintained by weeding, etc. Labour expended on coffee is not seen as worthwhile, under the circumstances.

Although there is a potential for coffee production and profitability in the Kapenguria area (See Chapter Six of this Report on crop production in Kapenguria.), it will have to be made more attractive to local farmers in several ways. Improvements in management and equipment at the factory and the expediting of payments to producers are needed at once; delay in payment should be further alleviated as production rises. Renewed interest in coffee growing needs to be stimulated amongst the society's members

through training courses in proper husbandry and in society and factory management to ensure maximum returns. The Society is in need of new and more responsible leadership and this can best be brought about by increasing the members' participation through such training. The Society itself should be encouraged to assume more responsibility for increasing production. Means could be provided for the Society to operate a properly equipped spray team service as needed.⁸ A special team composed of trained Society members and Government extension personnel could also be organised to inspect coffee shambas and advise farmers. Similar measures have been employed successfully elsewhere, and have been noted as factors explaining member satisfaction in their societies. Another option that could be explored is the formation of Agricultural Village Committees, using the model tried in the Migori SRDP area which has shown great promise.

The Maize Store: In July 1975, a small store (20 x 40 feet) was completed in Makutano for the use of the Pokot F.C.S., at a cost of £750. The money represented a grant from SRDP funds to the Society. A sum of £1000 was originally allocated for this project, but £250 was used to complete staff houses for the Co-operative Department in Kapenguria. The intention is to use the new building to house the Society's office and to store farm supplies as well as maize.

Private traders operating in the area have long followed the practice of passing transportation charges (to and from the Maize and Produce Board depot in Kitale) on to the producer and consumer. This is so even though it is the policy of the Maize and Produce Board to give a special allowance to traders operating from a distance. The early plan for the maize store project was to eliminate transport costs, thereby reducing the exploitation of the producers by middlemen. As originally envisioned by the Project Adviser, the project was to be carried out on a far larger scale. The proposal was for a store big enough to accommodate the off-season maize needs (for 3 months) for West Pokot and Turkana Districts, at a cost of £25,000. The Pokot F.C.S. was to have functioned as the local agent of the Maize and Produce Board. However, the Board did not concur with the plans, claiming that the Kitale depot was adequate to serve the entire area. In view of the Board's reluctance, the Co-operative Department decided that a small store could be built instead, and that the Society could at least gain some experience by running this. Apparently,

8. As noted in Chapter Six of this report, the promotion of good husbandry is more important than spraying campaigns.

other options were not considered. Assuming the donor country is willing to allocate sufficient money, bolder and more imaginative projects ought at least to be explored. If the Maize and Produce Board does not want another store in Kapenguria, the money could, for example, be used to purchase a lorry to supply a network of smaller stores in outlying areas.

Although the scale of the project has been drastically reduced, the Society is still in a strong position to function as a local buyer and seller of maize and other produce. With the new storage space, it can compete much more effectively with private traders. A further grant of £1500 is available for 75/76 for the same project. This money will probably be used to construct another small store and branch office of the society in Cheperaria. Alternatively, it may be used to enlarge the present store in Makutano.

Sunflower Development: £500 has been budgetted for 75/76 for the participation of Pokot F.C.S. in the CPCS. The Assistant Co-operatives Officer has proposed to use this money for a project in sunflower marketing. Capital would be provided to the Society so that it could buy harvests on a cash-on-delivery basis. Again there is interest in discouraging Society members and other local people from selling to private traders. The latter have the advantage over the Society since they can buy for cash-on-delivery even though they offer lower prices. The Society would in all **likelihood** benefit from the project. However, there may be some question as to whether the CPCS can be used for the purpose envisioned, as the scheme is ordinarily used to provide credit for agricultural inputs and not for trade loans. Moreover, until the earlier A.F.C. loan is straightened out, it may be difficult for the Society to receive further credit. A final point is that the possibility of using CPCS funds for coffee production development ought to be explored. As discussed above, the Society faces critical problems in regard to coffee production and these should be rectified as a matter of priority.

Kiletat Women's Organisation

Planning for organising a consumers' co-op shop at Makutano in conjunction with the District-wide Kiletat Women's Organisation is supposed to be underway. This project has long been discussed, but does not appear to be getting off the ground. Decisions need to be made as to what the feasibility of the project is, what the shop is going to handle and what the exact role of the Co-operative Department ought to be. There is a strong possibility of using the 76/77 funds for this project, but a proposal and estimate must be submitted soon.

A seminar on consumer co-ops is planned for the near future at the Co-operative College, and West Pokot District has been allocated three places. Strong encouragement should be given to Kiletat women to send representatives, and an attempt ought to be made to provide a travel allowance to the representatives by the Kapenguria Co-operatives and Social Services office.

Co-operative Education and Staff Training

Educational opportunities for management committee members, society staff and regular members have not been fully exploited by the movement in West Pokot. Only two society officials in the area have attended courses at the Co-operative College. In 1969, the Chairman and Treasurer of the Pokot F.C.S. went for a one-week session. As previously mentioned, Teleu F.C.S. recently sent two representatives to a short dairy course at Kaimosi F.T.C. Although the present Area Coordinator has conscientiously informed local societies about courses for society officials and staff, the response generally seems poor. The problem has been lack of funds, as the societies are expected to meet expenses of travel and course fees.

At the local level, educational activities aimed at committee members and general membership have taken the form of "Committee Members' Days" and "Members' Days" when the Co-operative Education Team (Rift Valley North) conduct one-day training sessions for management committee and society members. The Assistant Co-operatives Officer reports that Committee Members' Days have been well attended in all three societies, but for the Members' Days, only Muruny and Teleu have shown good response. Not surprisingly, the response of Pokot F.C.S. members has been very poor. The few attempts at holding Members' Days for this Society have been failures, another symptom of member apathy in this Society.

No SRDP funds have been used for training society staff. Staff training in the area has mostly consisted of general supervision of society bookkeepers by the Assistant Co-operatives Officer. The present Secretary/Manager of the Pokot F.C.S. has received some formal training through correspondence courses ("Elementary Bookkeeping" and "Basic Co-operative Knowledge") offered by the Co-operative College, but he failed the exam given at the end of these courses. Bookkeepers of the other societies have had no training whatever. At Teleu, the bookkeeper is a society member who has volunteered his services. At Muruny, the bookkeeper was hired just recently, replacing the earlier one who left because of the low salary offered (150/- per month).

COMMENT: PROPOSED CO-OPERATIVE DEVELOPMENT IN VIHIGA/HAMISI

The Ministry of Cooperative Development does not have any projects in the Vihiga/Hamisi area which are specifically associated with SRDP. However, the Cooperatives Assistant stationed in Vihiga is interested in creating a large-scale cooperative through which the women's groups in the area would be able to market garden and other farm produce as well as handicraft items. The proposed cooperative is known as MANYATIBU (an acronym of the six locations in the Vihiga/Hamisi SRDP: North and South Maragoli, Nyang'ori, Tiriki, and East and West Bunyore). The basic idea is to bring together producers (women's groups) and buyers (local institutions for produce, tourist shops for handicrafts) by organising production and collection on the one hand and supply tenders on the other.

Women's groups in the Vihiga/Hamisi area, as elsewhere, have major marketing problems. The vegetable market is primarily a seasonal one, and it is either saturated or undersupplied. The local market for some of the handicrafts produced is quite limited and other items are oversupplied, since the groups are competing with one another and with private producers in general. Some effort to coordinate the commercial activities of women's groups and to provide better marketing channels (particularly for handicraft items, channels reaching outside of the District to tourist centres) would be welcome. However, the MANYATIBU proposal as it now stands is not at all promising, and while commending the local Co-operatives Officer for his initiative, we would recommend that either major revisions be made or the whole idea be dropped as impractical.

The organisational effort for MANYATIBU started in November 1973, and the work to date has consisted of trying to attract sufficient numbers of women to make registration of the cooperative possible. The membership drive has been exceedingly slow. The Cooperatives Assistant feels this is due to transport problems: he has no regular transport for getting around to the groups to discuss the proposal. It is also likely that local women are not yet convinced of the value of the Cooperative, although the Cooperatives Assistant reports that there is enthusiasm for the idea, and we spoke with several group leaders and members who seemed to favour it. Furthermore, there are reports that some of those who have already paid to join the Co-operative (some long ago) are becoming concerned about the fate of their money since nothing has been forthcoming in return. In order to join the MANYATIBU organisation, a person must pay 20/- for one share plus 2/- as a membership fee. When the Cooperatives Assistant was interviewed in March 1975, he reported that a

total of 54 women had joined MANYATIBU. At the same time, he expressed a belief that a membership of between 700 and 800 is required in order to make the organisation viable. Thus, in terms of the target membership, the effort to date is certainly not encouraging.

Although the Cooperatives Assistant feels that there are very **goods** prospects for MANYATIBU to supply local institutions with regular shipments of vegetables, and claims that he has made inquiries and has determined that a strong local institutional market exists, his confidence is not shared by others who are acquainted with the situation. The Vihiga/Hamisi Project Adviser, as well as an official of Partnership for Productivity (both interviewed in March 1975), are both very pessimistic about the prospects for MANYATIBU in its present form. Their pessimism seems well founded.

Studies of produce marketing potential in the Vihiga/Hamisi area have been conducted, although the authors of the MANYATIBU proposal seem to have paid little attention to their findings. A USAID marketing specialist, M. Hanrahan, studied the area and submitted a report in December 1972. He concluded that any large-scale produce project would require substantial market development in order to be successful, and that Vihiga/Hamisi is generally not a horticulturally deficient area, although there is a shortage of a few crops and a problem of seasonal availability. According to the Vihiga/Hamisi Project Adviser (personal communication: March 1975) Hanrahan invited experts from the Horticultural and Crop Development Authority to review the situation, and these people also concluded that large-scale production of vegetables **was** not feasible at the present time. In the Project Adviser's view also, the contracts for the supply of individual local institutions are largely taken up. The recent USAID Sponsored Evaluation of the Vihiga SRDP - Kenya (October-November 1974) recommends that the vegetable sub-project be dropped from the Programme. It is noted that there is a potential for irrigated vegetable farming in the area: dry-season water sources exist and dry-season vegetable production could deal with the current seasonal **availability** problem. As the report states, however, little has been done to exploit this potential.

The Project Adviser reports that when the MANYATIBU idea was first considered, a much smaller-scale organisation was urged by several of the parties who were involved in the discussion. At least one group of local farmers in the Vihiga area has shown that small-scale vegetable **growing** and marketing can be a successful enterprise. This group, organised and operating with the assistance of Partnership for Productivity (PFP) personnel, is now supplying a major hotel in Kisumu with all of its fresh vegetable needs.

The logistics involved in organising a collection and marketing system on the scale envisioned in the MANYATIBU proposal seem impossible to realise. A lorry (or lorries) must be obtained, tenders secured, production geared to meet a consistent (not just seasonal) demand - which would involve the development of irrigation facilities - and all of this on a scale that would assure participating groups of a meaningful return for their labour. The proposal as formulated is far too ambitious and it does not seem likely that it will actually be carried out. It would seem ill-advised to continue with the organisational effort in its present form.

It may be possible to develop a far more modest project which would entail the organisation of a few of the stronger women's groups in each location into a vegetable production group. It does not require a great labour force or extensive amounts of land to produce substantial quantities of vegetables, as the experience of the existing vegetable group shows. Most important of all, there is simply no market to absorb prodigious quantities of vegetables at this time. The needs of any **local institutions could be adequately** catered to by a far smaller group of producers than is contemplated in the MANYATIBU proposal. A limited institutional market could perhaps be developed in the Kakamega area: the Rehabilitation Centre, the Kakamega Prison, an approved school and the hospital are reportedly being supplied, not always reliably, by Nairobi sources. However, any serious vegetable production project would still have to deal with the dry-season irrigation problem.

In the area of handicraft marketing, planning should be carried out on a far more modest scale as well, at least for the time being. The prospects for handicrafts ever providing a major source of income for women's groups in Vihiga/Hamisi are not very good. It would be best to use the available marketing channels at present, fully exhausting this potential before embarking upon some more ambitious approach. Local women's groups already market through PFP's Upcountry Crafts Shop in Kakamega, and the National Christian Council of Kenya's outlet in Nairobi. There is a new PFP-sponsored shop in the Majengo trading centre, and an effort should be made to inform women's groups of the existence of this new outlet.

COMMENT: FISHERIES CO-OPERATIVE DEVELOPMENT IN MIGORI/KIHANCHA

In the financial year 73/74, £1500 in SRDP funds was allocated for co-operative development activities in Migori/Kihancha. Of this total, £750 was channelled through the Co-operative Production Credit Scheme (CPCS) to aid the Mohuru Fishermen's Co-operative Society (Mohuru Bay, Macalder Division)

in developing production capability.⁹ The Co-operative Bank provided an additional £250 so that the total CPCS loan to the Society was £1000. This money was mainly used for the **purchase** of fishnets.

The CPCS project is one component of an overall strategy to increase production, reorganise marketing and eventually raise incomes for the Mohuru area fishermen. The plan is to have the Society buy and bulk the catches of both members and non-members at either of the two fish bandas recently constructed with the aid of the Fisheries Department on nearby landing beaches. From the bandas, the catch will be shipped to **inland** markets such as Kisii. Alternatively, the catch can be put in cold storage (One of the bandas has such facilities.) to await better prices before shipment. Smoking facilities will allow fish to be smoked when catches are particularly heavy. In general the marketing effort will concentrate on fresh fish, as the price is much better. Distribution to markets inland is to be done by the Society's own van. In the past, private traders have dominated the marketing of fish, buying low at Mohuru and selling high after transporting the fish elsewhere. The reorganisation of marketing through the Co-operative Society will enable the producers to obtain a better price for their catches.

When members of the Mohuru Society's management committee and other Society members were interviewed in December 1974, they impressed members of the I.D.S. study team with their high level of commitment and enthusiasm for the co-operative. The Society is only a few years old, and has about 170 members, who represent roughly a quarter of the total number of fishermen in the Mohuru area. Qualifications for membership are ownership of nets, payment of the entrance fee (shs.5/-) and purchase of one share in the Society (shs.20/-). According to the local Fisheries Officer, the Assistant Co-operatives Officer and Society members, the local people were reluctant to join the Society at first, but now interest is increasing sharply. Members feel that the Society has brought them the following advantages:-

- It has opened employment opportunities for local people. The Society now provides employment for eighteen people, who would otherwise be looking for work in places such as Kisumu or Nairobi.
- Now that fishermen are marketing their catches themselves, they find their incomes have increased, which makes it easier for them to pay school fees for their children and to buy produce from places such as Migori to supplement the poor and limited crops in Mohuru.

9. See Chapter Two of this Report for discussion of other projects related to co-operative development in Migori/Kihancha.

- The co-op has helped to bring local people together to exchange ideas, such as ways to improve business, and to benefit from collective action, such as getting better prices for nets.

The Society's headquarters was built on a harambee basis, with mabati roofing and timber provided by the Provincial Commissioner. In addition to serving as an office, the building is used to store nets and repair materials for purchase by both members and non-members. The Society receives a discount on these items when buying in bulk from Kisumu Fish Net Industries.

Problems

The strategy devised to develop fishing co-operative in the Mohuru area appears a promising one, not least of all because of the high level of commitment shown by the local people. An element of experimentation is **involved** in the attempt to give the co-operative a role in the distribution and sale of fish catches. However, a serious obstacle has been encountered which threatens the success of the project. The Department of Fisheries originally donated an old Chevrolet van to the Society for use in determining the feasibility of inland distribution. The van operated for eight months or so quite successfully, even though there were a number of mechanical difficulties. Then a fire in the engine compartment put it completely out of commission. Because the trial operation was a success, the Society was promised the use of a new van by the Provincial Fisheries Officer (Nyanza) and by the Assistant Director of Fisheries in a meeting at Mohuru in November 1974. As of May 1975, the van had not been delivered. (Personal communication with the Assistant Co-operatives Officer - Migori/Kihancha). It was reported to be still in Nairobi undergoing necessary modifications. When interviewed in December 1974, the Society's Secretary/Manager said that profits had been halved due to lack of a van. It is obvious that the ability of the Society to meet its loan repayments easily and in good time is seriously affected by this state of affairs. Without the van, the Society must rely on the local bus service for shipments, and this means a ~~slower~~ and more limited distribution of the catch.

Another problem which was noted by the study team in December 1974 was that the fish banda which was supposed to be outfitted for cold storage lacked the necessary insulated door and ceiling. It was therefore impossible to store fresh fish. Even when complete, this facility cannot operate without the support of the van, as ice must be transported into the area. It is planned that the van will bring ice to the store when making return trips.

COMMENT: CO-OPERATIVE DEVELOPMENT IN SOUTH KWALE

There are four major co-operative development projects in the South Kwale SRDP. The first is aimed at reorganising the existing Kwale Farmers' Co-operative Society for the purpose of efficiently transporting and selling sugar cane to the Ramisi Sugar Factory. The second project has the objective of establishing a co-operative society in Kikoneni Location to purchase and market various kinds of farm produce as well as to secure and administer farm loans. The third project is to set up a fishermen's co-operative at Msambweni for buying and marketing fish. The fourth co-operative development project is aimed at training members in management principles and practices of co-operative enterprise. Although it is listed as an SRDP project, this co-operative training does not receive any SRDP funds and is incorporated into the District co-operative education programmes.

There are about 366 members of the Kwale Farmers' Co-operative Society, but very little sugar has been marketed. The **purchase** and marketing of sugar depends on the Ministry of Agriculture's sugar outgrowers project which has not been successful. (See Chapter Four of this Report.) The co-operative is therefore mainly involved in developing marketing for cashew nuts, simsim and copra. The visible result of the SRDP effort has been to enable the co-operative to secure a £2500 loan through the Co-operative Bank to purchase a lorry. The District Co-operatives Officer was apparently not consulted or otherwise involved in the design and implementation of this project.

During the 1973/74 financial year, the Kikoneni Produce Buying Co-operative obtained a loan of £2500 through the Co-operative Bank which was used as purchasing capital for deliveries of cashew nuts, simsim, bixa, maize and chillies from local producers. These purchases were aimed at improving local marketing services as well as earning the traders commission for the benefit of the 393 co-operative society members. The Society acts as local agent for the Maize and Produce Board and all produce is delivered to the Board's depot. This project has been successful as an experiment in ways to improve a co-operative's marketing activity. The Society had no difficulty in repaying the loan and in fact made a profit. A further loan of £3000 has been issued to the Society for 1974/75.

The fishermen's co-operative was registered in July 1974 and was still in its infancy at the time of the I.D.S. study team's visit in December 1974. The project shows promise but is threatened in two ways. Society members are renting fishing boats from commercial fishermen with whom they have to compete. Furthermore, the local hotel industry provides the largest single market for fish in the area, but there are indications that private traders are lobbying the hoteliers not to buy fish from the co-operative.

PART III: SUMMARY AND RECOMMENDATIONSGENERAL

1. Fundamental factors in the local environment in which co-ops operate often undermine effective co-operative organisation. The standard stock of administrative-technical measures applied up to now will be of limited utility unless means of coping with these influences can be found. Factionalism amongst local interest groups and the dominance of the elite tend to impede loyalty to co-operative organisations and to subvert their goals.
2. Fuller participation of rank-and-file membership in the movement is a prime desideratum. But this requires that ordinary members should think of co-operatives as their organisations, which means that the co-operatives must bear more material and ideological relevance to their lives.
3. Sessional Paper No. 14 calls for more educational opportunities to be directed towards the general membership in order to promote greater involvement. This policy should be vigorously pursued, and other steps should be taken as well.
4. The proposed Co-operative Development Council should concern itself as a matter of priority with making co-operatives more relevant institutions for genuine smallholders. In the design, implementation and monitoring of credit programmes or other development activities, benefit for the less privileged must be the guiding principle.
5. As one means of reducing competition between local solidarity groups for representation on society and union management committees, the size of the committees could be adjusted to ensure that all 'constituencies' in any locale are represented. This kind of flexibility in organisational structure should be encouraged in general, for the imposition of strict bureaucratic rules and procedures can hamper the ability of co-operatives to develop themselves in terms of circumstances peculiar to their local environments.
6. The policies of centralisation of co-operative society functions into the district unions and amalgamation of smaller into larger societies should be implemented with caution. Such consolidation has not always yielded advantages even from a business point of view, and the risk of fostering alienation amongst members is high. Individual societies should be allowed a full voice in deciding questions of consolidation, and should not be pressured into joining larger units.

7. In the training of Co-operatives Department staff, especially those working at field level, attention ought to be paid to the subject of relations between the movement and the Government bureaucracy. Training should stress the costs associated with extensive Government control and supervision of the movement, particularly as regards member involvement. Staff should be made more aware of how their own behaviour as officials towards the co-operative members can be counterproductive if they adopt a hard bureaucratic posture.
8. Serious consideration should be given to the idea of allowing the executive staff of societies and unions to join the management committees. This would be an important step in reducing the conflict between the staff and leadership of the movement.
9. Sessional Paper No. 14 promises measures to deal with personnel and management problems within the Co-operatives Department and in the co-operatives themselves, such as insufficient staff, lack of qualified staff and poor terms of service. Attention to the question of the co-operatives' role in marketing is also promised. It remains to be seen when and how effectively intended measures in these critical areas are implemented.
10. As a component of the SRDP, the co-operative programme has been disappointing in several respects. Projects have lacked a strong experimental element (e.g. Kapenguria), there have been cases of poor planning (e.g. Kwale and Vihiga/Hamisi, though in the latter case the association between co-ops and the SRDP is only proposed, not actual), and poor co-ordination between the Co-operatives **Department and other** Government agencies (e.g. with the Ministry of Agriculture in Kwale and Kapenguria and the Department of Fisheries in Migori/Kihancha). Those co-operative development efforts in SRDP areas which were evaluated by the study team have not yet demonstrated viable solutions to chronic problems in co-op development. So far, in spite of SRDP activities, the potential role of co-operatives **in rural** development is an open question.

KAPENGURIA

1. Co-operative development activities within the Kapenguria SRDP for the most part lack a conscious experimental framework. Little has been done to test innovative strategies. This is unfortunate, as the area presents problems in co-operative development which exist widely in other parts of the country.

For example, testing new measures designed to promote increases in production, utilisation of local resources, benefits for the poorer farmers and member involvement would have great relevance for other areas. The Pokot

F.C.S. in particular provides a good testing ground for strategies to revitalise near-dormant societies.

2. It is possible to view the maize store and the proposed sunflower development projects as potentially experimental. Both projects aim to put the Pokot F.C.S. in a better position to compete with private traders. Yet these projects lack a rigorous definition of the existing problem and the steps proposed for dealing with it, and careful monitoring and evaluation.

3. The Co-operative Production Credit Scheme (CPCS) projects in Kapenguria are still young and cannot be evaluated conclusively. However, several points should be noted.

In general, care should be taken in ongoing and future CPCS activity that a fair distribution of benefits be achieved. The scheme should not neglect those with fewer opportunities for income-generation and employment.

Arranging CPCS credit on a revolving basis appears worthwhile. Development funds are kept circulating locally, and this may incidentally encourage conscientious repayment since a certain amount of social pressure can be brought to bear on current recipients to keep the loan system alive. This idea may warrant consideration for replication elsewhere, **depending** on how it fares in Kapenguria.

4. CPCS - Teleu

If still more CPCS funds are being considered for the Teleu Co-operative in the future, a determination of the incomes and land holdings of Society members as compared with those of the community as a whole should be made first. It is possible that poorer farmers are not being included in the Co-operative.

The Teleu CPCS project is being undermined due to short-comings in the supporting services. This indicates a lack of integrated effort among Government departments. Measures need to be taken to correct the situation:-

- Teleu area cattle dips are not functioning properly.
- The establishment of an artificial insemination service is long overdue and this should be started immediately.
- The quality of extension service to dairy farmers could be improved. Farmers do not fully appreciate the measures necessary for effective disease control.

The Teleu Society should develop a nucleus of trained members who can advise fellow members on dairy cattle husbandry, making the Society itself more involved in promoting proper management.

5. Muruny CPCS

The Muruny CPCS project must be carefully integrated with the older Ministry of Agriculture smallholder scheme for sheep development. The allocation of grade sheep throughout the Lelan area should be monitored closely to assure equitable and optimal distribution.

The possibility of using the CPCS to help revitalise coffee production ought to be investigated.

Further encouragement to pyrethrum farmers in developing plant stock from seed is desirable. Training of Muruny Society members in pyrethrum production should be emphasised.

The Muruny Society might be encouraged to take over the English Potato bulking work of the Ministry of Agriculture. The development of English Potato production as another Society enterprise should be an objective.

6. The eventual purchase of a lorry for collective use by West Pokot District societies warrants serious consideration. If a lorry becomes available, steps should be taken to ensure its exclusive use for co-operative business. No 'commandeering' by Government officers ought to be allowed.

7. The Pokot F.C.S. has had serious difficulties, mostly related to the sad state of coffee production in the Mnagei area. The maize store and sunflower projects will probably help the Society considerably, but attention to the coffee question is urgently required. SRDP resources have not really been used effectively to encourage coffee production, and Government officers' efforts to promote coffee have not been particularly successful up to now.

The current state of the 1963/64 A.F.C. loan needs immediate clarification. The case for waiving any outstanding amount is strong.

The coffee factory at Tartar needs immediate renovation. The processing equipment should be repaired and subsequently maintained properly.

A competent factory manager is an absolute necessity, and should be given a reasonable salary. The present manager has had no training. He should either be trained or replaced.

The Pokot F.C.S. should drop out of the Sirikwa Union. It derives no benefits from membership, and in fact suffers because of delays in book-keeping services provided by the Union. The 4,000/- spent annually on union

membership could just as well go to paying a competent Secretary/Manager to keep the books. The suggestion that the Society drop out of the Union runs against general Co-operative Department policy, but such an action is warranted in this case. A new Union could eventually be formed in West Pokot if necessary, once the co-operative movement in the area matures.

Member apathy in the Pokot F.C.S. is very high. This may partly be attributed to weak leadership, and partly to lack of benefits in membership for reasons beyond the leaders' control. One way to encourage better member participation in Society affairs is through intensified efforts to promote coffee production, focussing on training the members in coffee husbandry and pointing out to them the importance of the efficient operation of their society. A new and/or more responsible leadership would emerge if the members became actively involved in the coffee business and Society affairs.

Extension and training activities should not be wasted on those who have lost interest in coffee growing or were never really interested in the first place. If they continue to prove unresponsive, efforts should be concentrated on more recent growers who show more enthusiasm. Interest should increase once coffee growing reaches its potential as a profitable activity.

The Society itself should be encouraged, by the provision of advice and the means to implement it, to take more responsibility in promoting and disciplining coffee development activities. For example, the Society could organise teams to inspect coffee shambas and advise growers. (See point no. 9 below.)

8. Plans for a consumers' co-op shop at Makutano, to be operated by the District-wide Kiletat Women's Organisation, require early investigation by the Assistant Co-operatives Officer in conjunction with the Assistant Community Development Officer in Kerenguria. Decisions need to be made as to the feasibility of the shop, what goods it might handle and how the Co-operatives Department can play a role. Firm plans and estimates need to be drawn up and a phasing for action worked out.

9. SRDP funds could be used for training co-operative society staff, officials and members. Educational opportunities are not lacking. Many training sessions, seminars and correspondence courses are given through local Farmers' Training Centres and the Co-operative College. Using SRDP funds for this purpose could be justified under the SRDP principles of experimentation and development of existing resources, providing appropriate plans were devised.

- The possibility of establishing an education fund for each society, first with the help of SRDP finance and later maintained by the societies themselves, ought to be considered. The education fund would be used to meet travel expenses and entrance fees for training events.
- The idea of society members organising themselves to take on extension duties has been mentioned in connection with both Teleu and Pokot co-operative societies. Teams of trained members could be organised. Alternatively, the Agricultural Village Committees method tried in Migori SRDP, or a variation of it, could be tested in West Pokot. In any case, use of SRDP funds for any necessary training would be justified.

VIHIGA/HAMISI

1. The progress of MANYATIBU to date has been most discouraging. The membership drive has a very ambitious target, but there has been a marked lack of interest amongst local women. There is apparently some concern on the part of those who have already committed funds to the project as to what will happen to their money.
2. Those who have studied the feasibility of large-scale vegetable production projects in the Vihiga/Hamisi area see the prospects as very poor. A potential for dry-season vegetable growing has been identified, and some possibility exists for successful small-scale growing and marketing by smaller groups of producers.
3. We would recommend that the MANYATIBU proposal as now formulated be dropped. A radically revised version of the proposal might be possible, involving the organisation of a few of the women's groups in each location rather than the comprehensive organisation now planned.
4. Any attempt at large-scale marketing of handicraft items does not seem advisable at this time. It would be better to work at a more modest level, fully utilising the existing markets and monitoring the results before attempting anything more ambitious.

MIGORI/KIHANCHA

The strategy which has been devised for the promotion of production and marketing reorganisation in connection with the Mohuru Fishermen's Co-operative seems advisable and appropriate to the SRDP. However, its success depends upon the provision of two crucial inputs:- The new fish van should be secured -its delivery to the Society is long overdue. Also, the insulation of the fish storage facility at Mohuru Bay should be completed.

SOUTH KWALE

1. Co-operatives projects must be integrated with relevant agriculture projects to ensure success. This would avoid such fruitless efforts as the organisation of a co-operative to market sugar which is never produced.
2. Experimentation in improving co-operative marketing in Kikoneni has been extremely successful and the project strongly warrants consideration for replication elsewhere.
3. Positive Government policy is needed to protect new co-operative societies from heavy competition from private traders, who in the Kwale **area may be** using unethical methods to protect their interests.

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CHAPTER NINETEENSRDP AS AN EXPERIMENT IN DEVELOPMENT ADMINISTRATIONINTRODUCTION

In this chapter the way in which the Special Rural Development Programme has been administered is discussed. Administration has frequently been cited as one of the shortcomings of development policy in Kenya.¹ This shortcoming is by no means peculiar to Kenya. It is now generally recognised that developing countries must respond to underdevelopment with administrative structures which are responsive and oriented to change. In other words, development administration is more than the sheer exercise of administering development projects: it must contain features which make it developmental in its orientation. It is therefore commendable that an attempt has been made, as part of SRDP, to devise a system of administration that is itself experimental, with the intention of replicating it elsewhere in the country if it is judged successful.

Within the Ministry of Finance and Planning, certain officers have been designated to oversee the Special Rural Development Programme. From 1968 until 1973, most of this responsibility fell to a British officer, but since his departure in early 1973, the work has been divided for the most part between one Kenyan officer and one U.N.D.P. advisor. SRDP operations in the field have necessarily involved a number of ministries besides the Ministry of Finance and Planning, and in order to acquire a satisfactory level of interministerial coordination, 'Linkmen' have been designated in each relevant ministry. All SRDP matters involving their ministries are to come to them first.

Outside Nairobi in the SRDP areas themselves, a new post of 'Area Coordinator' has been created. There is one Area Coordinator in each SRDP area. District officers from the Office of the President have filled these posts, and although they now have responsibilities to the Ministry of Finance and Planning, they remain officially within the Office of the President. As their job title suggests, their task is to coordinate SRDP activities within their areas. In order to do this, a management information system has been devised which has become known as the Programming and Implementation Management System (PIM). Review of PIM and initiative in developing programmes devolved on a coordinating body known as the Project Committee.

The question of evaluating this administrative experiment is a difficult one because of its interdependence with the experimental development

1. See for example, the Ndegwa Commission Report (8).

projects being carried out simultaneously. It is impossible to evaluate these two types of experiments separately. Perhaps the achievement of SRDP objectives should be the common and ultimate criterion for the evaluation of both. However, a short discussion of some of the general problems of development administration should serve as a background and a supplemental criterion for specifically evaluating SRDP administration.

Development administration is the process of carrying out planned change in any sector **of** the economy or the social services, and not simply implementing decisions through routine behaviour. This involves formulating policies, programmes and projects and inducing only the necessary changes in people's attitudes and behaviour. In addition, and most important, a condition of scarcity of resources must be a built-in premise of the policies and programmes. In other words, the scope of the activity is not enough to distinguish development administration from traditional public administration, for the **environment** of the activity is in many ways the most important distinguishing feature.

Effective development requires an administrative system which incorporates broadly accepted values and norms so that its performance is to a large extent independent of time, place or any particular individuals. In other words, institutionalisation must take place. In pursuit of this intermediate goal, most developing countries are forced to utilise external assistance in one form or another. Sometimes, the nature of the assistance is such that it tends to militate against institutionalisation. The history of the original Programming and Implementation Management System (PIM), which was specifically designed for SRDP administration, illustrates one aspect of this problem. PIM became closely identified with its **creators** who left the country before the system was properly understood. At other **times**, inter-donor conflict and different goal perceptions when several donors are involved in one area can also have an undesirable effect on the process of institutionalisation.

A second prerequisite to development is an adequate level of expertise without negative side effects. Few people would deny the necessity of some expertise, especially when programmes of economic development are involved. There is a danger, however, that specialisation will bring two undesirable consequences: first, the administration is likely to become too great a drain on financial resources, and second, the administration is likely to become too complex. An administrative structure that is too complex easily leads to a one-way top-down pattern of communication simply because the local people

might not understand the system well enough to even consider making an input. The result could be lack of local enthusiasm or even outright non-cooperation at the project level. In this context, the structure of SRDP Project Committees is of crucial importance, and especially the role of the Area Coordinator as a general administrator.

Another prerequisite of development is an administrative structure that facilitates reaching good decisions in a short time.² This dual objective is not peculiar to development administration. However, in development administration the dual objective creates a dilemma. Speed can be achieved by a high degree of decentralisation, but to achieve both speed and quality in decision making requires a high calibre of staff at the periphery, which is not likely in a situation characterised by scarce resources. Given the premise of scarce resources, a priority of values must be established, and by accepting deconcentration, the SRDP administration seems to have opted for some speed, among other things.

However, the choice between high quality implementation and immediacy of implementation need not be absolute. It is possible to make administrative arrangements which utilise the expertise at the centre during implementation and at the same time ensure that the experience of field staff is fed back to policy makers. Perhaps this is the context in which the role of the Linkmen should be understood. The onus is on policy makers at the centre to strike a balance between the necessary level of control and the equally necessary development of leadership, initiative and teamwork in the field which are classic concerns of development administration.

Further, means must be found to involve the local population in the implementation process, not by manipulating local leaders, but in a meaningful way which allows local people to have a real say in the way their communities are governed. This community participation should help channel local energy and talent towards solving local problems without continuing dependence on Government administrative and financial resources so that these limited resources can be used as productively as possible. In this process, Government officers may be subject to some degree of popular criticism, but this is by no means undesirable. Administrators cannot expect to be immune to criticism from outside the civil service.

Emphasis on these concerns in the SRDP areas should enhance the role of the Project Committees. However, a thorough assessment of their functioning

2. See Guy Hunter, (5).

must take into account such factors as the budgets available to them, their composition and recruitment policies, and in particular their relationship to the local communities.

The evaluation of SRDP administration presented in this chapter is based on the study of as much documentation as possible, both in Nairobi and in the field, and on interviews with a number of SRDP officers, planning officers, project advisors and Linkmen. Finally, the discussion of various SRDP sectoral programmes in other chapters of this Report has pointed out the interplay of administration with other factors.

In this chapter, the experimental administrative elements in SRDP are discussed in the following order: the Programming and Implementation Management System (PIM) and the Project Committees, the Field Staff Management System (F.S.M.S.), SRDP as a grant-in-aid mechanism and local participation. In the sections that follow, the Linkman system and the role of expatriate technical assistants and advisors are discussed. The net impact of resources channelled through SRDP and the administrative factors affecting this impact are assessed. Finally, recommendations are made for the administration of SRDP and for district development planning.

THE PROGRAMMING AND IMPLEMENTATION MANAGEMENT SYSTEM AND THE PROJECT COMMITTEES

The PIM system originated largely from the work of two former I.D.S. research fellows, Deryke Belshaw, who worked on the project from 1971 to 1972, and Robert Chambers, from 1970 to 1973. In collaboration with the Area Coordinators and Nairobi officers of the relevant ministries, they drew up a plan for streamlining development administration, which they and many other observers had regarded as a critical weakness in Kenya's development programmes.³ A staff seminar was held at Kwale in 1973 where a number of officers from different ministries discussed PIM and suggested a variety of changes which have since been incorporated into the system. The present discussion largely deals with the revised system as it stood in late 1974 and early 1975.

The basic components of this system are:-

1. A Project Committee which meets three times a year. In view of its importance we shall give special attention to this body;
2. Informal meetings of Area Coordinators and SRDP staff;
3. An Annual Implementation and Evaluation Review;

3. For the background of the PIM idea, see E. Kulp (9), D. Belshaw and R. Chambers (2) and R. Chambers (3).

4. An Annual Programming Exercise;
5. An Annual Estimate Exercise; and
6. An Annual Re-plan and submission of new proposals.

The Project Committee

Suggestions as to the composition of the Project Committee are given in a Ministry of Finance and Planning document, EPD/sc 237/020, p. 5.

The suggested membership is:-

1. The Divisional Officer of the Division(s) in which the SRDP is situated - chairman,
2. The Area Coordinator - secretary,
3. All **divisional** departmental officers associated with SRDP projects,
4. Members of Parliament (M.P.s) whose constituencies embrace the SRDP area,
5. Two representatives of local government in the area (It is not clear whether local government officers come into this category.),
6. Three prominent local leaders,
7. One representative of the voluntary agencies operating in the area, and
8. One senior Chief from each Division covered by SRDP.

There is also an important provision that the District Commissioner (D.C.) may vary the membership at his discretion to meet local requirements.

Chambers and Belshaw gave little attention to improving local participation in SRDP, and the whole programme has been criticised from time to time because of this. (See, for instance, the minutes of the Kwale ~~staff~~ seminar, p.9.) A number of attempts have been made to overcome this weakness, one of which has been the strengthening of the Project Committees as avenues for effective local participation. This was done at the Kwale seminar, and the rationale is contained in a circular distributed afterwards:-

Experience within the six SRDP areas has demonstrated that full commitment and participation of the public, and optimum utilisation of local resources, can only be assured if local leaders are willingly and effectively involved in the development process.... It is important that SRDP Project Committees should be fully associated with all steps in the revised management system. It is equally important that the normal planning machinery of government - particularly the District and Provincial Development Committees - should not be short-circuited in matters of policy formulation. (EPD sc 237/020, p. 4)

The actual performance of the Project Committees has varied quite a bit in the different SRDP areas. The critical factors seem to be: the nature of local politics in the SRDP area, the attitudes and skills of the Area Coordinator, the turnover rate of Area Coordinators, and the attitudes of sectoral ministries towards local participation.

In all the SRDP areas there have been difficulties in involving local politicians in the Project Committees. Part of the reason has been that participants are not paid expenses for attending meetings, and M.P.s who must spend a great deal of time in Nairobi have to travel long distances to attend. Secondly, the Project Committees have in fact tended to remain advisory, rather than policy-making bodies so that many non-officials do not see a great deal of point in taking part. Further, some politicians have had unrealistic expectations about SRDP. For example, one former M.P., who lost his seat in October 1974, wrote to the Area Coordinator for the area embracing his constituency to complain that no SRDP money had been made available for Harambee school projects in which constituents were involved. This shows his failure to fully understand the experimental nature of SRDP. Another M.P., whose constituency straddles SRDP and non-SRDP areas, argued that the area outside SRDP should receive **larger** Government contributions for self-help schools to compensate for not coming within SRDP, although in fact the part of his constituency within SRDP is relatively poor in terms of educational provision. His argument conflicted with the important principle that SRDP areas should be treated equally with other areas in all matters which do not pertain to SRDP, such as the funding of self-help schools which has never been a part of the Programme. Finally, the evidence suggests that a constant problem has been that some members of the Project Committees treat SRDP as a tool for political manipulation which they can use to improve their levels of support in their constituencies. Once it is made clear that they cannot do this, some politicians have lost their **incentive** to participate.

The Functioning of Project Committees in Five SRDP Areas

Although the Area Coordinators have generally done their best to encourage local involvement in SRDP, they have often confronted difficult situations. In Kapenguria, for example, local leaders show a good deal of suspicion towards SRDP. It has been very difficult to involve the Pokot County Councillors, whose political inclinations seem to be to have as little to do with central Government as possible. The KANU District Chairman also takes very little interest, but since the elections of October 1974, both M.P.s seem keen to play an active role.

In Vihiga, the Area Coordinator, in collaboration with the District Commissioner, allowed the Project Committee to grow much larger than the Ministry recommended on the grounds that any Councillors or Chiefs omitted would resent the exclusion and make SRDP activities in their areas more difficult. This expanded Committee has become unwieldy so that many decisions are taken by an inner circle, generally consisting of the Area Coordinator, the departmental heads and USAID officials. Thus in Vihiga, the Project Committee seems to have become a device for 'formal cooptation' of local leadership, with the real decisions being made by a smaller group. The M.P.s in the area have not been closely involved.

In Kwale the Area Coordinator is not happy with the functioning of the Project Committee. While attendance is not a serious problem, the non-officials on the Committee tend to bring major demands without seriously considering the implications of their requests, especially the financial ones. This places a burden on the members of the Committee who are civil servants since they must put a damper on the expectations and demands of the non-officials.

In Mbere low attendance by non-officials has been a major problem, and they have complained bitterly about not receiving allowances to cover their expenses for attending meetings. However, the Area Coordinator has tried to build good informal relationships with some local leaders, and in this way they have been able to participate in SRDP planning and implementation.

In Migori/Kuria, the Project Committee seems to have functioned quite successfully due to a number of factors. The Area Coordinator has supported the group by energetically helping members propose programmes for the agenda, by encouraging the Committee to take joint responsibility for decisions, and by giving the Committee full credit for successful projects. In addition, the attitudes of local leaders have been positive, and the area has probably also benefited from the progressive attitude of the Nyanza provincial administration towards local participation in development. Finally, the early withdrawal of expatriates from the programme no doubt encouraged the local people to take initiative and responsibility.

The Project Committee in Migori has repeatedly involved local people in the deliberations, for example assisting in road planning, siting forestry and livestock holding areas and recruiting road gangs. There have been occasional misunderstandings between civil servants and local people, but the deliberations of the Committee have remained constructive and effective. The afforestation, roads and stockist credit projects have all involved the successful coordination of the activities of several ministries.

In Migori, the Area Coordinator encouraged group problem-solving in the Project Committee and consensus as the basis for project selection and implementation. Even M.P.s were subject to the rule of consensus: one M.P. who made several self-serving proposals was subsequently ignored in replanning activities. With time, the Project Committee became an effective decision-making group, with both civil servants and local leaders actively participating.

This discussion suggests that the Project Committees have a great deal of **potential** yet to be realised, and highest priority should be given to improving their performance. There is no doubt that the problem of local participation is one of the most difficult in development administration. If local involvement is crucial to development programmes, then the Project Committees, or something like them have to work well. It is perhaps most important that participation be more than mere 'cooptation'. A measure of real power may have to be given to the local communities if participation is to be truly worthwhile. Also, some improvement in the effectiveness of the Committees would be achieved by paying allowances.

Other Aspects of PIM

The Annual Programming Exercise involves a meeting of local officers and representatives of the appropriate ministries to choose a number of projects to be programmed for the following year. The component operations of each project are identified and listed in sequence with the date by which they should be completed. Specific officers are given the responsibility for carrying out each operation, and the operations are transferred to a phasing form and then a bar chart.

Staff meetings are meant to take place monthly, but the emphasis is on informality. The Area Coordinator need not call a meeting if he can contact all the relevant officers informally and discuss with them whatever is required.

All SRDP officers produce triennial reports to present to the Project Committees, based on the project charts which are kept up-to-date throughout the year. If a project is delayed, this is brought to the attention of the Project Committee which decides what action to take.

The central figure in the PIM exercise is inevitably the Area Coordinator. If his understanding of the system is weak or if he lacks interest, it is unlikely that it will work well. However, some Area Coordinators are quite enthusiastic about PIM as a management tool. For example, one said

that PIM is "perhaps the best thing associated with SRDP. The conventional system of reporting is much less helpful because it gives very little information which can be a basis for action." Few central Government officials involved in SRDP have expressed similar sentiments.

Evaluation

PIM has substantial advantages as a reporting system, if only because conventional reporting is so inadequate both as a source of information and a basis for action. PIM makes it possible to identify problems quickly, as well as the action required. It also focusses administration on clear objectives, avoiding the problems associated with goal ambiguity.

Having said that PIM has substantial merits, it is probably not inappropriate to spell out some of its limitations. It is a complex system, although the revisions made after the Kwale seminar in 1973 have simplified it so that it is now our impression that most officers in the SRDP areas understand it and find it workable. However, some officers in ministry headquarters in Nairobi apparently still do not understand the system completely, and many senior officers at the provincial level still seem to prefer the conventional reporting system. This can cause difficulties for the Area Coordinators who need support from the provincial administration, and furthermore the system must be made acceptable to Provincial and District Commissioners if it is to be used for district planning in the future.

Even if the PIM system is followed correctly, it does not ensure that the various SRDP projects will be coordinated. It is perfectly possible to have a whole range of unrelated projects in an area where PIM is being used. Further, there is a danger that PIM breeds unnecessary formalism and inflexibility, but there does seem to be a reasonable awareness of this danger in the field.

PIM does not eliminate the need for good informal relationships among various officers in the field. Maintaining these relationships is an important function of the Area Coordinator. Also PIM cannot eliminate central Government delays in the release of funds. PIM does indicate quickly and clearly where delays have occurred, and in this way some pressure is exerted, but this does not ensure that the ministry concerned will take appropriate measures.

Although PIM incorporates an element of evaluation, this function is not yet being performed adequately. For one thing, sufficient reliable data have not been collected to assess the merits of ongoing programmes. An

officer in the Ministry of Finance and Planning has been appointed to look into this problem, and hopefully methods for data collection will be improved. A second factor hindering effective evaluation is the reluctance of SRDP field staff to be critical of a project. Instead there is generally the assertion that "all is going well". The problem of evaluation is certainly not confined to PIM, but more adequate methods of evaluation must be discovered, especially if the system is to be used for district planning, because evaluation is likely to be one of the primary roles of the new District Development Officers.

Conclusions and Recommendations

1. The Project Committees are potentially valuable, but are not working well at present in all SRDP areas. They should not be allowed to become too big, and perhaps they should be given more effective decision-making power.
2. Local involvement in decision-making is essential to effective programming by the Project Committee and should not represent merely a cooptation of local leadership with decisions already made elsewhere.
3. The revised PIM system is a useful planning tool which can be replicated for use in district development planning.
4. Measures need to be taken to secure better understanding of PIM by central Government officers and acceptance of the system at the provincial level, particularly if it is to be used in district planning.
5. There is a risk that PIM will be regarded as a panacea for all problems of rural development administration. Some problems such as the informal relations between officers, the allocation of power, and the timely release of funds by central Government cannot be solved by PIM.
6. A workable system of project evaluation has not been provided by PIM and is still very much needed.

THE FIELD STAFF MANAGEMENT SYSTEM

In 1971 Belshaw and Chambers, in conjunction with Ministry of Agriculture (M.O.A.) officers involved in SRDP and the Area Coordinator in Mbere, devised an Agricultural Extension Staff Management System for use in Nthawa Location, Mbere. Later this system was used in Evurori and Mavuria as well. At first a system was worked out for crops staff and later extended to home economics staff. Then a revised system was devised for livestock staff to suit their work activities which differ in a number of ways from those of crop production officers. This experiment was designed to remedy what were regarded as crucial deficiencies in the traditional management system for these types of field staff. These deficiencies included:-

1. Top-down target setting which was often unrealistic,⁴
2. No systematic choices of priority among competing demands on staff time,
3. No organised work planning for field staff,
4. Little feedback to supervisors on staff activities, and
5. No standard reporting procedures. (See Chambers, 3, p. 67.)

In fact, these criticisms, **with some qualifications**, probably apply to the management of other field staff as well, such as Community Development Assistants, Chiefs and Veterinary Scouts.

The new system devised for crops staff included:-

1. A daily activities record kept by each staff member. This listed the activities carried out each day of the month and compared these with the planned targets. These activities included farmers visited, crop demonstrations carried out, and so forth.
2. A location planning sheet on which the Assistant Agricultural Officer and locational Agricultural Assistant set out the priorities for the Location and planned how to meet them.
3. A black book kept by each staff member showing the farmers he had visited.
4. A farm visit book (red book) kept by each farmer who received a visit. The staff member recorded his visit in this book, the advice he gave and any other comments.
5. A daily dairy also kept by each staff member.

In each Location a monthly meeting was held for all extension staff. At this meeting, which was attended by the A.A.O., the information emerging from the staff members' records could be discussed. Failure to meet targets could be identified and explained. Another function of the monthly meeting was to plan together the work to be done the following month. The staff members then filled in the targets for the next month on their daily activities record.

This system was subsequently simplified to reduce the amount of paper work involved. The livestock system followed the same principles but was also less complex.

Did the system succeed? This is hard to measure. Certainly agricultural production in Mbere did not develop rapidly, so that some senior

4. This was not the problem in Mbere. Essentially there were no targets, either from the top or from the bottom.

M.O.A. officials considered the extension system a failure. Yet a good management system cannot bring about ecological changes, nor can it alone determine the appropriate pattern of crop production. What it can do is improve staff performance, and in fact this system operated well as an **organisational device.**

A number of real improvements could be observed. For one thing, the A.A.O. obtained much more information about the activities of his staff. If a particular crop were being neglected, the system drew his attention to the fact. Also, joint target-setting enabled the A.A.O. to make sure that certain key extension activities were included in each month's plan. Earlier the field staff had set their own targets informally with little involvement of the A.A.O. Finally, it seems likely that the system, once it was properly understood, encouraged field staff members to be more committed to their work since they felt their views were being considered by the more senior officers in Mbere.

A few problems did arise, however. The field staff found the forms complicated at first, but they seem to have overcome this initial difficulty fairly quickly. Certainly the complexity of the system is not a major defect. Some of the field staff were not particularly happy about the way the system allowed the A.A.O. to know what they were doing. We found this criticism more widespread than Chambers did. Finally, not all the information obtained was specific enough to be useful. Yet it seems this could not be rectified without greatly increasing the amount of paper work involved.

Belshaw left Kenya in 1972, and Chambers in 1973. Chambers had recommended the replication of the system in Embu Division, but this never took place, and once the two researchers left the system was also abandoned in Mbere. A similar system was used in Vihiga under USAID auspices, but it seems to have been considerably less valuable. The information it produced was actually no more specific than that provided by the conventional reporting system.

Although the Field Staff Management System was never replicated and was abandoned in Mbere by the end of 1973, virtually all observers and those who had participated in it considered it a useful extension management tool. A number of factors explain why it was dropped. For one thing, the initiative came from two expatriates who were outside M.O.A., and the officers they worked with in the Nairobi M.O.A. headquarters were also expatriates. No senior Kenyan was significantly involved, so that when the expatriates left there was no one

available to keep things going in Nairobi. Senior officers in Nairobi tended to feel that the system had not been worthwhile since it did not give quick results in terms of improved agricultural production. Chambers and Belshaw apparently exaggerated the potential benefits of the system, so that when the results, in terms of production, proved disappointing senior officers were disillusioned. Furthermore, the system used large quantities of paper which were supplied by the I.D.S. researchers. We were not able to ascertain the cost of this paper, but after the researchers left the M.O.A. did not feel the cost was justified. Finally, a number of senior M.O.A. officers felt, though probably incorrectly, that the system was too complicated for the junior staff.

Conclusions and Recommendations

As of January 1975, there was no M.O.A. officer at Nairobi headquarters who was familiar with the Field Staff **Management** System. Yet in Mbere, officers who had experience with the system felt that it had value. Certainly there had been problems: often the information obtained was too vague to be useful, often the field staff resented the opportunity the system gave for the A.A.O. to exercise closer **supervision** of their work, and sometimes staff members fabricated figures. Yet still this system is likely to be more effective than the conventional reporting system, and it could be used for field staff of other ministries as well. It is unfortunate that the system was allowed to lapse without being sufficiently evaluated.

1. It is recommended that an M.O.A. officer in Nairobi be assigned to report fully on the Field Staff Management System experiment in Mbere.
2. If the System seems to have been useful, it should be replicated in Embu or another SRDP area such as Tetu or Vihiga.
3. If the system is replicated, machinery should be devised to ensure the involvement of both the planning and extension divisions of M.O.A.
4. The replication should be carefully monitored by M.O.A. officers in Nairobi and by field officers.

SRDP AS A GRANT-IN-AID MECHANISM

A grant-in-aid is a fiscal device which enables a recipient to obtain resources from a donor subject to specified terms. An open-ended grant is one in which unlimited resources are available to the recipient once the terms have been met. A matching grant is one in which the recipient must provide a portion of the overall resources himself. The size of an

open-ended, matching grant is limited by the recipient's ability to raise resources, and full fiscal responsibility is placed with the recipient.

A closed-ended grant, on the other hand, is one in which the donor establishes the limit of total resources to be granted and retains the authority to accept or reject grant applications.

Analysis of grants-in-aid in different parts of the world supports the following conclusions:

1. **The existence of a grant that is conditional on fulfilling specified objectives acts as an incentive towards focussing local attention on those objectives.**
2. Open-ended, matching grants are likely to mobilise local resources.
3. A closed-ended grant is unlikely to be appropriately adapted to local needs. Too large an allocation results in waste, while too small an allocation frustrates local initiative aroused by the grant availability.

SRDP Experience

SRDP experience validates each of these three generalisations. To see this clearly a distinction must be made between grants from donor countries to the Government of Kenya and the allocation of resources from the Government to the SRDP Districts.

Kenya's grants from donor countries have been essentially closed-ended and non-matching⁵. While good performance under the grants may encourage further aid extensions, SRDP has been forced to plan within fixed resource constraints determined by the donors, rather than with an open-ended grant; or the donors' largesse has in some cases resulted in activities that were not replicable or that conflicted with locally determined priorities. Thus the Water Resources Survey in Migori and the large staff of technical assistance experts assembled in Vihiga both far exceeded any activities which could be replicated in other districts.

Within Kenya, most of the SRDP funds were administered through the central ministries in Nairobi and involved additions to the district-level budgets, rather than a grant to the Area Coordinator. Thus for many SRDP projects local officers have responsibility for project decision-making without fiscal control, and this has created a number of problems. Area Coordinators must

5. USAID required some matching resources, but these were not significant for motivating local resources because of the closed nature of the grant.

make tremendous efforts to secure inputs for projects which have already been approved: Authorities to Incur Expenses (A.I.E.s) are not processed by the ministries on time, vehicles, petrol and other materials which must be requisitioned from the ministries are delayed or diverted to non-SRDP activities, seed and fertiliser are not delivered in time for planting. Under this system of central control of funding, the functioning of the Area Coordinators is seriously limited by lack of direct financial authority, lack of control over non-SRDP activities in the SRDP areas and the inability to assure that personnel and resources required for projects will be available at the required times. If grants were made to Project Committees, with the Area Coordinators chief executive officers, many of these delays and bottlenecks could be prevented by assuring delivery of materials and permitting local purchase of inputs as needed.

The Ministry of Works was the one ministry which used a grant mechanism for SRDP projects. Funds for the labour-intensive roads projects were granted to the Area Coordinators in Migori and Vihiga. The Area Coordinators could set salaries, supervise local gangleaders and workers and requisition supplies at appropriate times. There has been no question of misuse of funds, and the success of these projects has exceeded all expectations. They have become the model for the proposed M.O.W. Rural Access Roads Programme.

Although the roads grant was not envisaged as a matching grant, it was administered in Migori to produce much the same impact as a matching grant. Faced by a budget too small to permit construction of desired road segments, the Area Coordinator encouraged contributions of land and labour to augment the M.O.W. funds.

In several instances, despite the central control of ministry allocations for SRDP, the Project Committees operated so as to match the available funds with local resources. In Migori, the efforts of the chairmen of the agricultural village committees matched those of the Government extension officers. The private investments in tobacco leaf production were matched with a Government programme to encourage afforestation.

Lessons of the Experience

Delegation of fiscal responsibility to the recipient of a grant assures effective coordination and avoids displacement of resources from the intended purpose of the programme. The Area Coordinators can control the personnel hired through a grant although their influence over ministry personnel is limited to goodwill created by intelligent leadership.

Locating fiscal responsibility in the Area Coordinators and Project Committees also implies that many of the counter-productive constraints on resource use imposed by the ministries could be avoided. For example, petrol and service for vehicles for SRDP has had to be requisitioned through ministry vouchers. The 'in kind' nature of this resource has limited the flexibility of SRDP and at the same time has failed to assure sufficient resources to meet SRDP objectives. The shortage of operable vehicles implies that non-SRDP activities have made claims on SRDP vehicles and supplies. In addition, conflicts between provincial engineers and SRDP personnel over tenders for water projects or use of ministry equipment could be averted by giving the Area Coordinators and Project Committees more responsibility. Also protracted waiting for supplies (as in the case of furnishings for Ministry of Health dispensaries) could be avoided by local purchasing.

SRDP was not conceived as an open-ended grant nor was it administered as a matching grant. Yet the experience of SRDP may be viewed as an experiment that offers insights into the relative advantages of matching grant programmes and the likely limitations of programmes that are closed-ended and completely financed by the central Government.

A basic concern of SRDP was to develop innovative projects that could be replicated in other areas of Kenya with available resources.⁶ Minimising financial burdens on Government implies a maximum of self-help which in turn implies a local understanding and a local desire to participate in the development programme that is based on a clear local perception that the programme is high priority.

Thus the need for local resources implies that development projects have to relate to a local view of priorities - if roads or community water supply are perceived as the most important development programmes, maximum local involvement is achieved by incorporating the local interest in these projects as part of SRDP. (The local feeling that roads and water are new investments was voiced repeatedly by a variety of spokesmen.) A programme that tries to proceed according to another view of priorities would encounter local disinterest or resistance.

The Migori fish marketing project is an example of a project developed to meet local interests - the consumers were eager to purchase fish and the

6. Available resources was nowhere clearly defined, but the term presumably connotes the fact that Kenya has a limited amount of government revenue that can be mobilised for development projects; and local communities have some available manpower, land, and other resources that can be added to a development programme.

fishermen were eager to extend their market and gain a better prices. SRDP organised a transport system that accomplished both. Thus attention to local desire stimulated some unusual programmes.

The implementation of SRDP has also **illustrated** the value of making grants to the Project Committees. The rural roads programme, which was administered autonomously at the local level and financed by grants, was innovative and successful. In contrast, the complaint was often heard that some agricultural projects had to be abandoned because authorisations to incur expenditure were delayed by the Ministry of Agriculture so that seed and fertiliser could not be delivered in time for planting or other problems created. Such experiences clearly indicate the dangers of withholding financial responsibility from the Project Committees which initiate and coordinate the projects.

When PIM was used effectively and the Project Committees functioned as problem-solving groups, constraints on implementation could often be overcome. Success depended in particular on the ability of the Area Coordinator to mobilise personnel to meet the needs of local projects, to secure the approval of new projects and the release of funds, and to ensure the timely delivery of needed resources. The Area Coordinator's effectiveness in these tasks was seriously limited by lack of control over development programming which did not come under SRDP, by lack of direct financial responsibility and by the inability to assure that the personnel and resources required for projects would be available on time. (See 6, p. 49.) All these difficulties could be averted by making the Area Coordinators the administrators of open-ended, matching development grants.

Local Involvement

For open-ended grants to function well, plans to use grant funds and motivation for committing local resources must be created through local involvement. The Project Committees appear to have been a key mechanism to accomplish these tasks.

In addition to encouraging active Project Committees, a number of other techniques have helped mobilise community support. One effective technique has been the involvement of local leaders in project implementation decisions. For example, Chiefs and Assistant Chiefs were successfully used to recruit gang leaders and labourers for road projects in Mbere, Vihiga and Migori; and Agricultural Village Committee chairmen have **helped** schedule the activities of extension agents. Another technique has been to make certain that, once local

resources have been mobilised for a project, the necessary Government support is forthcoming so that the project can be completed without delay. For example, the Project Committee in Migori recognised that once land had been donated and cleared for the roads project, the roads must be completed without delay. Failure to do so would have caused a loss of public confidence which would seriously jeopardise local support of future projects.

THE LINKMAN SYSTEM

Soon after SRDP was initiated it was realised that an officer in the headquarters of each participating ministry was needed to receive, process and dispatch to the field information relevant to SRDP, so that project ideas and proposals could be communicated without delay. A decision was made in 1970/71 to designate at least one officer in each participating ministry to perform this function, and these officers subsequently became known as Linkmen.

Since its inception five years ago, the Linkman system has worked well in some ministries and much less well in others. In those ministries where the system has worked well, senior officers with a keen interest in SRDP have been appointed Linkmen. In one ministry, the position has been held since its inception by two Kenyans who are enthusiastic about the kinds of activities which have been part of SRDP. In other ministries, officers were appointed Linkmen who had never worked in the rural areas and were not enthusiastic about their duties, or officers were appointed who were already fully employed and were not relieved of any of their prior responsibilities.

The responsibilities of a Linkman include frequent visits to the SRDP areas, and in order to make these visits the officer must not be tied down to other routine duties in Nairobi. In addition, he must have access to a vehicle and the necessary allowances to enable him to travel to the field. In one important ministry, the designated Linkman was an undersecretary, and he had delegated his SRDP responsibilities to one of his officers without relieving him of his other tasks. This officer had not visited any of the six SRDP areas in a full year. He gave lack of transport as the main reason for this. In the same ministry, two young expatriate officers had previously acted as Linkmen, and they had been primarily concerned with collecting data for their own research activities. Thus they concentrated only on those SRDP activities which were of special interest to them personally.

Another major responsibility of the Linkmen is to handle **SRDP-related** problems for their ministries, and this requires close consultation with other operating ministries and with the Ministry of Finance and Planning. In fact, it appears that there is no horizontal communication concerning SRDP projects except between each operating ministry and the Ministry of Finance and Planning. If the coordination provided by the Ministry of Finance and Planning could be supplemented by consultation between the other relevant ministries, the SRDP decision-making process could be greatly accelerated.

A third major responsibility of the Linkmen is to ensure the timely release of resources from their ministries for SRDP project implementation. This duty has been carried out effectively only in the Department of Social Services and the Ministry of Works. We found numerous instances in which Area Coordinators had identified the need to release funds in their Project and Implementation Management Reports, but action was not taken at headquarters for months.

Recommendations

1. The system of Linkmen is a useful innovation which should be **strengthened** and replicated for development administration on a nationwide basis. Ministries should designate officers to be in charge of specific activities, and their names and responsibilities should be known to field officers so that they will know whom to approach when they have problems.
2. Linkmen should be officers who have field experience in the relevant areas of activity and who are enthusiastic about their responsibilities. It is pointless to designate a senior officer as Linkman if he is not able to perform his duties effectively.
3. Linkmen should be allotted the necessary transport and allowances to visit the field regularly.
4. Linkmen from the different ministries should meet together periodically and communicate informally whenever necessary for the effective implementation of projects.

THE ROLE OF EXPATRIATE TECHNICAL ASSISTANTS AND ADVISORS

The focus of this section is mainly limited to the field activities of the expatriate technical assistants associated with SRDP. For a detailed evaluation of the role of technical assistance in SRDP administration in general, see Oyugi, (10), pp. 102-123.

The Personnel Involved

Ideally a project advisor should be highly regarded by those whom he is supposed to advise. This high regard emanates from a number of factors, including relevant qualifications and experience and the ability to deal with the problems at hand and to cooperate effectively with local colleagues. The men serving in the five SRDP areas where expatriate personnel are employed have been ~~more~~ mature in years. Almost all of them have had high academic qualifications, **and most** have had adequate relevant experience. A number of them have seemed competent and dedicated and apparently cooperated satisfactorily with their Kenyan colleagues, but a few have appeared to be ill-equipped for the roles they were supposed to play.

Kapenguria and Kwale SRDP areas each have one expatriate advisor, and both of these men are highly qualified and experienced. They have both been with the Programme since 1971. In Mbere, in addition to regular expatriate field personnel, the Norwegian planning team attached to the Embu Provincial Planning Office participated in SRDP planning. Since the beginning of SRDP, about 15 different expatriate officers have been associated with the Programme in Mbere, all academically qualified and with some experience, though not in the third world.

Four Food **and** Agriculture Organisation (F.A.O.) employees were associated with the SRDP in Migori in 1971, but one left after a short period and the other three in August of that year. Later they were replaced at the suggestion of the Kenya Government by a single advisor who is academically qualified and experienced. At the beginning of the Programme, two donors were involved, the Swedish International Development Agency (SIDA) which acted as the funding authority, and F.A.O. which acted as the executive agency. Projects prepared by the F.A.O. team in **Migori** had to be approved not only by the Kenya Government, but also by SIDA and by F.A.O. headquarters in Rome. At times a project would be approved by two of the participating organisations, only to be turned down by the third, which created difficulties for both the Kenyan and expatriate officers working in the field.

In Vihiga, about ten expatriate officers have been associated with the Programme. Of these, two seem to be more or less permanent and the others have served for an **average** of two years each. Of the four officers present when this Report was prepared, all had sufficient academic qualifications, but only two had relevant working experience before coming to Vihiga.

Recruitment of Expatriate Officers

The recruitment of expatriate personnel was delayed at the outset because some of the donors were indecisive about adopting SRDP areas and the Kenya Government was uncertain about a number of policy issues associated with SRDP. Although SIDA had shown interest in the Migori area as early as 1968, expatriate officers did not arrive until 1970. Expatriates arrived in Kwale and Kapenguria early in 1971 and later that year in Vihiga. Because of these late arrivals, the launching of SRDP projects was also delayed, and since commodity prices increased in the interval, the actual costs of projects turned out to be higher than originally anticipated.

During the course of the Programme the replacement of departing officers has also frequently been delayed, in some cases as long as six months. The initial request from the Kenya Government or a donor organisation for a replacement may be delayed, it may be difficult to find suitable applicants, and there may be delays in processing the credentials of prospective officers. All these factors have contributed in varying degrees to the late arrival of replacements.

Job Descriptions for Expatriate Personnel

Most of the problems concerning the activities of expatriate officers have arisen apparently due to inadequate descriptions of their duties. Nearly all the expatriates interviewed said they had never received clear instructions or any written statement about the nature of their work. As one officer put it:-

Terms of reference do not exist. I have open terms of reference. The only thing I have is a written piece ... from /his government/ which states my terms of appointment with them. Although I met some senior Kenyan officers before I went to the field, there was no briefing whatsoever.

Another told us:-

Nobody explained **anything** to me. I had a very vague idea of what I was expected to do here when I arrived but having been here now for about one year, I know what I am supposed to do.

As a result, many expatriate officers have played different roles from what their Kenyan colleagues had expected. A number of Kenyan officers were asked what role they thought the expatriates were playing in SRDP, and they gave a wide variety of answers. One responded, "He is mainly here to plan. Implementation is for us Kenyans." Another said, "He is the eye of his government - seeing how the SRDP funds are spent." Two other officers replied, "They are supposed to plan and implement the programme," and "They are responsible to us for whatever they do." Thus it is clear that neither

expatriate nor Kenyan officers are certain about what specifically the expatriates are supposed to do.

In fact, expatriates have been actively engaged in both the planning and implementation of SRDP projects. In Kwale and Kapenguria, the project advisors have had a hand in all the documents which have been produced over the last few years and have also been actively involved in project implementation. In Kwale the Kenyan Area Coordinator had been engaged at the District headquarters on routine administrative work when the I.D.S. researchers visited in January 1975, so the project advisor had performed many of the duties of an Area Coordinator. He had carried out feasibility studies, initiated projects, written them up into a plan and coordinated their implementation. He was the only officer in Kwale who had a general grasp of the Programme in the area as a whole, certainly a much broader role than merely "seeing how the SRDP funds are spent".

In Mbere, Norwegian advisors have been active in both planning and implementation since the beginning of SRDP. The initial plans were made in 1969 by the Eastern Province planning team, then composed of Norwegians, in collaboration with the Ministry of Finance and Planning. They planned the water project in detail, locating intake points and surveying for the entire pipeline system, and afterwards they supervised the construction. The planning of the roads project was less elaborate since most of the routes were deteriorated County Council roads and new routes did not have to be identified. However, Norwegian roads engineers supervised all of the construction until late 1974 when the present roads engineer was joined by a Kenyan assistant engineer.

As in Kwale and Mbere, in Migori expatriate officers were actively involved in project identification in 1970 and 1971. However, the SIDA-F.A.O. planning team was unable to produce 'acceptable plans', for reasons to be discussed shortly, and when they left in August 1971 there were very few projects ready for implementation. Between August 1971 and October 1972, when another expatriate advisor arrived, the Kenyan Area Coordinator took most of the initiative in project planning and implementation, and has maintained this position ever since.

In Vihiga, expatriate advisors have been actively involved in SRDP planning and have had a hand in all the documents produced in the area in the last four years. They have also been active in project implementation. They designed the roads project, including the experimental labour-intensive construction methods, and an expatriate roads engineer has been in charge of alignment and the overall supervision of the work.

Thus in all five SRDP areas where there are expatriates, they are playing active operational roles. They are not advisors operating behind the scenes and could never function in that way due to the nature of the work to be done. Yet even today some of these expatriates maintain that their role is 'purely advisory'. One explained to the I.D.S. researchers his active involvement in planning and implementation, but then added, "But all this has been in an advisory capacity. I am not an executive and never will be." The uncertainty on the part of both expatriate and Kenyan officers about who should play what role has led to a number of misunderstandings which in some cases have greatly impeded progress.

Organisational Machinery and Working Relationships

In addition to lack of clear guidelines about the role of expatriates, proper organisational machinery for interaction between Kenyan and expatriate officers has also been lacking. Instances of conflict between expatriate and Kenyan officers have seriously reduced the effectiveness of the expatriates.

One of the operational principles of SRDP stated in the 1970/74 Development Plan is that "as far as possible the programme shall be planned and implemented within the existing machinery of Government". (6) Thus, the expatriate officers working in the Programme are expected to fit within Government machinery. Early in 1970, the National Rural Development Committee stated:-

In pursuance of the programme objectives it will be important so to arrange technical assistance in the field that the programme remains under Kenyan direction and control while providing scope and initiative to technical assistance staff to play their full role. (EPD237/01)

In October 1969, the Secretary of the Committee wrote in another memorandum that, "In carrying out his duties a technical assistance officer should be answerable to the government head of department concerned." (EPD 237/010) These and similar instructions issued subsequently were interpreted by Kenyan SRDP officers to mean that the expatriates would be responsible to divisional heads of departments for their technical roles, since they were operating at the divisional level, and to the Area Coordinators for their more general administrative work. Generally speaking, the Kenyans' expectations have been disappointed for a number of reasons.

For one thing, the expatriate officers are not employed by the Kenya Government, but rather by the donor agencies who expect to be kept fully informed and in some cases have to approve any plans before they can be implemented. The expatriate officers are thus faced with dual, and in some cases multiple,

loyalties and responsibilities. For example, in Migori officers were responsible to F.A.O., SIDA and the Kenya Government, and in Vihiga to USAID, F.A.O. and Florida Agricultural and Mechanical University. Secondly, expatriate officers have generally had access to higher levels of the Kenya Government not enjoyed by their Kenyan colleagues in the field. The Kenyans have resented this, quite genuinely feeling that they are being by-passed in the decision-making **process**.

In an attempt to assert their authority, and to remedy the fact that the expatriate advisors have received no clear set of instructions from the Kenya Government, a number of Area Coordinators have issued their own instructions to the expatriates. This has often only added to the confusion. Working relationships have also been hampered by the irreconcilable personalities of some of the officers involved, and in three areas we found cases of intense antagonism between the expatriates and some of the Kenyans. In Migori, it was this personal antagonism which led to the expulsion of the expatriate team in 1971. Vihiga has been the exception, for here the expatriate team leader has been able to minimise conflict between his group and their Kenyan counterparts by encouraging regular dialogue and consultations.

The I.D.S. team interviewed nearly all divisional officers involved in the administration of SRDP and found in general a hostile attitude toward the advisors. One Area Coordinator expressed views similar to those of many others we interviewed:

The man here does not get along well. He pushes too much. He generates animosity among staff. He does not **accommodate** other people's ideas, bosses people around and does not know how to play his cards. As a result he is not liked.

In the same area another officer stated:-

I have occasional professional disagreement with this man. He is arrogant and pushy. He tends to push very impracticable things **which** tend to confuse officers in the field.

In this particular area, the implementation of one project is being impeded because of the level of personal animosity which has been generated, and this area is not unique in this respect. We found similar evidence of poor personal relations elsewhere as well.

Most of the Kenyans interviewed felt that SRDP would not suffer if the expatriates left since "there is nothing they are doing which we cannot do". Three officers being interviewed together stated, "If their presence here is being linked up with money it should continue. **Otherwise** we do not see their use." In addition to individual personality conflicts, there is a general feeling among most Kenyan officers in the field, not just divisional officers, that, apart from watching the way aid money is spent, there is nothing

the expatriates are doing which Kenyans cannot do themselves if the Kenya Government will make the relevant job assignments.

An Overall Assessment

In the absence of any clear guidelines about the role of technical assistance officers in SRDP, their contribution to the Programme can only be assessed in terms of a general definition of technical assistance. Foreign technical assistance, strictly speaking, refers to any external efforts in the form of advice, demonstration or performance which are:-

1. Beyond the indigenous capabilities of the recipient country itself, and
2. Designed to improve certain specific techniques of planning, communication, control or operation. Accordingly technical assistance aims at:-
 1. The discovery of problems which are unknown or unfamiliar to the recipient country,
 2. The supply of solutions which are beyond the recipient country's technological or material capacity, and
 3. The provision of conditions for the self-generation of the skills and knowledge which have been acquired through technical assistance. (1)

On paper, two types of technical assistance officers are supposed to be working in the SRDP areas, advisors and operationals, but in fact all the officers are actively participating in the Programme and none are merely giving advice. How effective have they been in performing functions which are beyond the indigenous capabilities of Kenya?

It should be noted first that the appointment of expatriate officers to SRDP was not linked to actual manpower inadequacies within the Kenya civil service. As a result, a number of them are performing functions which Kenyans could perform, such as planning and supervising the construction of minor roads, working in mobile health clinics, doing woodwork or carrying out agricultural research, agricultural extension **or** sociological studies. On the other hand, we feel that the recruitment of a water engineer or an experienced expatriate to set up an agri-service centre or a rural industrial training centre was in order because of local manpower inadequacies in these areas.

Some of the expatriates who have performed functions that could have been performed by Kenyans have also failed to get along with their Kenyan counterparts. Friction has caused delays in project implementation in Migori for example. In other cases, expatriates have devised projects which could not win local support, for example a proposed intensive extension programme in Kwale.

In the roads project in Vihiga, expatriate personnel have made a positive contribution to the indigenous level of useful skills and knowledge by devising labour-intensive road construction techniques. Although disliked by the politicians, these techniques are new to Kenya and have real potential value, and a Kenyan has been employed and trained as an Overseer so that he now supervises construction on his own. The hope is that this project will generate a level of organisation and skills sufficient to be replicated on a self-generating basis, without further need for foreign assistance. For more information on this positive contribution of foreign technical assistance, see the chapter in this Report on road construction.

At the Siakago agri-service station in the Mbere SRDP area, a Kenyan who was trained as a counterpart to a NORAD officer has taken over and seems to be directing the station effectively. There have been other instances in which the work of expatriate officers has been useful. For example, in Kwale expatriates devised a number of maps and charts depicting development zones and potentials, though unfortunately only the Provincial Planning Officer at the programme level regards these as useful development tools. All in all, however, there seems to be little accomplished by expatriate personnel which could not have been done by Kenyans.

Recommendations

Despite this fairly critical examination of the role of technical assistance in SRDP, realistically we do not think that technical assistance personnel can be dispensed with as long as Kenya continues to receive financial assistance for development from abroad. To improve the present situation, we make a number of recommendations.

1. A system should be devised so that when the employment of a technical assistance officer is being considered, reports about him can be received directly from the countries in which he has worked. This would reduce the possibility of employing incompetent or uncooperative officers.
2. Whenever possible the terms of reference of technical assistance personnel should spell out clearly what they are meant to do, when and where.
3. Expatriates should not be **engaged** to perform duties which Kenyans can perform. This can only demoralise the Kenyan officers.
4. It should be stipulated in the technical assistance officers' terms of reference that the authority to operate development programmes resides with a specific group such as the SRDP Project Committee or the District Development Committee.

5. The Ministry of Finance and Planning should carry out its intention to monitor the activities of all technical assistance personnel serving the Kenya Government so that undesirable officers can be identified and eliminated before the programmes with which they are involved are adversely affected.

THE NET IMPACT OF SRDP

A Summary of the SRDP Budget

Despite the enormous conceptualisation and planning effort that has gone into SRDP, Government financial support for the Programme has been extremely limited. It is understandable that the ministries have not over-turned their normal budgeting and planning procedures to **accommodate the** special needs of a Programme which covers only six Divisions. In fact, in no ministry did the SRDP effort represent over 5 per cent of recurrent expenditure in fiscal year 1974-75. SRDP accounts for 4 per cent of recurrent expenditure **estimates** in the pertinent ministries, and 7 per cent of the development estimates in those ministries. SRDP is so small in the larger context of development planning and implementation that key officials in Nairobi have not given the Programme very much attention.

It may not be appropriate to consider a large part of the SRDP budget as a development project, since funds have in fact been expended on providing current services in the form of agricultural extension, loan services, family planning and other activities. These activities are aimed more at building up human resources and a base of knowledge than directly increasing the social capital available for production.

It is a major oversight that **neither development expenditures nor** recurrent expenditures are classified according to the district or division in which they occur. Thus it is impossible to compare SRDP expenditures with other ministry efforts in the particular divisions selected for SRDP. One estimate given by officials interviewed is that SRDP accounts for 3 per cent of district development budgets and less than 2 per cent of the total recurrent and development budget. Tabulations from the Ministry of Finance and Planning show only a small part of total development expenditure allocated to SRDP. A comparison of estimated SRDP expenditures in Table 2 with estimated district development expenditures in Table 3 suggests that 12 to 14 per cent of district development expenditures went to SRDP.

Table 1. Total SRDP expenditures from 1971/2 to 1975/6. (Kf)

	Actual Expenditure		Estimated Expenditure			Total 1971/76	Donors' contributions
	1971/72	1972/73	1973/74	1974/75	1975/76		
Migori	69,289	81,-99	126,075	155,674	89,210	521,729	620,000
Vihiga							231,100 ^a
USAID	15,725	25,613	63,330	44,053	28,529	177,250	
G.O.K.	<u>11,614</u>	<u>16,221</u>	<u>42,220</u>	<u>29,364</u>	<u>19,019</u>	<u>118,438</u>	
Total	27,339	41,834	105,550	73,417	47,548	295,688	
Kapenguria	58,801	56,833	72,603	63,948	84,017	336,202	365,000
Tetu	24,442	30,000	33,910	24,634	23,729	136,715	b
Mbere	80,408	230,907	183,775	200,367	245,434	939,891	500,000 additional sums negotiable
Kwale	18,939	47,090	115,212	73,522	30,212	285,025	200,000
TOTAL	279,268	488,163	636,107	591,562	520,150	2,515,250	1,916,100
Headquarters	-	-	-	10,000	10,000	-	-
GRAND TOTAL	-	-	-	601,562	530,150	-	-

a. Excludes direct USAID contributions to PFP.

b. Government of Kenya financed.

Table 2. Allocations by ministries to SRDP, recurrent and development estimates combined. (Kf 000's)

	1973/74	1974/75	1975/76
Office of the President	26	27	27
Agriculture	212	273	296
Commerce and Industry	*	26	32
Education	-	*	-
Social Services	68	44	43
Cooperatives		18	20
Health	66	57	27
Works (roads)	251	144	78
Natural Resources (forests)	4	5	4
Tourism & Wildlife (fisheries)	<u>18</u>	<u>6</u>	<u>3</u>
* Kf10 only.	645	602	530

Table 3. Estimates of development expenditures in SRDP Districts. (K£ 000's)

	1973/74	1974/75
Nyeri	1225	1617
Kwale	667	569
Embu	214	172
South Nyanza	382	750
West Pokot	58	73
Kakamega	733	1259
Total	4283	4575

Factors Reducing the Effectiveness of SRDP

Interviews with Provincial Planning Officers, Area Coordinators and other officers working with SRDP have indicated that the real impact of even these limited SRDP resources has been reduced by a number of factors. In several cases, material and personnel assigned to SRDP has been diverted to ongoing ministry activities. Typically, an SRDP officer on taking up his post might discover that a vacancy in ministry field staff has not been filled so that he has to assume extra duties. Some non-SRDP duties have been formally assigned to SRDP staff: for example, the Area Coordinator in Mbere was made Deputy Returning Officer, which occupied most of his time during the six months prior to elections in October 1974. The Area Coordinators in Kwale, Tetu and Kapenguria were never relieved of their substantial duties assisting their respective District Commissioners.

SRDP vehicles and other supplies have been similarly misdirected. For instance, as soon as the SRDP vehicle arrived in Migori (Macalder) one vehicle was removed from the District Officer's post so that the Area Coordinator and the D.O. shared one vehicle. Undoubtedly other SRDP supplies have been transferred to local administration without the displacement appearing in the audits.

Given the lack of financial reporting and the limited information available to the Area Coordinators, ministries can easily 'borrow' money from SRDP to ease fiscal crises in other divisions or districts. Despite the explicit earmarking of funds for the Migori SRDP roads project for example, the Area Coordinator discovered that the balance in his roads account was mysteriously expended - elsewhere in the province. Clearly, better and more timely financial reporting is called for, as well as more careful auditing.

A second factor which has reduced the effectiveness of SRDP has been the high turnover rate of staff in charge of the programme.⁵ Few officers have remained in their posts as long as two years, and no provision is made for overlapping appointments to smooth the transfers. In many cases there have been gaps between the departure of one officer and the arrival of the next. Because of this, time and resources have to be spent acquainting new officers with the characteristics of their areas, including past programmes and the relative value of alternative future programmes. In **addition**, participation of local people is discouraged when they have to become acquainted with a succession of different officers and styles of administration.

Further, the effectiveness of SRDP particularly as an experimental programme, is diminished because many SRDP projects are merely replications of ministry projects which have already been carried out in other areas and would have been pursued anyway without special SRDP funding or inputs. (6, p.43) The grade cattle project in Migori, tea planting in Vihiga, cotton in Mbere, sugar in Kwale and livestock holding grounds in Kapenguria were merely replications of projects which had been successful in other places. In all these cases, sound environmental analysis and marketing studies would have shown that these projects might not be successful in the SRDP areas, or might not **deserve** priority treatment.

Finally, the impact of SRDP on development has been limited by the general shortsightedness of both the Project Committees and the central SRDP administration. Important questions were almost never asked, such as: What will happen if the prices of crops change? or Is it possible that the market we envisage will be different in five years' time? As evidence of this shortsightedness, it would appear that at the SRDP seminar held at the Kenya Institute of Administration in January 1975, the emphasis of the Programme was shifted to agriculture on the basis of **extremely** weak analysis. Further, in Migori, investments are being made in tobacco production with optimistic expectations about returns without any assurance that the sole purchaser, British American Tobacco (B.A.T.), will not lower prices once the crop has been established. Similarly, milk production is being expanded apparently on blind faith that the prices announced by K.C.C. are an appropriate indication of local demand, and without considering whether, regardless of local nutritional needs, local incomes will be sufficient to provide an adequate market. These sorts of questions call for **imaginative** and skillful analysis of the programming of local areas by central SRDP staff.

5. This criticism was stated eloquently in early memoranda from the Vihiga SRDP staff and was reiterated by the Ndegwa Commission, (8), paragraphs 187-188.

As this analysis has shown, various **bureaucratic** problems have tended to diminish the effectiveness of SRDP. These problems are not unique to SRDP and can be found in other development projects.

Factors Enhancing the Effectiveness of SRDP

A number of non-SRDP projects have actually complemented and enhanced the programme. The UNICEF water supply development programme and the UNDP/FAO Programme for Better Family Living were planned with some degree of coordination with the SRDP Project Committees. Where these programmes were implemented in SRDP areas, it was possible to use limited SRDP resources for other projects. The research on agricultural extension carried out by I.D.S. in Migori has also enhanced the impact of SRDP in that area.

Project Planning and Cost/Benefit Analysis

It is clear that the net impact of SRDP depends not only on the level of funds allocated, but also on the effectiveness with which these funds are used. In most cases, the data necessary to make a careful quantitative analysis are not available to the SRDP staff making decisions about project priorities. As a result, programming decisions are necessarily forced into a mode of sequential decision-making: results from the early stages of a project must be screened and evaluated to determine whether the project should be continued.⁶

There is little evidence that a sequential strategy has developed. Discussion with the Area Coordinators gives the impression that it has always been difficult to generate a sufficient number of viable projects to create real alternatives in terms of the overall development of the Programme. Furthermore, many projects of secondary importance were evidently kept alive largely to maintain the appearance of diversification. The women's horticultural project in Vihiga appears to have been of this nature, although it could have had a major impact on the quality of the food available to Vihiga residents.⁷ As a result, most projects were not seriously scrutinised in terms of how they affected local incomes and living standards, and critical questions about better alternatives were seldom asked. The use of PIM forms to assign benefits to projects came as an afterthought imposed by the Ministry of Finance and Planning.

What kind of critical discussion did projects receive in place of a full cost-benefit analysis? This depended very much on the effectiveness of the

6. Emphasis was placed on this in the 1972 SRDP Evaluation, (6) pp. 35-36.

7. See Harmon and Zalla's comments in their evaluation of the USAID involvement. (4)

Area Coordinator. An ideal system of sequential project selection, which we believe was realised in two of the SRDP Project Committees, would proceed something as follows:-

1. The Area Coordinator acts as a catalyst by assisting division officers to conceptualise projects, to work out a timetable and to estimate costs.
2. The Project Committee reviews proposals and rejects some primarily on the basis of perceived local receptivity, obvious defects in coordination and assessment of local capabilities.
3. The ministries approve projects largely on the basis of their replicability, and to a lesser extent on the notion that a significant feature of the socio-economic environment was disturbed - this was sufficient to label the project experimental.
4. The Area Coordinator by reviewing the project timetable, is alerted to bottlenecks and brings the problems up for discussion by the Project Committee.
5. Projects which are obviously not meeting a local need can be dropped or modified in the annual replan-estimates exercise. Supporting evidence from administrative records and feedback from the local population are vital at this stage.

Deficiencies in the second and fifth stages of this process are most serious if appropriate priorities are to be set.

Projects can fail if the local population is not involved in their planning or if all the implications of a programme are not understood. The contrast between the maize credit schemes in Vihiga and Migori exemplifies this.

In general, the SRDP staff has not produced very much evidence of project performance. Officials involved in the Programme saw no need, and by and large foreign advisors or technical assistants did little, to enhance the documentation of ongoing activities in a way that would generate long-range measures of performance which would be useful in replicating the Programme. The notable exceptions are the agricultural and roads projects in Vihiga where information has been produced on performance and the relationship between inputs and outputs which could be the basis for assigning unit costs to new projects or, in some cases, a range of benefits.

SRDP operating staff could do a great deal more in the way of observation and data collection without impeding the operation of their projects. For example, in roads projects Overseers or gang leaders could observe traffic

on completed segments in order to measure the benefits of the roads. However, the generation of other sorts of information would require the assistance of personnel trained in field data collection and cost/benefit analysis.

To conclude this discussion, a well-functioning Project Committee, alert to the need to continuously review programmes and operations and thoroughly familiar with local needs and the potential for local initiative, appears to be the best assurance that resources are committed to high-priority needs. A little assistance from the Ministry of Finance and Planning staff would provide a framework for collecting performance data, thereby guaranteeing that pertinent information is generated to permit both a review of project experiences and generalisations which could lead to replication elsewhere in Kenya.

Information on SRDP Finances and Personnel

The lack of timely information on SRDP finances has made advance planning precarious and created a great potential for waste of resources at all levels of Government. In Nairobi, information on finances is seldom available until twelve to eighteen months after the actual expenditures are made, even though this information must be provided before the Kenya Government can be reimbursed by foreign donors. In the field, the situation is even worse. Area Coordinators and Project Committees must estimate budget needs without any data about the actual costs of past programme activity and the Area Coordinators do not have the information necessary to ensure that resources earmarked for SRDP projects are not diverted to non-SRDP activities. Provincial Planning Officers do not have enough data to compare development in SRDP and non-SRDP areas in order to assess the impact of SRDP programmes. Without financial records, cost/benefit analysis is impossible.

Some sort of personnel information system is also needed. The contribution of administrators and field personnel is crucial to the success of SRDP projects, and it is extremely important that Area Coordinators be informed of pending transfers and allowed to exercise some flexibility in arranging and timing transfers to avoid crippling on-going projects. Also information on personnel should be collected from Area Coordinators to be used as one basis for reviews and recommendations for promotion or salary increases.

Management of Physical Resources

Traditional administrative procedures do not always facilitate successful management of physical resources. For example, regular maintenance

of SRDP vehicles has often been neglected because of insufficient funds. Ways need to be found to achieve greater flexibility in obtaining supplemental funds for routine maintenance. An accounting system would be helpful which makes it possible to charge each project for its use of capital so that the proceeds can be used to pay for maintenance and replacements. In this way it would be possible to determine whether certain projects are making excessive use of resources such as vehicles and whether more resources should be made available to other projects. It would also help ensure that resources are not allowed to lie idle. Situations could be dealt with such as in Migori where equipment was purchased for the roads project, was found to be useless, but was not sold; land was acquired for livestock holding, was not used for this purpose, but was not put to any other use.

Exchange of Information

More attention needs to be given to the exchange of information among SRDP officers so that experiences in one area can be used to reinforce or correct work under way in other areas. In general, SRDP staff are not fully informed about the experiences of the programme or the materials available to them. For example, very few officers questioned in 1974 were familiar with the 1972 Evaluation Report.

The annual seminars are a useful device for the exchange of information among SRDP personnel but other avenues for communication are needed as well. The Nairobi SRDP office could make greater efforts to circulate project evaluations and other information among field staff, and could facilitate informal exchanges of ideas more frequently than once a year. Linkmen should visit the different SRDP areas frequently enough to communicate useful information from one area to another. Any additional transport costs incurred for these purposes would be worth while. We discovered one example of the value of exchanging information among the different areas: the Roads Inspector in Migori learned and applied the techniques for making culverts which had been used in Vihiga.

A Note on the Use of the 1972 I.D.S. Evaluation by Local Staff

I.D.S. researchers in Migori, Vihiga and Kapenguria used a short questionnaire as one method of collecting information from local SRDP personnel and from Government administrative personnel assigned to SRDP areas. Along with their views on the Programme as a whole and on the specific projects to which they were assigned, respondents were asked whether they were familiar

with the 1972 SRDP Evaluation Report. The exercise was greatly hindered by lack of response to the questionnaire. Only 34 completed forms were collected out of about three times that number which were distributed. The rate of return was satisfactory only where the researchers were able to distribute and collect the forms personally.

Although the sample turned out to be rather small, the responses reinforced the general impression that the 1972 Report had not been effectively disseminated among officers responsible for SRDP at the local level. Two questions were asked concerning the 1972 Report: (1) Do you know about the 1972 I.D.S. evaluation of the SRDP? and (2) Have you ever read it (in whole or in part)? The following tables summarise the responses to these questions in terms of total numbers and percentages for all staff, and broken down into senior and junior staff. SRDP and other Government officers at the divisional level are considered senior staff, and those working at the locational or sub-locational levels are considered junior **staff**.

Table 4. Knowledge of the 1972 Evaluation.

	knows of Evaluation		does not know of Evaluation	
	number	%	number	%
All Staff	10	30%	24	70%
Senior Staff	7	31%	16	69%
Junior Staff	3	27%	8	73%

* Percentages rounded to the nearest whole number.

Table 4. Reading of the 1972 Evaluation.

	has read Evaluation		has not read Evaluation	
	number	%	number	%
All Staff	7	21%	27	79%
Senior Staff	4	17%	19	83%
Junior Staff	3	27%	8	73%

* Percentages rounded to the nearest whole number.

A few additional observations should be made:

1. In several cases involving both senior and junior officers, although respondents indicated that they knew about the 1972 Evaluation and had read it, the I.D.S. researchers gathered from conversation with them that this was not so.
2. Many officers reported that the Evaluation had been brought to their attention once or twice by the Area Coordinators, but they had not been able to read it because copies were not available.

3. Several officers who had been posted to SRDP areas after the 1972 Evaluation was issued said that they had never been informed of its existence. Moreover, they reported that they had never been fully briefed about the nature and objectives of SRDP and did not feel completely familiar with the Programme and its significance.

RECOMMENDATIONS FOR SRDP ADMINISTRATION

1. The importance of the Area Coordinators as the key administrators in each SRDP area has been made clear. The effectiveness of the Area Coordinators would be enhanced by giving them authority commensurate with their responsibilities, particularly more fiscal control in the form of financial grants as was done in the labour-intensive roads projects. Area Coordinators also need information on expenditures for their plan/replan activities, so that they can relate the level of resources used to the impact of projects in the field. So far, financial management has been a major obstacle, and a number of projects have been seriously affected by delays in the release of funds.

2. The SRDP experience has underlined the importance of local involvement in project planning and implementation. Where local involvement has been lacking the results have been selection of inappropriate or low-priority projects and project failure.

3. The Project Committees in some areas have successfully encouraged local involvement and helped coordinate the activities of the different ministries involved in development projects. The techniques used by the more successful Project Committees should be documented so that they can be replicated in other areas.

4. The revised version of the Programming and Implementation Management System (PIM) and the Field Staff Management System (F.S.M.S.) have both proven to be useful management devices. They should be retained and further modified as necessary.

5. The Linkman system has proven useful when the officers serving as Linkmen are relieved of their other duties so that they can devote their full time to their SRDP responsibilities. It is also important that the Linkmen be enthusiastic about the goals of SRDP. Linkmen from the different ministries should meet together to work out their roles, coordinate ministerial activities and identify sources of funds.

6. Technical advisors should be given clear terms of reference which indicate to whom they are responsible within the Kenya Government. The Ministry of Finance and Planning should carry out its intention to monitor the activities of technical assistance personnel serving in the field.

7. Rapid turnover of key SRDP personnel, especially Area Coordinators and Linkmen, has been extremely damaging to programme development and continuity and should be avoided.
8. More emphasis needs to be given to the collection of data on SRDP projects and programmes to assist in evaluation and replication.
9. Very little of the knowledge gained through SRDP experimentation and evaluation has been disseminated to SRDP personnel. The I.D.S. team found that few officers in SRDP areas had read the 1972 Evaluation Report, and measures should be taken to disseminate the present Report and other relevant information more thoroughly to staff in the field.
10. SRDP central headquarters staff need to evaluate assumptions underlying proposed programmes to assure that prices, markets and policies taken as given by the SRDP Project Committees are realistic.

RECOMMENDATIONS FOR DISTRICT PLANNING BASED ON THE SRDP EXPERIENCE

Open-ended Matching Grants

1. District Development Grants can be an extremely useful mechanism to enhance local development if they are made in the form of open-ended matching grants. Grants should be made by the ministries directly to the District Development Committees so that they can be sure of commanding sufficient resources to complete development projects without having to go back to the ministries for each specific expenditure. Open-ended grants will assure the District Development Committees that the projects they initiate can be completed, and will not be arbitrarily rejected at higher levels. Matching grants assure the involvement and cooperation of the local population demonstrated by the commitment of local resources to development projects.

District Development Committees

2. Those SRDP Project Committees which have been successful demonstrate that it is necessary to involve representatives of the local population, as well as administrators, in programme planning and review. If local involvement is to be maintained at a high level, the District Development Committees, like the SRDP Project Committees, will have to retain important decision-making responsibilities, and not function merely as an ornamental **appendage** to a system of 'top-down' decision-making.
3. While it was possible for the Project Committees to include Chiefs and Assistant Chiefs, the inclusion of all these people on a district-wide committee would make the group too large and unwieldy. District Development

Committees will have to be made up of representatives of local groups who can report back to group members and elicit their ideas for development programmes to bring to the Committee. The Agricultural Village Committees which have been set up in Migori demonstrate how this system of representation might work.

4. In order to assure that the District Development Committees will be able to implement the projects they have agreed upon, they must have final authority over the ministries concerning how their projects are carried out. Otherwise, a ministry could alter or subvert a project agreed upon by a District Development Committee. Where the Committees have control of funds through District Development Grants, this will be a strong incentive to the ministries to cooperate. The District Development Committees will hire services and rent resources from the ministries, so that the ministries can expect to profit from a cooperative relationship with the District Development Committees.

District Development Officers

5. If the District Development Officer is to be effective, he needs more information and authority than he has at present. He needs information such as timely accounts of expenditures made by the ministries in his district in order to keep track of their activities, and he needs authority to coordinate the different ministries' activities which are sometimes competing or conflicting. The experience of the SRDP Area Coordinators has shown that effective coordination is extremely difficult without the control over finances which would be provided by District Development Grants.

6. The District Development Officer must also see the encouragement of local participation in development planning as his primary duty. Willingness to experiment and commit local resources will be stimulated by such involvement.

7. The SRDP notion of replicable experimentation should survive in district development planning activities, and experiments should be monitored and reviewed to provide useful suggestions for projects or information on what to avoid. However, whenever suggestions for projects are passed from one district to another, it will be necessary to evaluate the local environments to see if they can actually be adapted with success.

8. The District Development Officer should serve as the key individual for collecting information and disseminating it widely. He will also act as the chief executive for administering development grants and a gadfly encouraging local participation and effective decision-making by the District Development Committee. These roles have all been played by successful SRDP Area Coordinators.

Other Aspects of District Planning

9. District Development planning should not be introduced into a district until a competent District Development Officer can be assigned and resources become available. District Development Officers should not be responsible for more than one district because their efforts cannot be successful if spread too widely. It is also extremely important that District Development Officers, once assigned, remain in their posts long enough to be effective in carrying out their assignment. The rapid turnover rate that has been typical for District Officers and Area Coordinators is a severe impediment to their effectiveness.

10. Labour-intensive activities in such areas as road construction, forestry and other public works, using underemployed local labour paid at the going local wage rates, can be successfully initiated and administered by the District Development Committees with the District Development Officers acting as executive officers.

11. Where technical assistance personnel are attached to a district, the Kenya Government should make sure that they are given clear terms of reference stating that they will serve under the District Development Officer.

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CHAPTER TWENTY
AN OVERVIEW OF PROJECT AND PROGRAMME
FORMULATION IN THE SIX S.R.D.P. AREAS

IDS/OP 12

In this final short chapter we attempt to present a brief overview of project and programme formulation in the six SRDP areas over the four years or so in which the Programme has been in existence, and to make a rough assessment of its overall impact. What, first of all, would one hope might emerge from the Programme?

1. The primary emphasis in the Programme is on experimental and replicable projects and activities: trying out new possibilities in SRDP areas with a view to replication elsewhere if they are successful. The first question to ask therefore is what success has been achieved in eliciting such projects.
2. Apart from the experimental aspects, the hope would be also to produce better projects, or at least better formulated projects, together with better implementation of projects thus raising the 'success rate' among projects. This follows from the fact that the management system, with project phasing and tracking, has been a major element in SRDP.
3. The Programme was also intended to stimulate self-reliance and local initiative.
4. We should hope also to find coordination of clusters of projects and perhaps integrated development of the SRDP areas as a whole. This would provide some guide as to how district planning should be organised, together with an indication of its potential success.
5. Finally, we would hope to find, partly as a result of integrated planning, some kind of development impact on the areas as a whole. With these objectives in mind, the current lists of projects for all the areas were examined. We begin, on the basis of these, with a discussion of experimentation, continue with an evaluation of project quality, and of the extent of project coordination and integration, before concluding with some proposals for improved development planning which are suggested by the SRDP experience.

EXPERIMENTATION AND REPLICABILITY

Since one or more members of the I.D.S. team has inquired into practically every SRDP project in each area, it has been possible, pooling the separate impressions gained of each project, to obtain a fairly broad understanding of the total SRDP activity.

Some projects and activities which were deemed experimental were as follows:

- | | |
|-------------------|---|
| <u>All Areas</u> | 1. women's programmes |
| | 2. functional literacy |
| <u>Vihiga</u> | 3. labour-intensive roads |
| | 4. family planning programme |
| | 5. maize credit scheme |
| | 6. agricultural input supply |
| | 7. tea expansion (credit element) |
| <u>Migori</u> | 8. stockist credit scheme for hybrid maize development |
| | 9. group extension and agricultural village committees |
| | 10. crop storage demonstration |
| | 11. model dairy farms |
| <u>Tetu</u> | 12. dairy production experiment |
| | 13. hybrid maize extension for less progressive farmers |
| | 14. mobile family planning unit |
| <u>Mbere</u> | 15. health services extension project |
| | 16. agri-service station (not strongly pursued) |
| | 17. management and reporting system for extension staff |
| <u>Kapenguria</u> | 18. rural access roads |

This list is relatively short. Some of these have been minor activities, and some have not been particularly successful. It may be concluded that few projects have emerged from SRDP which Government has been able to replicate or could consider now replicating in future in other areas of Kenya.

Some explanation of the derivation of the list is necessary, however. We might distinguish two categories of innovative projects: those which are purely experimental, in the context of Kenya as a whole, and which could, if successful, be copied elsewhere; and those which are innovative only in relation to the particular part of Kenya concerned. For example, the introduction of commercial pig breeding or groundnut production in Migori may be innovative for that area, but not in terms of Kenya as a whole. Similarly the introduction of sheep into Lelan is innovative for the area, though here there are some differences in the credit and supervisory aspects of the project. The chief criterion for the experimental/replicable category should be whether there is some element in the project itself or the way in which it is carried out which might be replicated in other areas, and it does not simply represent the exploitation of a resource limited to one area.

Although only a limited number of projects are considered experimental and only a portion of these are deemed to have implications of more than local importance, nevertheless four of these projects have produced such significant findings that they alone are well worth all the expenditure on SRDP. These are the group extension and farmer training projects, the labour-intensive roads programme, the credit schemes and the Functional Literacy Programme.

In the group extension and farmer training projects, it has been demonstrated that the effectiveness of extension officers can be multiplied by using group extension methods and farmer committees. Furthermore, it has been clearly demonstrated that the diffusion of agricultural innovations from most progressive farmers to the majority of the farm population is extremely limited.

The labour-intensive roads programme has shown that underemployed rural labour can be effectively employed for major public works at less cost than would be incurred using capital-intensive techniques. Moreover, it appears that a national cadre of labour-intensive road building and maintenance units can be formed and the necessary supervisory staff recruited.

The SRDP credit projects have shown that credit is often less necessary than supposed in raising the agricultural productivity of small-holders, for large outlays on material inputs are frequently not essential. Furthermore, there are difficulties in securing repayment of loans to small-holders, except under conditions of effective loan administration and appropriate incentives. While credit facilities have a role to play, even more reliance than at present should be placed on the extension service, and in some situations temporary input subsidies to small-holders would be preferable to credit.

Examination of the Functional Literacy Programme has revealed that if literacy is to be taught successfully on the national level the materials and teaching methods which have been used up until now will need to be re-designed. A number of specific suggestions are made in this Report for an alternative approach to the teaching of literacy in Kenya.

The results of the Women's Programme and family planning projects have been inconclusive. This does not indicate that these programmes are unimportant, but rather that the delivery system for Government services has not been developed adequately and that other approaches should be tried in future.

PROJECT QUALITY

If we turn from the number of fully experimental projects to the general quality of project formulation and definition, we can again obtain

some impression from the projects lists. The descriptions of the different SRDP projects listed are extremely poor. In many cases only general headings are given, such as livestock marketing in Kapenguria, adult education in Tetu, community development in Mbere, animal health and husbandry in Kwale and tea, coffee, pyrethrum, maize, dairy products in Tetu. The project lists do not in fact usually indicate what the specific activity or project is, let alone what aspect of it is innovative or experimental. Partly this is because the aim is simply to provide headings under which allocations of funds may be authorised by the Ministry of Finance and Planning. But it is also a reflection of a failure to clearly identify what constitutes a development project, and its effect has probably been to blur the distinction in the minds of the officers concerned between such projects and, for example, the normal activities of the department. The willingness of the Ministry of Finance and Planning to accept such poor definitions before allocating funds may also be indicative of a weakness in project formulation at the central level.

If we examine the project lists we find a variety of items which fall outside the narrow definition of development projects. We find some items of ordinary social expenditures such as a show ground in Mbere. There are a number of items which are listed separately as projects but are in fact component aspects of some other project or programme, and which themselves do not directly yield a stream of output or consumption benefits. Building cattle dips, for instance, may be part of a programme to prepare an area for the introduction of dairy cattle but cannot by itself be properly considered a project. The livestock staff build-up in Vihiga and the stock and milk census in Kapenguria are in the same category. Many other projects listed should more properly be considered to be part of the normal, ongoing activity of the departments concerned. These would include, for example, cooperative marketing in Mbere and Migori, water supply for domestic consumption in Kwale and Tetu, animal disease control in Migori and Mbere, artificial insemination services in Kapenguria, and expenditure on primary schools in Tetu.

A number of the programmes and projects, even if experimental or innovative, are not particularly confined to SRDP areas, and therefore cannot be said to have emerged from SRDP. This includes group ranching, village polytechnics, 4-K Clubs, day-care centres and **poultry** production. Other projects for which the Programme cannot claim credit are those which started in these particular areas before the SRDP itself was launched. Thus the **Mwareni** Group Ranch project is listed under the SRDP although it was first mooted in 1967. Equally the **Rural Industrial Development Programme**, the operation of which does not coincide with the SRDP areas anyway, was planned and initiated before the start of the SRDP.

There are also a number of projects which are no longer being pursued, or perhaps were not in the end started, but which are nevertheless still listed. They include for instance a fruit nursery in Migori, pig production and vegetable growing in Vihiga and a beef production experiment and "experiments in the promotion of commerce and industry" in Tetu. The expectation, in an active experimental programme, would be that the list content would change as projects are completed or deleted if unsuccessful, and new ones initiated. In contrast, the current list of projects in Tetu, for example, is identical with that of the original SRDP proposal put forward in December 1969.

There are a number of good reasons for those rather unsatisfactory lists to have emerged. There is a natural tendency for the local areas to attempt to impress headquarters with evidence of their activity by producing as long a list as possible. Contributing to this also has been the attempt to find SRDP projects in all sectors, that is in practically all aspects of social and economic development, even if in some fields it was not likely that any very new approaches might be found. Partly this was an attempt to involve all officers in the area in the exercise. Much more, it was an attempt by the Area Coordinator and his team to use the SRDP to obtain additional funds for the area, and for as many different developments as possible within the area. For example in Migori all the ministries are listed first of all, and then projects listed under each of these heads. Thus project lists do not attempt to identify specific activities but to provide sub-heads with the minimum description necessary for the allocation of funds.

These factors partly explain the nature of the lists. But there is also another reason: a frequent ignorance of the supposed nature of the SRDP, or even of what can properly be defined as experimental, and perhaps more fundamentally an absence of ideas for useful experimentation. The Ministry of Finance and Planning appears to have insisted in only a mild way on experimental content in the projects which it was funding, but what is more surprising, considering that this has been Kenya's central rural development programme over the past four years, is that the central ministries did not take the opportunity themselves to suggest possible experimental innovative activities which the areas might take up. The number of activities initiated centrally rather than locally is not large. Women's groups and functional literacy are examples. While decentralisation of decision-making was one objective of SRDP, it seems that a greater effort should have been made to ensure sufficient experimental and innovative content in the programme.

In addition, the ministries have not been alert to the national implications of SRDP projects; local SRDP officers need guidance on national markets and national policies which may be in conflict with their proposed projects.

On the positive side, SRDP projects have had a considerable beneficial impact on local development. For example, more is known now about cropping strategies for medium potential areas such as Mbere and successful new crops have been introduced in several SRDP areas such as hybrid maize, tobacco and soya beans. These developments would probably not have occurred as quickly without SRDP planning and resources. Where projects have had less impact, it is likely that district or **divisional** administrators have not been fully committed to SRDP. In the chapter on SRDP administration it was observed that many SRDP officers, including Area Coordinators, have been tied down to other duties so that they could not devote their full time to the development and supervision of SRDP projects. Nevertheless, SRDP projects have not, on balance, been less successful than other Government development projects. It also seems that the integrated planning made possible by the Area Coordinators, the Project Committees and the plan/replan exercises has produced benefits which would otherwise not have been possible.

INTEGRATION OF DEVELOPMENT PROJECTS

The successful integration of development projects includes several different aspects. For one thing, development planning should have continuity over time and a clear planning horizon of several year's duration. To enhance the cumulative impact of a project, planners and administrators must be aware of past accomplishments and long-run goals. From these considerations, the intermediate objectives and steps can be derived which will lead to small but positive incremental effects over successive time periods.

A second aspect of project integration is the involvement of local people. Little of permanent value will be accomplished unless the people who are meant to benefit from a project can identify with the objectives and mobilise local resources.

A third aspect is the division of tasks among the different field workers in a particular local area. For broad and comprehensive development efforts to be successful, field officers must understand their duties in relationship to the programme as a whole; they must be willing to cooperate and coordinate with officers from other ministries.

Finally, the ministries themselves must integrate their development plans and programmes in order to achieve common goals. Otherwise, delays in some areas will frustrate efforts elsewhere.

Sequential Development

I.D.S. researchers found only limited attention to time-phasing in project planning and implementation. Rather than planning cumulative stages of a project **which** could reasonably be expected to be reached over a period of two or three years, Project Committees tended to set themselves unrealistically ambitious goals for the current planning period and give little or no thought to the steps which should follow present activities.

Each SRDP project included a static list of elements, and little attempt had been made to determine how success or failure of one component of a project would affect the other elements. Nor was the time-phasing of the activities planned in advance. One example of the limitations of a short time horizon occurred in Migori where careful phasing would have made it possible to develop roads gradually using labour-intensive techniques, thereby creating local employment. However, since local enthusiasm for road construction was not anticipated or planned for, roads had to be built in a hurry, using capital-intensive methods. Similarly, cattle dips were built in various areas without taking into consideration the long-run responsibility for developing mechanisms to assure that the dips would be maintained.

Integration of Activities in the Field

Several instances have been pointed out in this Report in which field workers from different ministries failed to combine resources to carry out a project successfully. For example, officers responsible for functional literacy programmes and women's programmes found it difficult to obtain the services of extension agents to assist in the development of demonstration plots or other activities. In Vihiga, it proved difficult to interest the local Agricultural Finance Corporation office in administering the loans which it had made through SRDP. Finally, there is no indication that personnel in charge of developing new products for rural industrialisation projects ever consulted other ministries or the local population to determine just which products were needed and would find a ready market.

Integrated Development Planning

There have been partial attempts in some areas to produce integrated development plans. In Kapenguria, for example, it was originally planned to develop a trade network between the lowland area, where livestock production would be put on a more commercial basis, and the highland area where crops are produced.¹ In Kwale, a 'sequential master plan' has been devised, which, however, amounts to little more than a general proposal. In Migori, both a master water plan and a development plan have been formulated. While some examples of coordinated activities can be identified, there are perhaps more frequent instances of lack of coordination: in Mbere there has been little coordination among water development, land adjudication and range management activities, and in Vihiga the rural industry promotion efforts of Partnership for Progress and the Rural Industrial Development Programme have not been coordinated. Although in some cases it has proven difficult to coordinate projects to reach a common development goal, in other instances effective coordination has been achieved. For example, in Migori, officers from the Forestry Department and the extension service joined forces to promote the production of wood fuel, used to cure tobacco, at a rate consistent with the planned expansion of the tobacco crop. In Vihiga, the introduction of a papain processing plant was coordinated with the development of the papaya crop. However, the plant was introduced by a private firm from outside the area, not by the initiative of the Project Committee. The development of 'growth centres' in Kwale was coordinated to some extent with road construction and the development of water supplies; in Kapenguria the intensification of crop production, as a long-run concept, was coordinated with the soil conservation programme; and for the hybrid maize extension project in Tetu, farmers' training, extension, credit provision by the Agricultural Finance Cooperation and the provision of inputs through the cooperatives were all fully coordinated.

It could be argued that the SRDP has fallen between the two stools of experimentation and innovation on the one hand, and integrated area development on the other. While the available finance was hardly sufficient to support integrated programmes which might have a major development impact in each area, the absorption of a considerable proportion of **funds** into the normal ongoing activity of the various ministries operating locally reduced the amount available for genuinely experimental or innovative projects. Projects satisfying one of these two objectives are not likely to satisfy the other very directly.

1. This plan was based on an overly optimistic view of the proposed commercialisation of the lowland area. See the 1972 SRDP Report, Appendix A.

Infrastructural projects such as roads may be basic to integrated area development, but take funds away from experimental activities. Purely experimental projects being tried out with a view to possible replication elsewhere are by their nature not likely to have a large immediate impact. The kind of projects which may contribute more to integrated development at the local level, **apart** from infrastructural projects, are perhaps those which involve the introduction of activities new to the area but which have been successful elsewhere and are not of the purely experimental type.

Examples also exist where the absence of integrated planning resulted in entirely inappropriate projects. In Vihiga, pigs **were** fed maize which was needed to feed the local population. Coordinated planning would have indicated that a livestock project dependent on the **generation** of local crop surpluses was premature. In Mbere, hybrid maize and cotton production were introduced before adequate experimentation had been carried out on a spectrum of crops appropriate for dry areas, and the results were not successful.

In conclusion, we may say that integrated development is difficult to achieve, and the obstacles are not always easily identified. The SRDP experience has shown that more emphasis needs to be placed on the long-term coordination of the activities of the various change agents in the field. This requires that projects are phased over a period of several years, that the functional division of responsibilities among ministries is properly understood, and that field workers are informed about broad programme concepts and motivated to support each other's **activities**.

These objectives have been partially met in some SRDP areas through innovations in administration. Area Coordinators convened Project Committee meetings in order to replan local programmes, and in some cases critical discussions took place which represented an integrated review of proposals. However, there was little integration of the day-to-day activities of field workers. In only a few cases the Area Coordinators were able to integrate these activities by meeting with the various officers who needed to work together.

CONCLUSION: SOME REQUIREMENTS FOR IMPROVED DEVELOPMENT PLANNING

Experimental SRDP projects and the experience of decentralised development planning at the **divisional** level have produced some useful insights concerning successful development strategy and the nature of effective Government support.

1. The number of genuine experimental and innovative projects has been somewhat circumscribed, and too large a proportion of SRDP funds has been spent on normal ongoing ministry activity, so that the conclusion to be drawn is that efforts to incorporate an innovative element into district development programmes should be increased, not reduced. In other words the problem is that the aims of SRDP have not been carried far enough. This implies that normal administrative arrangements are inadequate for this purpose and should be improved to incorporate the **best elements** of the SRDP approach.
2. The importance of the role of a planning and coordinating officer at the local level has been made clear. The Area Coordinators have supervised development projects, identified and overcome problems and bottlenecks, and generally provided an extremely valuable broad perspective on development efforts and the role of different Government officers in the field.
3. It has become obvious that more attention must be given to improving communication and mutual support among the various officers representing different ministries in the field. A series of short-term workshops might be held as an experimental training device to increase the awareness of Government officers of the interdependency of their roles. Workshops could be held to coordinate the roles of the various officers involved in the Women's Programme and in agricultural extension, and also workshops could make officers aware of the more complex relationships between livestock and crop extension activities. With improved communication, the real contradictions and gaps in ministry policies tend to come to light.
4. Local involvement is critical to the success of development efforts. In Migori, the enthusiastic efforts of local farmers committees achieved results which could not have been obtained by Government alone, even if financial support were very much greater than it has been so far. Local participation in the construction of roads and cattle dips has shown that valuable community resources can be mobilised for development if properly organised. The fact that lack of capital is still a frequent constraint, in spite of special funds available through SRDP, underscores the need for innovative projects, such as labour-intensive road construction, which utilise local resources.
5. Strong Project Committees which are actively involved in decision-making can provide the means for communication among different ministries and with the local people which is essential for coordinated planning.

6. More accurate time phasing of projects can be achieved if the directors of each project are required to report periodically on the implications of their progress for other **related** projects.

7. Better coordination of projects which involve more than one ministry would be made possible by district development grants which place fiscal responsibility in a local administrator, such as the Area Coordinator, and by grants made on the basis of performance in an integrated task.

The SRDP experience has made clear that no single development strategy is appropriate for all areas. Great attention must be given to the special features of each local area before cropping patterns, ranching schemes or other efforts at increasing production are introduced. Yet some general recommendations can be made for rural development strategies in all areas:-

1. Efforts should be directed to the average farmers rather than to the minority of most progressive farmers.
2. Recommendations should be geared to the risk of drought and other hazards rather than assuming that the conditions for crop and **animal** production will be ideal.
3. Attention should be given both to the economic return from innovations and to the effects on the wellbeing of individuals, families and communities.
4. Thorough project planning, management of implementation and follow up are preconditions for the success of projects. Often specific projects must be coordinated with the programmes of different departments, ministries or institutions.
5. Finally, given limited resources and the difficulty of increasing per capita incomes in the face of rapid population **growth** rates, it is clear that effective family planning activities must be an integral part of any realistic development strategy.

APPENDIX: S.R.D.P. PROJECT LISTS²KAPENGURIAMinistry of Agriculture

1. Livestock marketing
2. Group Ranching
3. Dip construction
4. Artificial Insemination services, Mnagei
5. Fodder and ley establishment
6. Sheep development, Lelan
7. Bull camps
8. Stock and milk census
9. Minor rural water supplies
10. Bee and honey development
11. Maize demonstration
12. Coffee demonstration
13. Pyrethrum bulking
14. English potato bulking
15. Soil conservation
16. Farmer training
17. Home economics
18. Rural youth development

Department of Social Services

19. S.R.D.P. training and education
20. Women's groups
21. Functional Literacy
22. Community development self-help

Ministry of Works

23. Rural access roads

Ministry of Lands and Settlements

24. Land adjudication

Department of Cooperatives

25. Cooperative production credit scheme
26. Cooperative maize store

2. These lists are the ones which were in use in December 1974.

Ministry of Health

27. Environmental health water supplies

Administration

28. Coordination

VIHIGAAgricultural and Livestock Production

1. Dairy cattle and milk production
2. Livestock staff build-up
3. Pig production
4. Poultry production
5. Agricultural credit
6. Hybrid maize
7. Agricultural inputs supply
8. Demonstration plots
9. Fruit and vegetable production for cash sale
10. Crop extension experiment
11. Coffee and tea expansion
12. Fruit and vegetable marketing cooperatives

Supporting Services

13. Road
14. Telephone
15. Water supplies
16. Functional literacy and adult education
17. Farmer training
18. Land Adjudication

Coordination and Publicity

19. Coordination
20. Community development
21. Information services

Other Programmes

22. Rural industries development centre
23. Village polytechnics
24. Fruit and vegetable processing
25. Medical services
26. Family planning

TETUAgricultural and Livestock Production

1. Tea, coffee, pyrethrum, maize, dairy products
2. Beef production experiment
3. Pig and poultry production
4. Bananas and other subsistence and cash crops
5. Intensive extension
6. Agricultural credit
7. Cooperative marketing
8. Special 4-K youth training programme
9. Dips

Supporting Services

10. Water supplies (a) Tetu, Thegenge (b) Zaina (c) environmental health water points
11. Roads
12. Farmer Training
13. Adult education
14. Information services

Education

15. Primary schools
16. Nursery schools

Health

17. Medical services
18. Environmental health projects

Social Services

19. Social halls

Experimental Programmes

20. Rural industrial development centre
21. Village polytechnics
22. Experiments in promotion of commerce and industry
23. Community development
24. Coordination

MBERELivestock Production

1. Livestock production
2. Ranches
3. Bee-keeping
4. Dips
5. Livestock improvement
6. Disease control and supervision

Agricultural Production Programme

7. Cotton
8. Cotton blocks
9. Tobacco
10. Mexico 142 pea beans
11. Castor
12. Katumani maize
13. Ishiara irrigation scheme
14. Agri-service station
15. Trials and research
16. Intensified extension
17. Credit and inputs

Supporting Services

18. Land Adjudication
19. Cooperatives
20. Roads
21. Water supplies
22. Health services
23. Post and telecommunications
24. Farmer training
25. Adult education
26. Information services

Industry, Commerce and Construction

27. Rural Industrial Promotion Centre, Embu
28. Building construction
29. Quarrying
30. Community development
31. Coordination
32. Evaluation and research

KWALEMinistry of Agriculture

1. Mwereni ranch - development and economic evaluation
2. Animal health and husbandry
3. Central tree crop nurseries
4. Coconut nurseries in S.R.D.P. area
5. Sugar cane nursery in S.R.D.P. area
6. Kikoneni Sugar outgrowers S.R.D.P. associated project
7. Crop processing and marketing study
8. Agricultural service centre
9. Buildings

Ministry of Health

10. Health centre - Kikoneni
11. Health education and environmental sanitation

Ministry of Works

12. Additions to classified road network
13. Construction and maintenance work on minor and secondary roads

Department of Cooperatives

14. Reorganisation of the existing Kwale Farms cooperative
15. Setting up of a Farmer's Cooperative Society at Kikoneni
16. Setting up of a Fisherman's Cooperative Society at Msambweni
17. Cooperative training

Department of Social Services

18. Training and seminars for local leaders
19. Women's group leaders courses
20. Functional literacy projects
21. Community development self-help projects
22. Day care centre projects
23. Sectoral projects, i.e. self help on specific jobs such as cattle dips, access roads, clinics, etc.
24. Students holiday programmes
25. Housing and staff requirements

Water Development

26. Phases I and II (Bumbani, Mrima, Mwanayamala); Phase III (Mwangunda, Mnasasini)

Land Adjudication

27. Ongoing national level project: co-ordination of land adjudication work with programmes of other departments, especially agriculture in the S.R.D.P. areas.

MIGORI/KIHANCHAMinistry of Agriculture

1. Model dairy farms
2. Livestock marketing (not phased)
3. Pig demonstration
4. Dips programme
5. Animal disease control
6. Water development
7. Hybrid maize
8. (i) Tobacco nurseries; (ii) tobacco
9. Cotton production
10. Groundnuts production
11. Rice
12. Fruits nursery
13. Crop demonstration plots
14. Farm management
15. Farmers training
16. Field days farmers and transport
17. Stockist inputs
18. Beans demonstration
19. Agri-service centres
20. Crop storage
21. Home economics

Ministry of Health

22. Development of health centres
23. UNICEF water scheme
24. Vector control
25. Mobile health clinics
26. Housing (at Kihancha health centre)

Ministry of Works

27. Feeder roads

Department of Cooperative Development

- 28. Cooperative reorganisation
- 29. Cotton marketing
- 30. Groundnut marketing
- 31. Tobacco

Ministry of Tourism and Wildlife

- 32. Fisheries

Department of Social Services

- 33. Training
- 34. Women's groups
- 35. Adult education
- 36. Nursery centres
- 37. Self-help
- 38. Youth centres and village polytechnics
- 39. Completion of staff housing
- 40. Sports and culture
- 41. Stadium show ground

Ministry of Natural Resources

- 42. Nursery and depots
- 43. Hilltop planting
- 44. Demonstration plots
- 45. Forest farmers

Ministry of Power and Communication

- 46. Airstrips
- 47. Telephones
- 48. Electrification

Ministry of Lands and Settlement

- 49. Land adjudication
- 50. Land registration
- 51. Town planning and development

Ministry of Commerce and Industry No projects listed

Ministry of Home Affairs No projects listed

Ministry of Education No projects listed

LIST OF CONTRIBUTORS

- Chapter One: Introduction, by George Alibaruho and Sidney B. Westley
- Chapter Two: Crop Development in the Migori/Kihancha SRDP, by Erastus S. Mbugua, Siegfried Schönherr and Peter Wyeth
- Chapter Three: Crop Production in Tetu SRDP, by Brooke Greene
- Chapter Four: Crop Development in the South Kwale District SRDP: An Appraisal and Guide for Action, by George Alibaruho with an appendix by Erastus S. Mbugua
- Chapter Five: Crop Production in Mbere SRDP, by Brooke Greene
- Chapter Six: Crop Production in Kapenguria SRDP, by Erastus S. Mbugua, Siegfried Schönherr and Peter Wyeth
- Chapter Seven: Rural Credit and Crop Production in Vihiga/Hamisi, by Peter Wyeth, Erastus S. Mbugua and Siegfried Schönherr
- Chapter Eight: Agricultural Extension and Farmers Training, by Erastus S. Mbugua, Siegfried Schönherr and Peter Wyeth
- Chapter Nine: Improvements in Kenya's Livestock Economy: Lessons from the SRDP, by Ian Livingstone and Peter N. Hopcraft
- Chapter Ten: Group and Cooperative Ranching, by Ian Livingstone and Peter N. Hopcraft
- Chapter Eleven: Rural Industry, by Ian Livingstone with the assistance of Bruce F. Johnston and an appendix by Eritha Mikkelsen
- Appendix to Part I: Pesticides and the Development of Local Resources, by J. Eric Reynolds and Peter Wyeth
- Chapter Twelve: Labour Intensive Road Construction and SRDP, by Martin David and Peter N. Hopcraft
- Chapter Thirteen: An Appraisal of Water Resource Development in the SRDP Areas of Tetu and Mbere in Kenya, by George S. Ongweny
- Chapter Fourteen: The Adjudication Process and the Special Rural Development Programme, by H.W.O. Okoth-Ogendo
- Chapter Fifteen: The Women's Groups Programme in the SRDP, by Achola O. Pala, J. Eric Reynolds and Malcolm Wallis, with the assistance of Dallas Browne
- Chapter Sixteen: The Kenya Functional Literacy Programme: An Evaluation, by O.N.N. Gakuru, H.C.A. Somerset and Malcolm Wallis
- Chapter Seventeen: The Family Planning Programme in Vihiga/Hamisi, Kakamega District, by Ian Livingstone and Achola O. Pala
- Chapter Eighteen: Cooperative Development in Kenya - Some General Considerations, by J. Eric Reynolds, with the assistance of Erastus S. Mbugua and George Alibaruho
- Chapter Nineteen: SRDP as an Experiment in Development Administration, by Martin David, Walter Oyugi and Malcolm Wallis
- Chapter Twenty: An Overview of Project and Planning Formulation in the Six SRDP Areas, by Martin David and Ian Livingstone
- Report edited by Sidney B. Westley and Angela MacTavish Mohamed

Table 11. Economics of soya bean production.

	Production level		
	low	average	high
1. yield in 90 kg bags/hectare	5	9	17
2. output @ 116/- per bag ¹	580/-	1,044/-	1,972/-
3. seed @ 50 kg. per hectare ²	65/-	65/-	65/-
4. fertiliser	-	-	-
5. sprays and dusts	-	-	-
6. other costs	10/-	20/-	30/-
7. total variable costs (3 to 6)	75/-	85/-	95/-
8. gross margin per hectare (2 minus 7)	515/-	969/-	1,887/-
9. labour mandays/hectare (average)			
seedbed preparation	35		
planting	8		
weeding	20		
harvesting	20		
total mandays	83		
10. gross margin per manday (8:9) 11/70			

Remark: Two crops can be grown per year. The short rain crop tends to yield higher, probably due to more sunlight. Soya bean is a light feeder and enriches the soil with nitrogen (leguminous).

1. Maize and Produce Board price from 17th August, 1974.
2. Not certified (from farmers own crop).

Table 12. Economics of bean production.

	Production level		
	low	average	high
1. yield in 90 kg. bags/hectare	2	6	15
2. output @ 105/- per bag ¹	212/-	636/-	1,590/-
3. seed	30/-	30/-	100/-
4. fertiliser	-	-	-
5. sprays and dusts	-	-	-
6. other costs	10/-	20/-	30/-
7. total variable costs (3 to 6)	40/-	50/-	130/-
8. gross margin per hectare (2 minus 7)	172/-	586/-	1,460/-
9. labour mandays/hectare (average)			
seedbed preparation	35		
planting	8		
weeding	20		
harvesting	20		
total mandays	83		
10. gross margin per manday (8:9)	7/10		

Remark: Two crops can be grown per year.

Beans are light feeders and leguminous.

- The prices paid for Canadian Wonder, Red Haricot, Rose Coco and Mexican 142 was shs.-146/- by the Maize and Produce Board, 17th August, 1974.

Table 13. Economics of sunflower production.

	production level		
	low	average	high
1. yield in 40 kg. bags/hectare	12	17	28
2. output @ 50/- per bag ¹	600/-	850/-	1,400/-
3. seed @ 10 kg. per hectare ²	50/-	50/-	50/-
4. fertiliser	-	-	-
5. sprays and dusts	-	-	-
6. other costs	10/-	20/-	30/-
7. total variable costs (3 to 6)	60/-	70/-	80/-
8. gross margin per hectare (2 minus 7)	540/-	780/-	1,120/-
9. labour mandays/hectare (average)			
seedbed preparation	36		
planting	8		
weeding	30		
harvesting	20		
total mandays	93		
10. gross margin per manday (8:9)	8/40		

Remark: Two crops can be grown per year.

1. Price paid for white and black varieties by the Maize and Produce Board, 17th August, 1974.
2. Certified.

Table 14. Economics of fire cured and flue cured tobacco production.¹

	fire cured	flue cured
1. yield in kg. cured leaves/ha	700	600
2. output fire cured @ kg 4/50 flue cured @ kg 8/-	3,150/-	4,800/-
3. seedlings	250/-	250/-
4. fertiliser	500/-	750/-
5. sprays and dusts	65/-	65/-
second application		50/-
6. watering can/rakes	40/-	40/-
7. woodfuel	110/-	360/-
8. barn repayment:		
fire 1,000/- over 2 years	500/-	
flue 4,000/- over 4 years		1,000/-
9. total variable costs (3 to 6)	1,465/-	2,515/-
10. gross margin per hectare (2 minus 9)	1,685/-	2,285/-
11. labour mandays per hectare ²	446	482
12. gross margin per manday (10:11)	3/78	4/75

Remarks: If tractor ploughing is done the tractor operations would be valued at 320/- under variable costs and the total mandays would be reduced by 60 mandays.

If properly maintained the barns should last twice as long as calculated.

Tobacco is a very heavy feeder.

1. These basic data are from B.A.T. They reflect obviously an average production level. The data were cross checked with figures obtained from the German Agricultural Team, Kisii.

2. For ploughing and ridging our own estimation is 60 mandays.

Table 15. Economics of cotton production.

	Production level		
	low	average	high
1. yield in kg/hectare	170	250	1,000
2. output @ 1/85 per kg.	315/-	463/-	1,850/-
3. seed	12/50	12/50	12/50
4. fertiliser	-	-	300/-
5. sprays and dusts	-	60/-	360/-
6. other costs	10/-	20/-	40/-
7. total variable costs (3 to 6)	22/50	92/50	702/50
8. gross margin per hectare (2 minus 7)	292/50	370/50	1,147/50
9. labour mandays/hectare (average)			
seedbed preparation	60		
planting	40		
weeding and spraying	70		
harvesting	25		
other tasks	30		
total mandays	225		
10. gross margin per manday (8:9)	1/64		

Remark: Yields among farmers are generally low but they could be increased considerably by good husbandry; 2,000 kg/hectare is possible.

Cotton can be grown in the drier areas where many other crops with higher gross margins can not be cultivated.

CHAPTER THREECROP PRODUCTION IN TETU SRDP*INTRODUCTION

According to the original SRDP draft, the Tetu agricultural programme was to emphasise extension, credit and marketing. (3, p. 22) The crop development project per se was supposed to consist of demonstrations of new crops. (4, p. 5)

The 1970 District Annual Report had little to say about SRDP. (8, p. 48) The 1971 Report (9, p. 130-131) mentioned various 4-K projects and the extension and farm budget project. The 1973 Report (10, p. 76-77) mentioned 4-K projects, the extension, training and credit scheme, and the farm budgeting scheme.¹ Through 1973, therefore, any crop development that took place did so by means of: (a) the 4-K club projects (b) the Home Economics (H.E.) Club kitchen-garden projects and (c) the hybrid maize extension, training and credit project. These projects all served as demonstrations to neighbouring farmers. The 4-K projects were supported by UNICEF funds. In general, these projects involved previously introduced crops such as hybrid maize, M 142 beans and vegetables. Only in 1973 did M.O.A. personnel try any new crops, and these were certified potatoes, capsicum and passion fruit. It was only in 1974 that the crop development project, as originally envisaged with new crops, was promoted by SRDP personnel. (See Table 1 for demonstrations actually implemented.)

A general description of Tetu Division can be found elsewhere, (1) Major crops mentioned for Central Province in 1963/64 with hectareage in brackets were: coffee (1191), tea (254), pyrethrum (400), macadamia nuts (64), tobacco (130, including local varieties), plums (40), hybrid maize (4,600), local maize (1,400), banana (950), beans (1,600), E. Potatoes (750), grass (7,446) and fodder crops (930).² (3, p. 20) If this list is then compared with crops grown in Tetu Division in October 1974 (Table 3),

* The author is grateful to B. Johnston, S. Schonherr and E.S. Mbugua for their suggestions.

1. There was no 1972 Report available in the M.O.A. library.

2. There is some question as to the accuracy of these figures. Also, several food crops have been omitted.

or in Nyeri District as a whole (Table 4), the only new crop mentioned appears to be passion fruit.

Considering Tetu first (Table 3), some increase has occurred in area under coffee and tea since 1968 and under hybrid maize. For Nyeri district as a whole (Table 4), increases have taken place in tea, macadamia nuts, hybrid maize, E. potatoes and beans. Unfortunately, confirmation of the above trends using estimated marketed production (Table 5) was not possible given the poor quality of data available from the annual reports. Tea, wheat and milk production have definitely increased and M 142 appears to have increased (Table 6). Looking at the number of growers involved (Table 7) gives some confirmation of these trends, especially in the case of coffee and tea. Further confirmation is obtained by looking at the estimates of total crops sold from Nyeri district (Table 8). The only data which appear reliable are for major cash crops and milk.

CROP PROGRAMMES

Maize

Hybrid maize has been a major concern of SRDP personnel since 1972. In the Gathano rains of 1972 (mid-June), the hybrid maize extension, training and credit project³ got under way, with 216 farmers out of a total of 225 selected low income farmers. (1, abstract and p. 3) This number increased to 582 farmers in the long rains of 1973, dropped to 189 in the Gathano rains of 1973, and the number involved in the long rains of 1974 was not known by the Agricultural Land and Farm Management Officer (A.L.F.M.O.), Tetu SRDP.

Initial problems were encountered with a release of funds by the Agricultural Finance Corporation (A.F.C.). Nonsecured loans were then made through SRDP to participants in order to purchase sufficient fertiliser and seed for one acre plots. As of the end of 1973, repayment

3. This project is part of the intensive extension portion of Tetu SRDP. Detailed description and analysis can be found in (1) and (2) and in the section of this report on "Agricultural Extension and Farmers Training".

of these loans stood at 80 per cent. Given the fact that the Nyeri branch of the A.F.C. made no attempt to collect these loans in the field⁴ and that farmers had to travel to Nyeri to repay the loans, this repayment level seems very high. According to one annual report (9), farmers were initially confused as to whether they had to pay back these loans or not.⁵

In any case, hybrid maize acreage seems to have increased in Tetu since 1970/71 and in Nyeri District as a whole (Table 3 and Table 10), though the available data are of variable quality. The number of bags marketed through the Maize and Produce Board has been quite small in Nyeri District as a whole (Table 5, 6), but this does not take into consideration marketing through local sales.

This project is experimental in that it is directed towards low income farmers and gives unsecured loans. According to the Provincial Planning Officer (P.P.O.), Nyeri, a similar project is now underway with Napier grass in Kirinyaga District. It is thus being replicated elsewhere. It is not clear why it is not being replicated in Tetu SRDP or Nyeri District. One reason given is lack of SRDP funds for participant training at the Wambugu Farmer Training Centre (F.T.C.), but the real reason may be that SRDP personnel felt that the 80 per cent repayment rate was not high enough.⁶

Another reason stated by the A.L.F.M.O., Tetu SRDP, was that farmers wanted to shift from hybrid maize to E. potatoes or beans as the weather is too risky. This does not appear to have been the case in the years under review, i.e. 1972, 1973, 1974 (Table 2). Other problems mentioned in the Annual Reports were: not enough seed available except through cooperatives, variable rainfall, and credit not available to buy seeds. However, maize seed supply through stockists should have been adequate, rainfall is said to be dependable for one good maize crop but not two,⁷

4. Information supplied by Mr. E.S. Mbugua, I.D.S., University of Nairobi.

5. Even though they all had filled out A.F.C. application forms according to Mr. Mbugua.

6. The Area Coordinator expressed this view point during my visit to Tetu SRDP prior to this evaluation exercise.

7. According to Mr. Mbugua.

and credit needs would remain the same for any crop. Supplies of certified E. potato seed would also be a problem, though present estimates of its gross margin/ha. for Nyeri District (Table 9) appear to be more favourable than for hybrid maize.⁸ Beans do not appear to yield as well as maize with good rainfall, but they may give higher yields than maize when rainfall is light. Therefore, they would be a good alternative crop in rotation with maize after the good rains.⁹

At present, SRDP is completely subsidising demonstrations of M 142 beans on one acre plots carried out by two farmers in Thegenge and three in Aguthi location, according to the A.L.F.M.O., Tetu SRDP.

Passion Fruit

The annual report for 1971 (7) does not mention this crop. However, the monthly report for October 1974 (5) mentions 6 ha. under passion fruit in October 1973, 5 ha. in October 1974 and an expected 20 ha. by the end of 1974.

This sub-project was a combined effort: the D.A.O. initiated it, the SRDP Area Coordinator was involved in the planning stages and the A.A.O. carried out the implementation. In 1974, 344,000 seedlings were produced in four nurseries at the Tetu coffee cooperative. Through a combined effort of all J.A.A.s and A.A.s, farmers were being recruited in late 1974 and early 1975 to plant passion fruit. Seedlings were thought to be sufficient for 190 ha. Effort are being concentrated on farmers in Aguthi location because this borders Mukurweini location where the M.O.A. is expanding passion fruit production. **Marketing** is through a juice extraction factory in Thika.

According to estimates made by the A.L.F.M.O., Tetu SRDP, this crop has a favourable gross margin/ha. (Table 9, column 2) which appears

8. **Average** yield for E. potatoes (96 bags/ha. at 43/-/bag); hybrid maize (28 bags/ha. at 65/-/bag); local maize (19 bags/ha. at 65/-/bag); beans (6 bags/ha. at 110/-/bag). (6)

9. According to Mr. Mbugua, The Gathano rains are dependable in Muhoyas, Tetu, and upper Thegenge locations of Tetu Division and the long rains are dependable in Aguthi and lower Thegenge locations.

to exceed that for hybrid maize. Yields range from 15,000-30,000 Kg/acre using 100 Kg. of single **superphosphate** per acre. Prices as of November 1974 were shs 0/33 per Kg.

Problems seem to arise from varied cultivation methods which result in a wide range of potential yields probably due to lack of familiarity with this crop. In addition, initial capital costs are high if trellis wire is used to support the plants. However, since 1972, the Horticultural Crops Development Authority (H.C.D.A.) in Karatina has been providing loans for trellis wire. The availability of credit, an assured marketing outlet and an ample supply of seedlings should go a long way to help diffuse this crop.

Other Crop: Projects Involving SRDP Personnel

Beans: Pure stands are uncommon. Intercropping with maize is the norm. In 1974, SRDP personnel began demonstrating pure stands of M 142 and **soya beans**. Yields presently range from 4-6 bags/ha., varieties are numerous and aphids and bean fly are the main insect problems.

There is a need to know which varieties are best suited to what area and which are most productive economically and nutritionally. Prices are quite good, varying between shs 100-200/- per 90 Kg. bag depending on the season and the market.

Sweet Pepper (Capsicum): This is a new sub-project which began with some demonstrations in the short rains of 1973. In December 1974, 172 farmers were selected to plant about 100 acres. The A.L.F.M.O., Tetu SRDP initiated the project and it is supported by the Ministry of Agriculture. The objective is to take advantage of a newly developed processing plant in Kiganjo, Mount Kenya Agro-Industries Ltd. This firm is providing several services that are advantageous to the farmers:

1. Extension advice on capsicums;
2. Convenient small packages of seed and fertiliser sufficient for $\frac{1}{4}$ acre plots;
3. Convenient collection by lorry at milk collection points;
4. Seed and fertiliser distribution on the collection lorry at favourable prices;

5. Monthly payment from the collection lorry;
6. A fixed future price for the season, the same price for all grades;
7. Farmer representative participation in management discussions at the factory.

Estimated gross margins/ha. are shs 2,400/-. This crop is grown on bottom land that tends to be rather moist. Farmers in the area have experience with the crop as there used to be a processing plant in Karatina.

English Potatoes: Acreage is increasing in Tetu SRDP area and in Nyeri District as a whole. SRDP clubs planted local varieties of this crop in 1973. The F.A.O. is doing very few field trials in Nyeri District, even though demand exceeds supply. In an attempt to overcome this deficit, the A.L.F.M.O., Tetu SRDP is trying to produce certified seed potatoes (B 53) with 50 farmers, each planting $\frac{1}{2}$ acre plots during 1974/75. SRDP is extending loans to these farmers for this purpose.

The major problem is a shortage of certified (bacterial wilt-free) B 53 seed. Another problem is that there have been few experimental field trials in local areas. Other problems are susceptibility to fungal blight unless treated with fungicide, and poor marketing arrangements. Marketing is especially difficult on settlement schemes (not in the SRDP area) where a greater part of production takes place. Gross margin/ha. appears very favourable (Table 9), especially as more certified seed becomes available.

Fodder Crops: These include Napier grass, sweet potatoes, ~~marigold~~, ~~fodder~~ beet, lucerne, banana leaves, corn stalks and silage.

SRDP demonstrations on these began in 1974/75. Certainly, some diffusion occurred prior to this without formal demonstrations, especially with Napier, sweet potatoes and the use of leaves and stalks. Sweet potatoes have been grown locally for many years as a famine food crop. With the expansion of the dairy industry and the high cost of purchased feeds, the tops are becoming a popular dairy feed. Banana acreage was estimated at 500 ha. in 1973, yielding roughly 200,000 bunches per year valued at around Kf50,000. These stalks are commonly used for pig feed in the Far East and perhaps could be used for this purpose here.

Recommendations for bananas include the stimulation of pure stands, the use of new varieties and the organisation of marketing and processing activities. Many varieties of sweet potatoes are now grown with generally poor cultural methods and low yields. More research is needed to pick out the better varieties¹⁰, and to experiment with pure stands. The advantages of sweet potatoes are that they can be used for both human and animal consumption and that they are relatively adaptable to erratic weather conditions.

Other crops also used as fodder and famine crops are cassava, yam and colocassia. They also merit research attention.

In 1974, some attempts were made to demonstrate the production of silage for dairy cows using Napier grass, maize stalks and Nandi Seteria.

Projects not Involving SRDP Personnel

Coffee: This is the major cash crop in Tetu and in Nyeri District. Recently there has been some slight expansion of acreage in Tetu. Average yields were 733 Ks/ha.¹¹ in 1973/74 and the gross margin/ha. was estimated at shs 1,160/ (Table 9). Most of Tetu Division is in the coffee zone so that there is room for more expansion. Present cooperative membership is 6,000 in 20 sub-locations of Tetu Division. Production fluctuates quite widely, primarily due to erratic weather conditions. Thus production was: 549,990 Kg. in 1970/71, 290,412 Kg. in 1971/72, 883,717 Kg. in 1972/73 and 914,154 Kg. in 1973/74, all from the same acreage. Local marketing is through the Coffee Board of Kenya in Nairobi, and coffee factories in each location of Tetu provide credit to cooperative members.¹²

10. Very promising high-yielding varieties are available from the International Institute of Tropical Agriculture (I.I.T.A.) in Nigeria, according to Dr. B. Johnston, I.D.S.

11. 914,154 Kg from 1,245 ha. valued at Kf274,590 in 1973/74.

12. Contrary to some other coffee areas, farmers here are paid through the Nyeri Farmers' Cooperative Bank and thus delays in payment are minimised (Personal Communication from Mr. E.S. Mbugua).

The main problems are: (1) variable quality and yields due to erratic weather and (2) congestion at the factories. Little can be done about the former, but better organisation can solve the latter.

Tea: There has been a steady expansion in smallholdings since 1959. Vegetative propagation began in 1970. The Kenya Tea Development Authority (K.T.D.A.) fertiliser credit scheme provided 7,919 bags N.P.K. (nitrogen, phosphate, potassium) in 1971 and 7,729 bags in 1973 to farmers. Barazas to promote sales and good management, and field demonstrations are numerous. Production in 1972 in Tetu was 798,066 Kg, and in 1973 it was 837,716 Kg (on 1635 holdings or 523 ha., giving an average yield of 2,569 Kg. per ha.), but 1971 yields were affected by drought. Evenly distributed rainfall is a major problem. A campaign to grow more tea initiated in 1973 seems to be having some results. Smooth leaf collection during the rains is hampered in some places by poor roads.

Pyrethrum: Acreage seems to have remained fairly static. Average yields per ha. are around 250 Kg. The gross margin as of 1973 was comparable to tea, but the extension services of the K.T.D.A. seem to be more active and efficient. The supply of high-quality seeding material is inadequate, and pyrethrum competes with fodder crops that are grown for dairy production, especially in the upper areas of the division.

Given the excellent gross margin per ha. for milk production as compared to all other crops (Table 9), it would appear that fodder crops are at an advantage over pyrethrum. Yield of pyrethrum in 1973 was 74,242 Kg. valued at Kf 2,648 compared to 24,478 Kg. in 1972 and 40,275 Kg. in 1971. Production appears to have been erratic over the last few years. Pyrethrum is marketed through the Pyrethrum Board in Nakuru.

Macadamia: Acreage has remained constant in Tetu over the past few years. Marketed production was 926 Kg., valued at Kf 530 in 1973. The grades were **poor due to poor drying techniques. Macadamia was started in** Tetu in 1965, and by 1971 good yields were 4 Kg/tree from about 500 tree/ha. The nuts are graded from 1 to 5, and in 1974 prices varied from 11/- per Kg. to 3/50 per Kg. No disease problems have been encountered.

The main problems appear to be: (1) Marketing, which is being done through the coffee cooperative societies with sales made to the Kenya Nut

Company, and (2) Quality control affected by poor drying techniques. Grafting of planting material is also expensive, and there are no credit facilities for smallholders. The gross margin/ha. (after coming into production) in 1973 was at least double that of coffee or tea (Table 9), the two leading cash crops, and labour requirements are much less.(11) It would be encouraged, possibly by providing credit facilities for planting and allowing delayed payments until production begins after four to five years.

Vegetable Crops: Home economics (H.E.) personnel have been responsible for encouraging women to grow kitchen vegetable gardens, and 4-K personnel have encouraged vegetable plots. Estimated acreage and production figures were unavailable, but acreages in Tetu, in 1973 were: onions (25 ha.), tomatoes (43.4 ha.), carrots (20.35 ha.) and cabbages (104.7 ha.). In addition, one or two farmers grew french beans. 200 H.E. Club members were assisted by SRDP in growing various vegetables in 1973 on $\frac{1}{4}$ acre plots. The crops grown were: cabbage, carrots, string beans, peas and tomatoes. 4-K club members in Tetu SRDP also grew 777 plots in 1971, 635 plots in 1972 and 526 in 1973.

The main growing areas are Mathira Division and on settlement schemes. In June 1972, the Horticultural Crops Development Authority (H.C.D.A.) Karatina packing and grading station was opened. In 1973, total production graded for Nyeri District as a whole was: tomatoes (831,253 Kg., shs 394,854/-), capsicum (24,138 Kg., shs 20,199/-), cauliflower (10,095 Kg., shs 6,915/-), french beans (623 Kg., shs 518/-), chillies (38 Kg., shs 36/-) and onions (10,052 Kg., shs. 5,973/-).

Onion acreage has been limited to 20 ha. by the H.C.D.A. since 1971. Yields vary from 7 - 12.5 tons/ha., and demand is greater than supply in the District. Cabbages and carrots have been common in settlement schemes, but poor roads have affected marketing. In addition, production is limited by lack of irrigation.

CONCLUSIONS

The Tetu SRDP crop development project was supposed to demonstrate new crops. Up to early 1974, little had been done in this direction. Only in the 1974/75 season was there **any** emphasis on new crops, especially cash and fodder crops.

However, crop development took place as part of other projects. These were the hybrid maize extension-training-credit scheme, the 4-K hybrid maize and M142 bean projects and the H.E. club kitchen vegetable gardens in 1972 and 1973. None of these crops were new to the area, and all projects were stimulated by outside funding.

In terms of crop development, it is not clear just how successful these latter projects have been. The maize extension scheme exposed several thousand farmers to hybrid maize, using unsecured loans for about 1,000 farmers over the duration of the project. It was experimental in being directed towards low-income farmers and in using unsecured loans. The repayment level was 80 per cent by the end of 1973. This project is being replicated in Kirinyaga District according to the P.P.O., Nyeri, using district development grants for Napier grass. But it is not being replicated in Tetu SRDP. If it was successful, why not?

The 4-K crop and vegetable projects initiated numerous plots, all of which produced fair harvests except for beans. But by the end of 1973 219 out of 350 loans remained outstanding, giving a repayment level of 37 per cent. (10, p. 76). Funding was through UNICEF until the end of 1973, and no projects were planned by SRDP for 1974/75.

The H.E. kitchen gardens were experimental. Although the extent of the project was limited, vegetable production was enhanced. It is not clear whether this project has generated continuing, self-financed interest in kitchen gardens for 1974/75 since SRDP financial assistance ended in 1973/74. Nor is it clear whether the extra vegetables produced were used for home consumption, thus having a direct effect on nutrition, or whether they were sold locally, thus having an indirect effect or possibly no effect on nutrition.

In all three cases, no replication is taking place in Tetu SRDP itself. This seems to infer that unless funding from outside donors is forthcoming, these projects are not considered worthy of replication by Tetu SRDP and might therefore be called unsuccessful!

Very little field work has been done with food crops such as beans, sweet potatoes, cassava, yam, colocassia, local potatoes and local maize. Nor has much been done with tree crops such as macadamia, banana, mango, and citrus.

RECOMMENDATIONS

1. More effort should be directed towards experimenting with and selecting new cash, fodder and food crops.

2. More efforts should be made to select better varieties, optimise cultural practices¹³ and organise marketing for local food crops. This would diminish the risk attached to adopting cash crop production, or other commercial agricultural enterprises.

3. The economics of crop production, pure and intercropped, should be studied in detail for a representative sample of farmers in Tetu Division. Accurate, up-to-date data would be useful in making farm management recommendations. Thus it appears that hybrid maize should be grown during the dependable rainy season, and rotated with other crops in the less dependable rainy season.

4. The maize extension-training-credit scheme should be replicated in Tetu SRDP using a variety of crops. The training element could be modified in order to simplify the approach and lower the costs.

5. Given the nutritive importance of beans in the local diet, a special effort should be made to select economic and nutritious varieties for each local area.

6. The value of establishing more small agro-processing firms in Tetu Division should be explored.

7. High yielding varieties of sweet potatoes should be obtained from the I.I.T.A. for field demonstrations, as well as any other improved varieties which would be of value locally.

8. Small holders should be encouraged to grow trees crops. Macadamia and a variety of bananas are the obvious choices.

9. SRDP field demonstrations should be carried out under conditions which farmers can replicate.

13. For example, rainfall probability data might be used to make seasonal estimates of optimal planting dates for each crop in each local area.

10. SRDP field demonstrations should as far as possible emphasise the success rather than the number of plots.

11. Replication of 4-K and H.E. projects should be encouraged, giving more attention to a smaller number of successful plots rather than to large numbers of failures.

12. A careful analysis should be made to see whether or not SRDP personnel are involved in too many duties. There is some indication that the location of SRDP headquarters in Nyeri, the district capital, has meant that SRDP personnel become involved in district duties.

13. Given the multiplicity of crops and the shortage of research funds and research personnel, some method of selecting the most promising crops (cash, fodder, food) should be attempted.

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Table 1. Crop demonstrations in Nyeri District or Tetu Division
1971-74.

1971 Tetu: 330 H. maize, S.R.D.P., 4-K, Nyeri: 425 Tea, K.T.D.A.
Tetu: ? beans, S.R.D.P., 4-K, Nyeri: 20 Coffee, M.O.A.

1972 (available)

1973 Tetu: 556 maize (469 H. maize), SRDP, 4-K
Tetu: 526 vegetable, SRDP, 4-K
Tetu: 167 bean, SRDP, 4-K
Tetu: 154 potatoes, SRDP, 4-K
Tetu: 1 passion fruit, Wambugu F.T.C., SRDP?
382 vegetable gardens by women in H.E. clubs
Nyeri: ? M142, pure stands, M.O.A.
(Nyeri: ? capsicum M.C.A.)
Nyeri: 8 potatoes, B53, M.O.A., 1 acre each
Nyeri: 43 H. maize, F.A.O., 1 acre plots
Nyeri: 3 Canadian Wonder, 1 acre plots
Nyeri: 3 potatoes, B53, 1 acre plots

1974 Tetu: 1 Napier grass, F.A.O., 1 acre plot

SRDP: L.R. 1974: 11 sunflower (not very successful; rotting; birds)
19 M142 (fairly good)
9 soyabean (?)
5 watermelon (?)
9 groundnuts (poor yields)
13 mango (successful)
17 fodder beet (successful)

SRDP: S.R. 1974: Planned:

3 sunflower (1 destroyed by goats, 2 nothing on head)
11 fodder beet (1 complete failure)
6 lucerne
5 M142
2 soya bean
1 watermelon

Source: Annual Reports, Nyeri District, Tetu Division and personal communication from A.L.F.M.O./A.A.C., Tetu SRDP.

Table 2. Quality of rainfall in Nyeri District and Tetu Division, 1966-1974.

1966	L.R. Good. Average distribution. First quarter favourable. S.R. Inadequate. Late, tapered off.
1967	L.R. Good. Heavy. Well distributed. First quarter dry. S.R. Inadequate. Early. Poor distribution.
1968	L.R. Good. Early. Prolonged. S.R. Good. Early. Heavier than normal.
1969	L.R. Poor. Late. Unusually dry. S.R. Poor.
1970	L.R. Good. Late. S.R. Poor. Totally erratic and unpredictable.
1971	L.R. Good. Cold spell. First quarter dry. S.R. Poor generally. Late. Erratic. Fair in Tetu.
1972	L.R. Adequate. Somewhat late. S.R. Good.
1973	L.R. Adequate in Tetu. Late. First quarter dry. S.R. Rather good.
1974	L.R. Adequate. S.R. Adequate.

Sources: Annual Reports, Nyeri District, 1971, 1973.
Annual Reports, Tetu Division.

Table 3. Estimate of major crops, Tetu Division of Nyeri District.

	1966/67	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74 ^e	1974/75
1. Coffee			1,041	1,192	1,192	1,198	?	1,246	1,246
2. Tea (began 1959)	130	166	198	241	256	239	?	326 ^d	326
3. Pyrethrum				345	412	310 ^f	?	324	331
4. Macadamia						53	53	53	53
5. Tobacco						very little	?	45	34
6. H. Maize					1,831	3075 ^a	4342 ^b	2,216	3,159 ^b
7. L. Maize					1,919	3394	18/9	689	865
8. E. Potatoes						Subsistence	?	371	463
9. All Beans						1,291	?	2,529 ^c	1,417
10. Sugar Cane						114	?	48	?
11. S. Potatoes						450	?	?	?
12. Passion Fruit						-	?	6	20

a. Data in Annual Report, Tetu Division, 1973.

b. Pure stand H. maize established at 888 ha., and the rest is H. maize intercropped for 1974.

c. Conflicting figures here: 4,694 ha. (1973 Annual Report, Tetu Division) and 2529 ha. (Monthly Report, Tetu Division, October 1974).

d. Annual Report, Tetu Division, 1973 mentions 523 ha., as opposed to 326 ha. in Nyeri District Report, and 434 ha. in tea report of 1973.

e. Onions: 25 ha, tomatoes: 43 ha, carrots: 20 ha, cabbages: 104 ha, plums: 43 ha, banana: 500 ha, fodder crops incl. sweet potato vine, Napier): 1288 ha.

f. Annual Report, Tetu Division, 1971 reports 112 ha. of pyrethrum, as opposed to the District Report of 310 ha. I have assumed the latter figure to be correct.

Source: 1971, 1973 Annual Reports, Tetu Division; Annual Reports, Nyeri District. Monthly Report for October 1974, Tetu SRDP. Vegetable hectareage is omitted.

Table 4. Total hectareage, selected crops, Nyeri District, 1966-1973.

	1966	1967	1968	1969	1970	1971	1972	1973
1. Coffee	?	6,196	6,262	6,084	6,084	6,084	6,084	6,084
2. Tea	?	1,200	1,372	1,534	1,806	2,273	2,620	3,051
3. Pyrethrum	1,165	698	633	1,117	1,120	1,154	1,407	1,490
4. Macadamia	?	?	52	171	193	272	248	248
5. Tobacco ^a	267	?	?	?	30	74	?	76
6. H. Maize	?	1,898 ^b	?	?	5,967	8,138	13,873	18,650
7. L. Maize	?	22,083 ^b	2,647	6,620	8,827	8,791	8,086	6,234
8. E. Potatoes	3,750	?	826	944	1,929	1,998	3,107 ^c	2,222 ^d
9. All Beans	?	?	?	6,620	6,882	5,230	11,132	11,200
10. Sugar Cane	?	?	?	338	870	?	?	?
11. S. Potatoes	?	?	?	4,046	3,800	1,108	?	?
12. Passion Fruit								16 L.R.

a. Excluding local tobacco.

b. P. 8, Annual Report, Central Province 1967.

c. Yield est. 17,399 tons.

d. Yield est. 9,088 tons, Av. 50 bags/ha.

Source: Annual Reports, Nyeri District. This excludes those crops not mentioned in Tetu Division, e.g. wheat.

Table 5. Estimated smallholder marketed production, selected crops, Nyeri District (M. tons).

	65	66	67	68	69	70	71	72	73
1. Coffee	730 es.	1,147 es.	3659	2,224	2,937	3,462	4,753	1,740	3,672
2. Tea, Green Leaf		t=180 N=2,912	65	80	108	6,525	4,574	9,268	N-S, C23
3. Pyrethrum		149	177	331	375	153	128	288	243
4. Wheat		?	998	11,587	10,951	8,950	6,094	?	?
5. Milk (G)		1.8 MG	2.4 MG	2.4 MG	3.1 MG	19.2 MKg	14.7 MKg	17.1 MKg	21.8 MKg
6. Maize	?	?	82	1,925	-	-	-	?	?
7. Beans		?	-	-	-	-	-	?	?
8. E. Potatoes		158	5	-	-	-	-	?	?
9. Tobacco			-	-	-	-	-	?	?
10. S. Potatoes		?	-	184	160	140	-	?	?
11. Castor Seed		?	13	4	17	14	-	?	?
12. Vegetables		?	367	36	12	20	260	?	?
13. Maltle		?	15,674	2,135	1,803	1,278	1,004	?	?
14. Onions		?	-	27	11	15	18	?	?

Es = estate, t = Tetu Division, N = Nyeri Bistrict, M = Million, G = Gallon.
Source: Annual Reports, Nyeri District.

Table 6. Maize and Produce Board (MPB) Crop Purchases, Nyeri District
1967-1973 (Bags).

	<u>1967</u>	<u>1969</u>	<u>1971</u>	<u>1972</u>	<u>1973</u> (Aug. 1 - July 31)
1. Maize	1213	339	-	338	293
2. Beans					
C. Wonder	-	-	-	1	1
M 142	32	44	109	42	222
Rosecoco	-	-	32	1	18
White	-	-	5	-	1
Zebra	-	-	-	-	2
Mwezi moja	-	-	-	2	0
Lima	25	52	-	-	-
3. Castor Seeds	312	113	16	26	10
4. Wheat	2,518	92	-	-	-
5. Total	4,100	670	162	410	547

Source: MPB, Annual Reports.

Table 7. Number of growers and average income per grower, Nyeri District, selected enterprises, 1968-1974.

<u>No. of growers</u>							
	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>
Coffee	27,689	t=5617 27,720	t=5617 28,609	t=5796 27,867	28,964	28,964	29,169
Tea	4,689	t= 797 5,013	5,216	5,216	t=1074 6 853	t=1458 7,982	8,963
Pyrethrum	3,786	-	3,683	2,762	2,762	2,304	NA
Wheat	703	-	822	1,750	1,750	NA	NA
H. Maize	-	-	-	-	-	NA	NA
L. Maize	-	-	-	-	-	NA	NA
Beans	-	-	-	-	-	NA	NA
Macadamia	-	-	-	-	-	NA	NA
Milk	-	-	-	11,116	14,209	-	-
Pigs	-	-	-	4,000	2,500	-	-
<u>Av. income/grower (Kshs)</u>							
	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>
Coffee	667	562	648	908	t=911 800	t=351 469	t-351 1247
Tea	546	621	822	1,022	719	1,203	?
Pyrethrum	200	240	83	199	421	497	?
Wheat	1,640	2,300	2,681	2,087	1,393	?	?
Milk	-	316	390	628	731	-	-
Pigs	-	343	483	929	1,200	-	-

t = Tetu Division, previously called North Tetu.

Source: Annual Reports, Nyeri District.

Table 8. Total value of selected crops sold, Nyeri District, selected years (Kf).

<u>Cash Crops</u>	<u>1967/68</u>	<u>1968/69</u>	<u>1971/72</u>	<u>1972/1973</u>
Coffee (clean)	794,792	894,828	621,838	1,836,153
Tea (made)	155,742	214,522	245,923	484,138
Pyrethrum	72,112	78,289	57,675	57,322
Wheat	250,728	227,910	177,824	187,785
Wattle	12,150	20,069	15,497	20,803
Total	1,285,524	1,435,618	1,118,757	2,586,201
<u>Food Crops</u>				
H. Maize	11,349 marketed	-	t.v. 829,672	t.v. 168,735
L. Maize	-	-	t.v. 48,288	t.v. 109,095
All Beans	?	-	t.v. 233,780	t.v. 195,200
Macadamia	-	-	NA	100
Tomatoes	-	-	-	18,060
Capsicum	-	-	-	1,009
Cauliflower	-	-	-	345
Onions	412	320	-	-
S. Potatoes	575	1,800	-	-
Castor Seed	109	320	-	-
Milk	284,886	350,559	718,797	1,292,467

t.v. = estimated total value of production.

Source: Annual Reports Nyeri District,
Annual Reports Central Province.

Table 9. Estimated average gross margins/ha., selected crops, Nyeri District, 1973 (Kshs).

<u>Crops</u>	GM/ha Per crop	GM/ha per year	GM/ha/yr less labour
H. Maize	558	1,116 ^a	228
All Beans	431	862	15
Cotton?	210(?)	420(?)	-375(?)
Tobacco	3,445	3,445	1,945 ^b
Tomatoes	1,470	2,940	1,020
Cabbage	1,693	3,386	1,378
E. Potatoes	1,250	2,500	710
Wheat	379	758	247
Pyrethrum	1,300	1,300	926
Coffee		2,600	1,160
Tea	-	1,330	925
Macadamia	-	2,555	2,390
Passion Fruit	-	1,130	485
Dairy	-	4,540	4,120(?)

Source: M.O.A., Land and Farm Management Division, District Guidelines, 1973, p. 26-28. This was before the recent dramatic rise in fertiliser prices.

- a. It is improbable that two crops of H. Maize would lead to a doubling of GM/ha. This is due to the fact that often there is only one dependable rain in an area, for example, the Gathano rains in Muhoyas, Tetu and Upper Thegenge locations of Tetu Division and the long rains in Aguthi and Lower Thegenge location of Tetu Division. (Personal correspondence from Mr. Mbugua.)
- b. Assuming 300 man days at 5/- per day.

Table 10. Diffusion of maize in Nyeri District and Tetu Division.

Nyeri District		67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75
Hectares									
Hybrid		2,647	6,620	5,967	8,138	13,873	18,650	19,000	?
Local				8,827	8,791	8,086	6,234	5,000	
Tetu Division									
Hectares									
Hybrid		?	?	?	1,831	3,075	4,342	2,216	3,159
Local					1,919	3,394	1,877	689	865

3 - 24

N.B. It is not clear whether area refers to planted or harvested. Data on production and value of production given in the Annual Reports were unreliable.

Source: Annual Reports, Monthly Report, Tetu Division.

CHAPTER FOURCROP DEVELOPMENT IN THE SOUTH KWALE DISTRICT SRDP:
AN APPRAISAL AND GUIDE FOR ACTIONINTRODUCTION

The South Kwale SRDP includes four Locations, Msambweni (population 20,113), Kikoneni (12,140), Mwereni (12,839) and Shimba South (13,631). This evaluation report deals with those projects in the Kwale SRDP coded as Ministry of Agriculture (M.O.A.) Projects which in one way or another are related to crop production. There are eight such projects on record: (1) The central tree crop nurseries in Mtwapa, (2) The coconut nurseries near Msambweni, (3) The sugar cane nursery in Kikoneni, (4) The Kikoneni sugar outgrowers scheme, (5) The agricultural growth points and extension experiment project, (6) The crop processing and marketing 'projected' project, (7) The agriservice centre project and (8) The buildings project. The last four of these are service projects, meant to support the first four which are direct crop production projects. In this chapter reference will also be made to those cooperative projects that impinge on the success of the integrated crop production programme under discussion. The rest of this chapter contains a project by project discussion encompassing project descriptions and objectives, determinable benefits and assessable problems. No attempt is made to assess the economic or accounting costs as some of the inputs, especially personnel, are not uniquely engaged in SRDP and there is no record of what proportion of their operating time is spent on SRDP and what proportion is spent on the ordinary business of the Ministry of Agriculture. The last section contains a set of recommendations regarding whether or not to strip some or all of the projects of their SRDP status. This is done on the basis of the terms of reference as well as the known SRDP principles and objectives.

THE CENTRAL TREE CROP NURSERIESLocation and Description

The nurseries are located in Mtwapa, North of Mombasa Island, out of the four administrative Locations where the SRDP is being implemented. The location of the nurseries is an old Ministry of Agriculture experimental site and what was done to accommodate SRDP here was to expand the site and increase the range of seedlings as well as to provide more irrigation facilities. The SRDP project includes specifically mangoes (900 seedlings), apples (460), sweet oranges, mandarin oranges, lemons, coconuts, limes and seedless grapefruit (actual numbers were not obtained for the latter six categories).

Project Objective

The major project objective was to increase and improve the range and standardise the husbandry of fruit grown on the SRDP farms as well as to lay a foundation for a future fruit canning and juice and oil extraction industry.

Benefits

Like other Ministry of Agriculture nurseries, the central tree crop nurseries have provided farmers with well bred planting materials. Mango, apple, coconut and orange seedlings are sold without any major sales promotion campaign. But, strangely, most of these are sold out of the District and therefore out of the SRDP area. Because this is so, the benefits have accrued to people and areas other than those in the SRDP. There is no record of which farmers purchased what seedlings!

Limes are a very new introduction in the nurseries, and so it is not possible to assess any of their benefits yet in the context of SRDP. Grapefruit seedlings are not being marketed at all. They are new to most farmers and, without an aggressive marketing and extension programme, the seedlings are becoming too old to be transplanted to the field. Apart from the few labourers employed on site, one can hardly see any benefits that may have accrued from the foregoing project subcomponents.

Some Problems and Overall Assessment

Some of the seedlings, especially the lemons, are being attacked by a disease which affects the roots in particular and has not been identified. One SRDP principle, research and evaluation, has not been invoked to solve this problem.

Beyond the environmental problems, the major shortcoming of this project is that it is not integrated into the general SRDP programme. From a purely production point of view, there is no question about its general success. Since it is not linked in any definite way to such SRDP projects as the agricultural growth points and extension experiments and it is not located in the SRDP area, this project has failed to meet SRDP principles and objectives. There is nothing experimental about growing more seedlings of already developed varieties on an already developed site; replicating such a project would simply entail giving experimental stations more money, and it is difficult to see the extent to which this project in the SRDP area has

led to increased use of existing resources. The project has hardly had any perceptible positive output effect in the SRDP area. Nor can we say that it has reduced unemployment to any significant degree, especially since none of the labourers came from any of the Locations designated as SRDP areas. In addition extension aspects have been completely overlooked. Finally, although another SRDP objective is decentralisation of decision-making authority, such decentralisation should not be carried so far that the Agricultural Assistant based in Msambweni, who was knowledgeable about all the other projects, knew very little about the nurseries at Mtwapa.

COCONUT NURSERIES IN MSAMBWENI

Description

This project consists of two adjacent coconut nurseries with a total size of about one acre. The nurseries are located just outside of Msambweni township. Project implementation began in June 1972. It had been planned to begin in April of the same year, but funds were not released on time. Project implementation is still in progress. Since seeds are planted and seedlings are sold once a year, at the time of the evaluation (December 1974) only the first phase had been completed, i.e. planting and selling the first output.

Project Objectives

The objective is to raise good quality coconut seedlings for sale to local farmers in a nursery located centrally in the major coconut growing area. Since these seedlings are of superior quality (compared with those raised by individual farmers) it was hoped that their availability coupled with a good extension effort would lead to the replacement of old unproductive trees on the farms. In the long run, this could also lead to an overall expansion of acreage.

Benefits

At the time of the evaluation, 141.2 ha. had been planted with seedlings obtained from the nursery. This has formed a basis for improved husbandry in the area, although this effect tends to be neutralised by inadequacies in the extension system. This project may also have increased the number of those gainfully self-employed in the District.

More direct benefits have been in the form of utilisation of local resources. All planting materials were obtained locally and labour was hired locally to carry out the necessary production operations such as planting and weeding. There are five labourers and watchmen. Local leaders have also been involved, along with M.O.A. officers, in 'selling' this project to the people.

Some Problems and Overall Assessment

The weather has created some marketing problems for the project. Because of an unexpected drought before the end of 1974, farmers had stopped planting and so had not bought up the second crop of seedlings.

All in all, the project has been successful, but it has not been fully integrated with other agricultural projects which would have enhanced its success. This project might have been treated as part of an overall experiment and linked with other projects such as extension experiments and the agriservice centre. As it is, only those farmers who find out about these nurseries on their own come to buy seedlings, and there is no systematic extension follow-up. Following the SRDP experimentation principle, we should have a controlled experiment to see whether the availability of planting materials at the right planting time and at subsidised prices would improve husbandry and lead to the replacement of dead and unproductive trees with the superior seedlings raised in the nurseries. As it is now, we only assume that since the seedlings were bought, these objectives were accomplished.

SUGAR CANE NURSERIES AT KIKONENI AND THE KIKONENI SUGAR OUTGROWER SCHEME

Description

These are listed as two projects (the sugar cane nurseries and the Kikoneni sugar outgrower scheme), but they are essentially part and parcel of each other, as is indicated by their simultaneous failure.

The nurseries are made up of mature sugar cane which is ready to process. They are located at the centre of a sugar cane growing area where existing small growers are being encouraged to increase their production and those not yet growing sugar cane are being encouraged to adopt the crop. This extension effort is the sugar outgrower scheme.

Objectives

The project objectives were to overcome the shortage of planting materials and to bring the planting materials to the small-farmer sugar out-

grower area near Ramisi Sugar Estate. From a longer term point of view, this project was to act as a stimulus for increases in acreage planted to cane for the production of white sugar.

Implementation began in January 1972, six months later than planned. The project was subsequently held in abeyance after the seedlings were grown in the nurseries due to problems which arose in the outgrower section of the project.

Benefits

Some local labour was employed (numbers not specified) to prepare the nurseries, but only ten farmers received seedlings from the nurseries. Most of the sugar cane will be sold to Ramisi Sugar Factory by SRDP, and the proceeds will revert to the Programme, but this is very different from the anticipated benefits.

Problems and Overall Assessment

The two subcomponents had to be effectively integrated to ensure success, and money should not have been committed to the nurseries until the potential problems in the outgrower section were resolved. These problems stem from the farmers' production decisions.

Before planting sugar, a substantial outlay has to be made on land preparation, often including tractor hire services. This is one area in the production chain where farmers need credit. Unfortunately the A.F.C. does not include land preparation in calculating the required sums to advance farmers for production. This problem was communicated to the highest officials in the Ministry of Agriculture, but no steps were taken to save the project. In addition, the donor representative and project advisor were never in favour of this project. One wonders whether better cooperation with the local Ministry of Agriculture officials would not have saved the project.

AGRICULTURAL GROWTH POINTS AND EXTENSION EXPERIMENT

Description and Location

Thirteen farms were selected in the SRDP area from different ecological zones as agricultural growth points for purposes of demonstration. They are located in Kikoneni, Kikombero and Mwenamanyala.

Objectives

Agricultural growth points were designated as experimental foci for concentrated loan and extension effort to foster mixed farming and accelerate development, particularly employment and output per unit of cultivated land. These focal points would then serve as 'bush schools' for the rest of the farmers.

Benefits

So far only thirteen farmers have been involved in this experimental extension project, and there is evidence that all these have increased their output as a result. But this project has been inequitable in some cases. For example, a very rich farmer in Kikoneni has been a beneficiary rather than the more needy small non-progressive farmers. We also seriously doubt that these selected farmers act as effective demonstrators for others. This problem is discussed more generally in Chapter 8 of this Report which deals with agricultural extension.

Problems and Criticisms

Project implementation started in September 1973, but had been planned for January 1972. This was mainly due to the fact that no procedure had been specified for the selection of model farmers. The funds to be used in the experiment were not released as farmers could not qualify for secured loans without title deeds. The selection of farmers has been completed and so has the farm survey and planning stage, but the provisions of funds (loans) to participating farmers has not been completed. So the project is still in progress.

In principle, the evidence provided by the Agricultural Assistant indicated that 'progressiveness' or non-progressiveness of a farmer was not one of the criteria for selection. In actual fact, many participants in the project are well-to-do farmers, including one with a very modern farm in Kikoneni which is well over 20 acres. Apart from the equity aspect, there should be objective criteria by which to choose participants in this experiment. Lack of farmer selection criteria has reduced the effectiveness of this very important project which should include elements of experimentation and be aimed at improving the extension services.

Several questions can be raised:

1. Why did extension experiments devolve on more progressive farmers when that factor was not to be **one** of the selection criteria?

2. Does the growth points strategy imply a group approach - farmers being selected from one geographical area which is designated as a growth point?
3. Is there any empirical indication that concentrating extension, training, credits and other efforts on growth points (for a long period) will have a better impact on the whole farming community than other extension strategies?

THE CROP PROCESSING AND MARKETING STUDY

Implementation of this project has not started.

Objective

This project was meant to be a production and service project in the SRDP crop production programme. It was supposed to start with a feasibility study to determine whether a factory can be usefully set up to process the fruit that already grows at the Coast, as well as any new varieties of fruit introduced through the central tree crop nurseries. This processing would take the form of preparation for canning and/or extraction of juice and oil.

Assessment

The project has never been implemented and this has created a potential bottleneck in the prospects for long-term output of the fruit industry, especially for new varieties of fruits such as grapefruit which may not easily find a local market.

THE AGRICULTURAL SERVICE CENTRE

This project has not yet been implemented.

Objective

The agricultural service centre is meant to be developed and equipped to provide services such as tractor hire and fertiliser. In the long run, it would also provide farming and cooperative training.

Problems

There has been lack of co-ordination in choosing a site for the agricultural service centre as well as releasing the necessary funds.

THE BUILDINGS PROJECT

Description

Houses and offices are to be constructed, mainly at Msambweni.

Objectives

The project objectives were clearly to provide accommodation and offices for SRDP staff based in Msambweni.

Benefits

Eleven staff members have been housed. The project also provided some employment to local labourers in construction and preparation of building materials, especially breaking and grinding stone. The number of labourers employed was not obtainable.

Problems

The implementation of this project has been completed in spite of an initial delay because of late release of funds from the Ministry of Works. Transportation of materials was also delayed and contractors did not finish on time.

For the offices, the project subcomponents were not well integrated to facilitate provision of water for the sanitation system. The toilet facilities at the site constitute a health hazard. Poor co-ordination between the Ministry of Works and contractors also lead to the unnecessary involvement of Ministry of Agriculture officers in construction duties.

Finally, there is no fund provided for building maintenance, so necessary repairs are not being carried out.

ADMINISTRATION

The Kwale SRDP has clearly suffered from a history of inappropriate administration. The Area Coordinator was diverted substantially to non-SRDP activities. Furthermore, project planning has tended to be imposed from the top and from the donor adviser, without effective involvement of local people to determine their perceived needs and available resources.

Attention to development of the Project Committee as an effective problem-solving group could do much to focus effort in this SRDP **area on more** truly experimental and high-priority activities.

SUMMARY AND RECOMMENDATIONS

By this assessment, only two out of eight projects have had anything close to success, and of these only one deals with crop production directly. Two have actually never been started and two were abandoned. It would not

make sense, therefore, to judge the results of an experiment which has not yet really begun. It is recommended that the SRDP crop programme be maintained and reactivated. The recommendations to reactivate it on the basis of the foregoing analysis are in two categories: those specifically relating to each project and finally those relating to the agricultural programme as a whole.

Specific Project Recommendations

There is nothing especially experimental about the central tree crop nurseries in Mtwapa or the coconut nurseries in Msambweni. The Ministry of Agriculture has always operated agricultural experimental stations with nurseries, and it is difficult to see what is special about these. As noted earlier, the central tree crop nursery is located very far north of the SRDP area. This makes the transport costs of potential purchasers from the SRDP area unnecessarily high and may explain why all the output of the nurseries has not been purchased and why most of the purchased output goes out of the SRDP area. Nevertheless, the provision of superior seedlings to improve the future stock of trees is commendable. It is therefore recommended that:-

1. The central tree crop nurseries be retained as an SRDP project;
2. These nurseries be relocated in the SRDP area and the seedlings sold to farmers in this area only. Extension service should be provided to keep up with the progress of the farmers who purchase these seedlings;
3. The Horticultural Crops Development Authority should be urged to market the newly introduced varieties, especially grapefruit;
4. In order to make long-term plans for the fruit industry at the Coast and to provide a larger market for fruit, a feasibility study should be undertaken immediately to establish the viability of the projected SRDP crop processing plant;
5. The coconut nurseries should be retained within SRDP but should be integrated with the current (but relocated) central tree crop nurseries to form one project; and
6. Research should be carried out to prevent future disease attacks on seedlings in the nurseries.

The sugar cane nursery in Kikoneni together with its projected outlet, the Kikoneni sugar outgrowers project, needs to be continued, but with the following stipulations:-

1. The planning and timing of the two related projects must be strictly co-ordinated. The seedlings must be ready and marketing well planned when the potential outgrowers are ready to plant;
2. Previously, farmers spent their meagre capital funds for land preparation for which they could not get credit under the loan terms prescribed by the Agricultural Finance Corporation. Land preparation should be regarded as an essential input, just as fertiliser, and farmer credit should explicitly be calculated to include this cost;
3. The Kwale farms co-operative project (D.O.C. 1) must be strengthened, especially to provide a tractor pool and fertiliser inputs, and at a later stage transport of cane to the Ramisi Sugar Factory.

The agricultural service centre project should be implemented as part of SRDP, but closely integrated with the agricultural growth point and extension project.

1. The SRDP authorities must obtain the necessary authority to purchase land on which to develop the site;
2. This site should be located in as poor and unprogressive an agricultural area as possible so that it can function as an agricultural 'growth point';
3. The agricultural growth point and experiments project should be restructured to be explicitly directed to the less progressive smallholders.

The buildings project, though now completed, must be provided with allocations for recurrent expenses and possible capital development. Buildings should be maintained in good order and toilet facilities should be made operational.

Recommendations for the General Agricultural Programme

1. Project objectives and implementation procedures should be brought into line with SRDP principles and objectives even if this entails additional costs. This would avoid the type of project implementation strategy such as that adopted for the central tree crop nurseries.

2. Better integration of projects is called for. At present the agricultural service centre and the growth points projects on the one hand, and all four crop production projects on the other hand, are implemented in isolation. All these must be implemented to reinforce one another in order to generate the desired critical minimum effort to uplift less progressive farmers in the District.

So far the Programme has not had much impact on rural development. If these recommendations are followed, perhaps the SRDP agricultural programme in Kwale could be more successful. However, should Government decide to terminate these projects as part of SRDP, their integration into the Ministry of Agriculture's ongoing programme poses no problem. The central tree crop nurseries project and the growth points project are already manned by Ministry of Agriculture officers who can continue their work, and the sugar cane nurseries and outgrower scheme and the agricultural service centre are already not being implemented. The buildings can be given to the District administration and they can be maintained by the Ministry of Works.

APPENDIX: FOLLOW-UP INFORMATION ON COORDINATION AND PLANNING PROBLEMS.The Central Tree Crop Nurseries

Information gathered in Kwale in October 1975 indicates that this project is suffering from further administrative and planning problems. Shs 195,500/- were allocated to this project in 1972/3 and Shs 127,880/90 were actually spent. However, this money was spent on the SRDP Central Tree Crop Nursery at Mtwapa outside the SRDP area, and on the Ministry of Agriculture's settlement project at Lamu, 150 miles north of Mombasa with no relationship to SRDP whatsoever.

Due to poor planning, Shs 8,000/- were provided to dig a borehole to supply irrigation water for the nursery at Mtwapa, but no additional funds were provided to construct a casing to protect the borehole walls. As a result the borehole collapsed in early 1975. There were no plans as of October 1975, either to dig a new borehole or to move the nursery to a more suitable site within the SRDP area.

The Sugar Cane Nurseries at Kikoneni and the Kikoneni Sugar Outgrowers Scheme

Poor coordination of efforts to increase sugar production in this area has had serious consequences. A number of farmers (more than the ten original participants in the project) ploughed a considerable acreage for planting sugar, using private tractor hire services or hiring tractors from the Ramisi Sugar Estate. When it came time to plant, it was discovered that the planting material available in the nurseries was not nearly sufficient for the acreage ploughed. Neither SRDP nor Ramisi personnel were able to help the farmers find enough planting material, so the farmers decided to plant maize and sesame (simsim) instead.

There are also problems concerning the transport of harvested cane to the factory. The cane is transported by private lorry operators and by the Ramisi Sugar Company, but many farmers consider the transport charges so high that sugar production is unprofitable.

Finally, there have been problems concerning the grading policy at the Ramisi factory. A farmer must send a sample of his cane to the factory for grading in order to receive a permit. A number of farmers have been refused permits, which means that their whole crop is lost. Farmers and agricultural officers interviewed are of the opinion that the Ramisi Sugar

Company **wants** to discourage small farmers from growing sugar cane and would prefer to enlarge its own estates. Those interviewed proposed that all cane should be accepted and that an impartial inspector should be appointed to grade the cane.

Agricultural Growth Points and Extension Experiment

A number of farmers were given loans to buy grade cattle and poultry, and farm layouts were drawn for them. However, the farmers in the Mbamba part of Kikoneni do not have water, and the water supply at Kikoneni does not reach them because water is inadequate at the source. This has created serious problems for participants in the project from this area. Some farmers have used their own ingenuity to cope with these difficulties: for example, one farmer used his loan money to buy goats since they require a minimum supply of water; he is also growing two acres of maize and sesame. From the proceeds of these crops he hopes to repay his loan. Another farmer bought drought oxen and a plough, and he plans in this way to grow maize and sesame on an increased acreage and thus to repay his loan.

Other farmers at Mwenyamanyala were selected to receive loans, but they cannot raise grade cattle because their area is infested with tse-tse fly. If the project is to succeed in this area, bush clearing to eradicate tse-tse will have to be carried out first.

Still other farmers were given loans with which they bought poultry feed and constructed poultry houses. Then no arrangements were made for them to obtain chicks, so all their efforts were in vain.

Concluding Remarks

According to information received in the field, some SRDP personnel in Kwale have been reluctant to coordinate their activities with the office of the Provincial Director of Agriculture. As a result, the PDA is not informed about many SRDP activities. Some of the officers interviewed were of the opinion that the provincial headquarters was not involved in the planning and administration process because certain officers, especially the programme advisor, wanted to carry through with their own ideas without any outside interference.

In general, planning seems to have been carried out with little actual knowledge of local conditions. More local participation in the planning process could have eliminated many of the problems which were created. As a minimum, consultations with the officers of various departments would have led to more appropriate project planning.

CRCP PRODUCTION IN MBERE SRDPINTRODUCTION

The Mberé Special Rural Development Programme¹ was initiated in 1971. Several houses were constructed, three expatriates hired, three vehicles and Ministry of Agriculture (M.O.A.) personnel appointed and programming and phasing of projects and subprojects was carried out. (4) During 1972, the agri-service station was constructed and some equipment purchased. (5) However, little was done in terms of agricultural projects except for some demonstrations (Table 1) due to a delay in implementing a loan scheme by the M.O.A. Thus at the time of the Review/Replan in 1973, the authors stated that achievement of one of the immediate original objectives, increasing agricultural production, was "almost insignificant" (13, p.2), and that should the SRDP be discontinued on schedule in 1973/74, "it will leave the area largely without any anticipated results at all". (13, p.15) The SRDP was then extended to 1975/76, and crop programmes were rephased for the 1973/76 period. Demonstrations had been made in 1973 but were total failures due to poor rainfall in the long and short rains (Table 2).

One of the primary objectives of SRDP was to increase agricultural production. The agricultural programme got off to a bad start as shown above. In spite of this, however, cash crop acreage has increased for Katumani maize and M142 beans (Table 3). Cotton acreage has been highly variable, while castor acreage does not include uncultivated hedges. The only new cash crop is sunflower, which was introduced in 1973.

Some confirmation of the increase in maize and M142 beans is obtained from estimated marketed production figures for Embu District as a whole over the past 10 years (Table 4). Major cash crops of concern to SRDP are numbers 1 to 6 in this table. The trend in sales for Mberé Division was probably similar to the district-wide trend.

Special Problems for Mberé Division and other Medium Potential Areas

This is definitely a difficult environmental area primarily due to the erratic rainfall pattern. Few research results are now available which relate specific crops to optimal local planting areas. Some work has recently been done in this regard by NORAD agronomists attached to Embu Research Station. Definite efforts must be made to devise local moisture conserving practises which would also serve as soil conservation practises. In addition, greater emphasis should

1. See D. Hunt (1) for a description of the area in terms of physical and economic potential.

be placed on understanding local variations in resource potentials and constraints that would influence the comparative advantage of alternate crops. In particular, systematic trials with crops adapted to such areas as this, especially sorghums and millets, should be quickly launched. Plant materials may be available from ICRISAT (International Crops Research Institute for the Semi-Arid Tropics, Hyderabad, India).

CROP PROGRAMMES

Cotton

In 1971, 5 cotton blocks of 40 hectares (ha.) each were to be prepared using the tractor hire service of the M.C.A.; 70 ha. were actually prepared but only 18 ha. were planted. This project was then discontinued. (11, p.60) An attempt to re-start the block approach was made in 1973 when SRDP was meant to manage a 95-acre block. This block was ploughed but not planted. The reasons for discontinuation have not been clarified.²

Cotton had been grown in Mbere Division for many years prior to SRDP. Projected acreage for 1974/75 was somewhat less than that planted in 1969/70 (Table 3). Problems specific to 1974/75 were red spider on 70 acres, poor boll ripening during the year due to long rains extending late, and drought on demonstration plots. Another major problem was poor availability of loans for small farmers growing one-half to one acre plots.

There are few data available on how labour requirements for cotton compete with those required for food crops. Present estimates attribute higher labour requirements to cotton than to most food crops, a higher gross margin/ha. than sorghum or millet, but a lower one than grams, M142, or Katumani maize. Average returns/ha., on the other hand, were higher for cotton in 1972/73 than for maize, pigeon peas, or cowpeas (Table 5), while in the 1973 short rains Hunt (1) found that from a sample of 201 households the average return/ha. was 717 shs., 567 shs. and 505 shs. for a maize mixture, millet mixture and cotton respectively. Rainfall was inadequate for this period (Table 2). Recent price increases in 1973/74 raising A.R. grade from 1/35 to 2/- per Kg. and B.R. from 0/67 to 1/- per Kg. should help increase planted acreage. Unfortunately erratic rainfall patterns and lack of applied local research on optimal planting methods and dates have resulted in rather static production acreage³ in the recent past.

2. A detailed discussion of the cotton block project can be found in the first I.D.S. evaluation of SRDP (3, p.26, and appendix C-1).

3. Higher cost of fertiliser has affected availability and use in local areas for all cash crops. A 50 Kg. bag of double superphosphate cost 43/- in Nov. 1973, but 153/- in Nov. 1974 in Embu town.

Since there is little potential for growing irrigated cotton in Mbere SRDP, greater production would appear to depend on optimal planting methods and variable planting dates based on rainfall probability figures, on development of labour-saving ox-drawn implements or the use of more labour from local resources, on more extensive cultivation, i.e. planting larger acreage, or on variety improvement and selection.

Katumani Maize

This project has few innovative elements. Demonstrations and adoption began prior to 1966/67. In 1967, the Oxfam Katumani maize project supplied seeds for 250 one-acre demonstration plots which gave an average yield of 10 bags/acre. (6, 7) Acreage planted to local maize seems to have declined in Embu District between 1969 and 1973 (Table 6) while that of Katumani maize, grown mainly in the middle and lower areas of Embu District, seems to have increased⁴ (Table 3 and Table 6). F.A.O., SRDP and 4-K demonstrations of Katumani maize have been numerous in Mbere Division since 1971 (Table 1). These have used fertiliser and insecticide when few local farmers can afford to use either of these inputs.

Several problems stand out. Stockists in Mbere Division had no Katumani seed for either the short rains of 1973 or the long rains of 1974. Shortages also existed in the preceding year. Certainly gross margin per ha. for Katumani maize compares favourably with that for other food crops such as beans and grams and is higher than that for sorghum or millet. However, erratic rainfall patterns cause rather frequent high losses due to drought. Thus, when rains are adequate, return per ha. for maize mixtures (i.e. inter-cropped) is around 717 shs. compared to 567 shs. for millet mixtures, and return/hour is 0/79 shs. compared to 0/36 shs. (1, p.17) But what are the returns when rains are not adequate? And how would returns compare if improved varieties of sorghum and millet were tested against Katumani maize? Applied research on sorghum and millet would be worthwhile also because of their higher nutritive value and higher drought resistance than maize. In addition, this would better serve the needs of the smaller, low income farmer.

Mexico 142 Beans

There is little new in this project as the 1967 annual report (7) mentioned 700 acres of M142 which then rose to 1227 hectares (Table 8) in 1969/70.

4. The Annual Reports seem to report effective acreage, while the A.A.O. in Siakago has reported total acreage.

Numbers of growers appear fairly static over the last few years in Embu District as a whole. In Mbere SRDP, a definite expansion has occurred since 1969/70 as follows:

1969/70	S.R.	189 acres	1973/74	S.R.	726 acres
	L.R.	144 "		L.R.	1129 "
1970/71	S.R.	967 "			
	L.R.	538 "	1974/75		1680 acres projected
1972/73	S.R.	1000 "			
	L.R.	670 "			

However, over the last few years since 1970/71, planted acreage has remained fairly constant even though MPB prices per 90 Kg. bag have increased from 70/- in 1972/73 to 147/15 in September 1974.

The major problem seems to be drought prior to harvesting which has affected yields dramatically. Applied research into optimal planting time and planting methods is required.

Castor

Acreage figures (Table 3) seem to show a rather static to declining situation for castor in Mbere SRDP. There has been a decline in number of growers and average income per grower since a peak in 1967/68 (Table 8). The gross margin/ha. is lower than that for other cash crops and only higher than it is for sorghum and millet. (10)

Part of the problem is that SRDP demonstrations have been using hybrid seed (Hezra 22) with fertiliser, but no hybrid seed has been available for farmers. In any case, the local variety is more drought resistant than the hybrid. (2, p.61) Applied research is required to determine the optimal interaction between rainfall, planting time and method, and to explore the economics of pure compared to intermixed stands, using local and hybrid varieties. Given the adaptability of this crop to local conditions, there is every reason to stimulate its production. In addition, labour requirements are low and very similar to those required for Katumani maize, millets and sorghum and, like these crops, two crops can be obtained in one year. (10)

Tobacco⁵

Tobacco production in Mbere Division has declined since 1967/68 (Table 10). The SRDP project began in June of 1973 when British American Tobacco (B.A.T.)

5. A part of this section is based on data collected by Dr. G. Alibaruho, I.D.S., University of Nairobi.

handed over the nurseries to the Nthawa-Evurori Farmers' Cooperative Society Ltd. The number of growers has remained rather static since 1969/70, and average yield/ha. has declined since then (Table 10). The average gross income per grower has also declined while gross income per ha. has increased as prices/Kg. have gone up. Total Kg. sold have declined as has total gross income since 1969/70.

The main problem appears to be mismanagement of the cooperative society. Several things point to this conclusion. Whereas B.A.T. provided credit for purchase of seedlings and fertiliser, only 60 out of 700 registered members received credit in 1973/74. (9) Nurseries were watered by hand in 1973/74. SRDP had provided a pump but had not released it to the society as the pipes for the necessary irrigation system had not been purchased by the society. Poor weather at transplanting did not help matters. In addition an attempt was made to put in another crop over the long rains (rather than only the one crop over the short rains), but it was washed out except for five acres which performed badly. The society appears unable to implement the B.A.T. grading system and pays a lower price than previously obtained from the B.A.T. For this reason, there has been some quarreling between the society and the growers. (5, p.17) B.A.T. has continued to provide two Agricultural Assistants concerned with leaf marketing but little extension advice is available on the production side.

There are three experimental aspects of this project. The first is the administration of credit and leaf collection from the farmers by the cooperative society. This has been only partially successful. The second is the attempt by the cooperative society to initiate nurseries for a second crop. This failed due to an excessively wet season. The third is the holding of public barazas where extension personnel and farmers can exchange views, but there has been little follow up to those discussions.

The average return/ha. for tobacco was shs. 990 for Eastern Province in 1973 compared to shs.400 for all maize, shs. 651 for cotton and shs. 1,120 for M142. (2) In Mbere SRDP, the return/ha. in 1973/74 was estimated at shs. 1,820 for tobacco, and in 1972/73 shs. 325-925 for cotton, shs. 620-1,620 for hybrid maize (Embu District), shs. 170-540 for Katumani maize and shs.245-925 for M142. (10) Of course tobacco comes just after coffee and tea in terms of labour requirements. It therefore competes for labour which is a scarce resource in this area and probably competes with food crops in this respect.

Furthermore, there is a shortage of firewood in the area which is used for curing, which has been aggravated by the process of land adjudication and individual property rights.

Pigeon Peas

Until 1973/74, this crop was not of any interest to SRDP. In that year, 20 1-acre plots of hybrid pigeon peas were put in, but only forage was obtained. The seed was obtained from the K.F.A. depot in Machakos.

Farmers generally grow local varieties, scattered among other crops, which appear to be adapted to local climatic and soil conditions. As this is commonly a food crop, no estimates of acreage were available from the annual reports. However, as average return per ha. for dry peas compared favourably with Katumani maize in 1972/73 (Table 5) and return for the greencrop compared favourably with M142 beans, it would seem that this crop should be encouraged. While labour requirements are somewhat higher than for Katumani maize, sorghum, millets, castor, coriander or grams (10), gross margin/ha. in 1972/73 compared favourably with that from Katumani maize. Only one crop can be grown a year, but prices since 1970 have been around 0/70 per Kg. or 63/- per 90 Kg. bag and reached 106/- as of August 1974 (MPB price). While the average yield obtained has been low at four bags/acre, this crop is a low risk crop for the Mbere area. It is also highly nutritive. The only constraint, therefore, would appear to be lack of applied research to determine the optimal varieties, time and method of planting for local conditions.

Sunflower

This crop was initiated by the community development department (CDD) with 20 1-acre plots, of which 15 were in Mbere SRDP, in the long rains of 1973 (Table 1). The 'Kensis' (or 'black') variety was used with fertiliser (1 bag double superphosphate per acre). Average yields were under 5 40-Kg. bags per acre at 49/35 per bag (and 42/10 for the 'grey' variety), Maize and Produce Board (MPB) prices as of August 1974. A further 18 4-K plots planted in the long rains of 1974 dried up. SRDP was planning to put in 40 1-acre demonstration plots with the 'grey' variety during 1974/75.

The major problems are confusion over optimal planting dates, availability of seed in 40 Kg. bags only, while farmers require 2 to 4 Kg. per acre, and lack of applied research results for Mbere Division. Given the recent rise in fertiliser prices, gross margin/ha. appears to be rather low if fertiliser is used, and yields remain around five bags per acre.

CONCLUSIONS

The primary tool of the crop development projects has been demonstration plots where ploughing was by tractor, where fertiliser and sprays were applied and often hybrid seeds were used. Most farmers in Mbere Division follow none of these practices due to low income, high cost of inputs or unavailability of hybrid seeds. The malfunction of loans to stockists has meant that availability of inputs at the local level has been rather erratic.

Demonstrations and farmer education have generally been limited to those farmers who have been willing to cooperate. All materials however funded were controlled by the Assistant Agriculture Officer (A.A.O.) Siakago who in turn was supervised by the District Agriculture Officer (D.A.O.) and SRDP co-ordinator. Staff in 1974 consisted of 23 Junior Agriculture Assistants (J.A.A.s) and 3 Agriculture Assistants (A.A.s) who were M.O.A. and SRDP personnel concurrently in Mbere Division.

Crop programmes were planned by the D.A.O. in Embu after receiving his allotted budget for crop development as a whole. This budget was shs. 20,000/- for June to December 1974, not separated by crop. Some crop development and extension education has taken place through 4-K and Home Economics (H.E.) club activities but results have generally been poor due to uncertain weather conditions. UNICEF funding of 4-K projects was discontinued in 1974/75.

The objective of increasing agricultural production in Mbere SRDP does not seem to have been realised as of the end of 1974. Projects have included very little experimentation over and above that normally associated with demonstration plots. Only two new crops have recently been introduced, and these were hybrid pigeon pea and hybrid sunflower. Emphasis remained on cash crops grown in the area prior to the advent of SRDP. The conclusion seems to be that SRDP personnel have continued their normal M.O.A. work.

Demonstration plots can be replicated. The point is that the number of plots per location seems to be minimal. Costly inputs were used and crops frequently failed for various reasons. One might argue that this approach, in this area of highly uncertain climate, has not been very successful in the diffusion of crops.

With regard to evaluation of research or trial demonstration results, little data has been either collected or evaluated by SRDP personnel.

Emphasis has been directed towards cash crops. Little has been done with regard to applied research with local food crops such as sorghum, millet, local maize, pigeon peas and the various beans and grams. Should risk be reduced

and yields improved with these crops, then adoption of new cash crops and accompanying technology would probably be enhanced.⁶ The shift away from more drought resistant and nutritive local food crops should be questioned.

RECOMMENDATIONS

1. Overall uncertainty of farming conditions in Mbere due to unavailability of inputs or credit, erratic climate and weak extension services based on insufficient applied research needs to be diminished in any way possible.
2. One approach is to attempt to determine optimal planting times for each crop in relation to seasonal rainfall patterns. E.R.T.S. Satellite imagery such as currently being used by the Soil Survey of Kenya might be used for this purpose.
3. Tobacco production is a problem. Several recommendations are relevant: improve nursery management and production extension services; improve cooperative management and in particular seedling and fertiliser credit facilities; centralise tobacco curing in the cooperative headquarters in order to reduce deforestation and soil erosion problems and look into the possibility of using charcoal instead of wood for the curing process.⁷
4. As discussed by Hunt (2), scope exists for applied research work with tree crops, such as citrus, mango and cashew nut, and with castor in specific areas and possibly extending local castor varieties in hedgerow cultivation. Another crop that might be tried is the olive tree and various other oil crops suited to dry climatic conditions. At present, research on tree crops appears either unorganised or artificially restricted to specific areas.
5. Applied research in terms of selecting better varieties for each area and determining optimal planting time and method should be carried out with local food crops such as local maize, sorghum, millets, pigeon peas, cowpeas, bean varieties and varieties of gram. This should include pure and inter-cropping comparisons.
6. More efforts should be made to locate optimal growing areas for cash crops such as Katumani maize, M142, cotton and sunflower. To do this it is necessary to map the location of all demonstrations and evaluate the results. Perhaps more effort should be put into planning and organising the demonstration projects. The objective would be a rather detailed map showing optimal crops

6. See D. Hunt (2) for further discussion along these lines.

7. A local Kenya firm has recently perfected machinery which converts coffee husks (and shortly, other crop husks) into charcoal. This should soon increase the availability and lower the cost of charcoal in Kenya. The firm is Edmund Schluter and Co. (Kenya) Ltd.

for all areas of Mbere Division. This would necessitate the production of an accompanying detailed soil map.

7. The A.A.O. in the field should be given more direct control over his field budget and supplies. This would save a great deal of time, petrol, frustration and money.

8. Detailed analysis of cropping patterns and labour use should be made for Mbere Division as well as accurate cost and yield data for all crops. Aerial photography could be used to make accurate area estimates and to gain information on cropping patterns.

9. Comparisons between Katumani maize mixtures and local maize mixtures, millet mixtures, and sorghum mixtures should be made in good and poor seasons using improved varieties of millet and sorghum.

10. Since few Mbere farmers can afford to use fertiliser, demonstrations in which synthetic inputs are used are of dubious benefit. More efforts should be made to have demonstrations that duplicate actual farming conditions in the local area except for planting methods, time or variety. In addition, efforts should be made to locate effective levels of fertiliser usage that are below the economically optimum level, and to usage alternative non-synthetic fertilisers. These would be particularly useful under Mbere conditions as they improve moisture retention and soil structure.

11. In all cases, the interrelationships between crop/tree development and soil and water conservation should be emphasised. This would entail greater research efforts to devise entire farming systems which are moisture utilising and conserving.

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Table 1. Crop demonstrations in Mbere Division, 1970-1974.

(Source of funds specified in brackets; unspecified refer to M.O.A.)

<u>Year</u>	<u>Demonstrations</u>
1970	(Annual Report, sundry pages) 9 Cotton, 0.4 ha. each plot* 5 Castor (Hezera ++1), harvested* 25 K. maize (F.A.O.)* 23 Hybrid maize (F.A.O.)*
1971	(Annual Report, p. 27) 10 Cotton, 1 acre plots 22 K. maize, 0.75 acre plots 3 Potatoes, 0.75 acre plots 1 Sorghum, 0.75 acre plots 2 Maize trials (Embu Research Station), 0.25 acre plots 5 Castor (Hagera +22), 0.375 acre plots 4 Beans, 0.75 acre plots 4 Velvet beans, 0.25 Acre plots
1972	(Annual Report, p. 32) 21 Cotton (F.A.O.), 1 acre 10 Beans (F.A.O.), 0.75 acre 12 Castor (F.A.O.), 0.75 acre 35 K. maize (F.A.O.), 0.75 acre 5 Sorghum (F.A.O.), 0.75 acre 15 Beans (SRDP), 1 acre 29 K. maize (SRDP), 1 acre 10 M142 (SRDP) 4 Maize trials (E.R.S.)
1973	(Annual Report, p. 28) 28 Cotton (F.A.O.), 1 acre 5 Beans (F.A.O.), 0.33 acre 25 K. maize (F.A.O.), 0.33 acre 5 Potatoes (F.A.O.) 5 Sorghum (F.A.O.), 1 acre 1 Maize trial (F.A.O.), 0.5 acre 5 Beans (CDD), 0.75 acre 20 Sunflower (CDD), 1 acre 12 Pigeon peas (CDD), 1 acre 15 Cotton (SRDP), 1 acre 15 Castor (SRDP), 0.75 acre 20 M142 (SRDP), 1 acre 20 K. maize (SRDP), 0.75 acre 231 K. maize (4K), 0.5 acre** 25 pigeon peas (SRDP), 1 acre 10 Tobacco (SRDP), 1 acre 4 Maize trials (E.R.S.)
* Embu District as a whole.	
** 4K projects in the SRDP area were supported by UNICEF, not SRDP. These were 0.5 acre plots. In the long rains 1973, 4K had 76 K. maize plots and 76 M142 plots. In the short rains 1973, in addition to 231 K. maize, 4K had 142 M142 plots, 80 pigeon peas. In the long rains 1974, 4K had 20 K. maize, 60 M142, 18 sunflower and 10 vegetable plots.	
1974	(Assistant Agricultural Officer, Siakago, Mbere Division) Projected and actual demonstrations: 40 Sunflower (SRDP), 1 acre 15 Castor (SRDP), only in short rains 30 M142 (SRDP), 1 acre 45 K. maize (SRDP), 1 acre 6 Simsim (SRDP), 1 acre 10 Tobacco (SRDP), 1 acre 2 Tomato, cabbage, onion (SRDP), 0.25 acre. 15 Cotton (SRDP), 0.25 acre

Table 2. Rainfall quality in Embu District and Mbere Division.
(Source: Annual Reports)

1966/67	S.R.	Poor, especially in middle and lower area.
	L.R.	"Enough and well distributed" (p. 7).
1967/68	S.R.	Heavy rains stopped mid-November. Drought in lower areas.
	L.R.	Adequate. Well distributed all over district.
1968/69	S.R.	Adequate. Well distributed all over district.
	L.R.	Poor in Mbere.
1969/70	S.R.	Poor in Mbere.
	L.R.	Normal.
1970/71	S.R.	Late. Jan./Feb. no rains. Water stress. Partial failure.
	L.R.	Good. Normal.
1971/72	S.R.	Late. Inadequate.
	L.R.	Adequate in upper and middle zones. Inadequate in Mbere.
1972/73	S.R.	Heavy in upper zone. Very adequate in lower areas.
	L.R.	Upper areas adequate. Inadequate in middle and lower areas.
1973/74	S.R.	Inadequate in middle and lower areas.
	L.R.	Started late. Extended too long in Mbere.
1974/75	S.R.	Inadequate.
	L.R.	-

Table 3. Estimated acreage for major cash crops in Mbere SRDP.

Crop	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75
Tobacco ^a	275	360	280	398	252	484	171	213 ^b	350p
K. Maize ^c									
S.R.	317	986 ^d	664	1,324	0 ^e	811 ^f	2,140	3,000	3,954p
L.R.	?	?	477	1,032	1,116	-	2,444	2,877	-
Total	317	986	1,141	2,356	1,116	811	4,584	5,877	3,954
M142									
S.R.	8	48	140 ^h	?	189	967	1,000	726	1,680p
L.R.	8	140 ^h	219	144	538	?	670	1,129	-
Total	8	188	359	144	727	967	1,670	1,855	1,680
Cotton	1,900	252	278	2,066 ⁱ	2,212 ^j	1,684 ^k	1,744	1,609	1,977p
Castor ^l	?	?	132	124	156	156	120	-	100p
Sunflower	-	-	-	-	-	-	5	15	60p

S.R. = short rains

Source: Annual Reports, Eastern Province, Embu District; AAO, Mbere Division.

L.R. = long rains.

p = projected.

- a. Flue-cured. In addition air-cured was 28 acres in 72/73, and 52 acres in 73/74.
b. 52 acres air-cured included.
c. 68/69 - 71/72 data on Embu District as a whole.
d. Increase due to Oxfam Katumani Maize Project and subsequent farmer to farmer sales.
e. No hybrid or Katumani maize seed was available locally.
f. Separate figures unavailable. The L.R. were nearly a complete failure.
g. Introduced into Western Province. (7)
h. Estimated on basis of 1969 figures when Mbere grew 7.5 per cent of whole district acreage, i.e. 219 out of 2,887 total acres (8, p.25), or 0.075 x 3,736 acres.
i. Effective acreage was only 2,013 acres.
j. Effective acreage was only 1,080 acres.
k. Effective acreage was only 1,272 acres.
l. Data for castor are estimated and do not include uncultivated acreage.

Table 4. Estimated marketed production for selected crops, Embu District, 1964/65 - 1972/73 (metric tons).
Year (Relative Rank in brackets per year excluding bananas)

Crop	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73
1. Cotton	158 (10)	40	43	50	112	566	193	22	611 (8)
2. Maize (all)	405 (4)	483	12	1,244	165	81	2,313	1,450	18,274 (1)
3. M42	226 (7)	280	527	1,456	1,854	2,909	1,675	3,001	1,900 (6)
4. Castor	48 (12)	81	99	168	141	79	39	73	50 (15)
5. Pigeon Peas	4 (16)	2	-	-	-	473	329	824	49 (16)
6. Tobacco	8 (15)	45	31	58	47	80	29	62	21 (19)
7. Coffee (Clean)	972 (2)	1,446	2,335	1,837	1,741	1,753	3,910	2,880	2,385 (4)
8. Pyrethrum	11 (14)	5.5	5.5	5.3	4	3.4	1.6	1.2	3.5 (20)
9. Tea Green Leaf	82 (11)	125	311	453	723	1,204	1,220	1,640	2,083 (5)
10. Grams (all)	285 (6)	628	1,171	1,671	532	1,140	1,254	358	103 (14)
11. Cowpeas	- (18)	3.7	48	11	0.2	3.1	735	Nil	34 (18)
12. Canadian Wonder	190 (8)	117	35	38	10	10	40	795	470 (11)
13. Sorghum	3 (17)	-	-	264	-	754	813	934	214 (12)
14. Millets	46 (13)	-	-	-	-	1,134	806	2,076	172 (13)
15. Rose Cocu	726 (3)	1,297	738	834	325	275	85	3,149	1,349 (7)
16. White Haricot	1,430 (1)	1,461	711	567	?	?	?	80	45 (17)
17. Coriander	?	?	?	903	232	148	172	350	600 (9)
18. Potatoes	- (19)	-	-	-	360	385	2,126	2,107	3,360 (3)
19. Watila	185 (9)	180	330	325	238	441	169	226	?
20. Sisal	294 (5)	545	?	?	?	?	?	?	567 (10)
21. Bananas Bunch	-	-	9,143	140,000	150,000	1.2m	1.6m	1.7m	1.1m
22. Vegetables	- (18)	-	13	-	-	1,300	2,767	4,128	3,427 (2)

Source: Annual Reports Eastern Province;
Annual Reports Embu District.

N.B. Food crop figures, e.g. sorghum, millet, are not marketed, but total production. Also total production is given for watila and most of the beans, vegetables and fruits.

Table 5. Average return/hectare in shillings for selected crops in Embu District, 1970/71, 1971/72, 1972/73.

Crop	Year		
	70/71	71/72	72/73
1. Cotton	350	400	651
2. Maize	700	700	400
3. M142	774	716	1,120
4. Castor			
5. Pigeon Peas (Dry)	450	450	420
(Green)	1,890	1,400	1,050
6. Tobacco	710	875	990
7. Sorghum	288	240	-
8. Millet	208	120	150
9. Green Gram	680	680	720
10. Potatoes	3,600	3,600	2,400
11. Cowpeas	330	330	370
12. Mixed Beans	462	528	560
13. Onions	17,000	12,000	12,000
14. Chilies	6,650	6,650	6,000
15. Wheat	600	675	1,050

Source: Annual Reports.

Table 6. Diffusion of maize in Embu District, 1969 - 1973.

Year	Hectares planted	Total bags produced	Bags per family	Tons sold to MPB (% of total in brackets)	Value of sales	Price/90 kg. bag (MPB)	Local Price 90 kg. bag	Production tons	Estimate No. families		
1969 LR	110	199	3.5	165	£1,924E	21/00E	?	9,990E	31,000 E		
SR	77	277			3,554	111,004					
1970 LR	432	430	7,685								
SR	231	552	5,837	143,136	4.6	81	£7,977	21/77	40/-	12,882E	31,000 ^a
1971 LR	2,022	465	7,017								
SR	0 ^d	0 ^d	4,524	191,367	6.2	2,312(13.4%)	£40,996	32/05	48/- - 78/-	17,223 ^b	31,000 ^c
1972 LR	4,224	891 ^e	10,220	283,822	9.2	1,450(5.6%)	£27,878	35/-	?	24,544 ^f	31,000
SR											
1973 LR	4,272	1,018 ^g	7,700	234,667	7.6	18,274(86.9%)	£359,955	35/-	?	21,120 ^h	31,860 ⁱ
SR		1,250									
1974 LR		1,199 ^j									
		1,647									

Source: Compiled from Annual Reports and personal calculations. MPB - Maize and Produce Board. L.R. - Long rains. S.R. - Short rains. E.-Estimated by author.

- a. On p.21, the Annual Report - Embu District 1970 says 31,000, on p. 78 it estimates 1,000.
- b. 8,190 tons hybrid, 628 tons Katumani, 8,405 tons local. Sold through MPB: 13.4%.
- c. On p.85, Annual Report Embu District 1971 mentions only 14,000 families. We assume 31,000 here for comparative purposes.
- d. No hybrid or Katumani seed available locally.
- e. Shortage of Katumani maize in both rainy seasons. Hybrid 613B unavailable. Replaced by Hybrid 613C. In Annual Report 1972, 33 hectares reported, but 891 reported by the AAO. The Annual Report seems to have reported effective acreage rather than planted.
- f. 13,989 tons hybrid, 517 tons Katumani, 11,031 tons local. Average price 35/- per bag.
- g. In Mbere S.R.D.P. Again, the hectareage reported by the 1973 Annual Report was 1520, but that reported by the AAO was 1018 ha. in the L.R. and 1250 ha. in the S.R. for Mbere. These probably represent planted area rather than effective or harvested hectareage.
- h. 14,140 tons hybrid, 30 tons Katumani (drought in lower areas), 7,000 tons local.
- i. Annual Report Embu District 1973, table IV, p. 86. We assume 31,000 in the calculations.
- j. Reported by AAO, Siakago, Mbere Division.

Table 7. Maize and Produce Board crop purchases, Embu District, (bags).

Crop	1967	1969	1971	1972	August '72 July '73
Maize	3,506	9,345	931	38,877	34,818 ^a
Beans					
C. Wonder	143	243	170	1,276	1,071
Lima	-	-	-	-	1
M142	483	30,161	14,733	30,716	33,759
Mixed	32	7	2	671	3
Mwezi Moja	-	10	-	1	1
Rosecoco	1,541	6,072	2,279	6,647	1,769
White	1,089	3,995	397	172	54
Cashew Nuts					2,586
Grams	123B ^b	670B	1,956B	2,826B	
	3,269G	6,063G	1,939G	312G	741G
	2,984Y	12,371Y	9,350Y	10,205Y	
Millet					
Bulrush	-	-	-	-	48
Fox tail	-	-	2	-	-
Black Mixed	-	-	-	-	3
Red Mixed	-	-	-	-	6
Sorghum White	-	-	-	-	27,673
Pigeon Peas	18	-	-	-	-
Castor Seed	1,292	2,246	1,342	1,105	-
Coriander Seed	-	6,492	3,128	8,796	-
Cow Peas	41	-	24	176	-
Sunflower Seeds, Black-				110	-
White-				13	-
Total	14,523	79,896	36,253	101,903	105,442

a. 34,818 bags or 3,103,620 Kg. or 3,103 tons.

b. B= Black, G= Green, Y= Yellow grams.

N.B. The period covered by each year is August 1 to July 31st of the following year.

Source: Maize and Produce Board, Annual Reports.

Table 8. M142 in Embu District, 1969/70 - 1972/73.

Item	Year					
	69/70	70/71	71/72	72/73	73/74	74/75
1. Ha. planted	1,227	2,648	4,376	4,200 ^a	4,830 ^b	4,374 ^b
2. Total production	701(?)	2,217	3,736	1,980	2,274 ^c	2,060 ^d
3. Sales to MPB (Kf)	2,909	1,675	3,001	1,980	?	?
4. Gross value (Kf)	90,107	75,483	166,755	99,000	138,963 ^e	166,595 ^f

Source: Annual Reports, Embu District.

- a. 695 Ha. in Mbere.
- b. Embu District as a whole. Mbere had 16% of this figure in 1972/73. On this basis, it would have had 733 Ha. in 1973/74 and 700 Ha. in 1974/75.
- c. Assuming the same average yields as in 1972/73, 0.471 tons/ha x 4,830 ha. gives 2,274 tons.
- d. Assuming the same average yields as in 1972/73, 0.471 x 4,374 Ha. gives 2,060 tons.
- e. Assuming 110/- per 90 Kg bag.
- f. Assuming 147/- per 90 Kg bag.

Table 9. Estimated number of growers and average income per grower for Embu District, 1965/66 - 1972/73.

Year	Number of Growers						Average Income per Grower (Sh)							
	C	T	Py	Cot	Cas	To	M142	C	T	Py	Cot	Cas	To	M142
65/66	14,925	750	148	2,120	400	357	560	477	280	105	153	121	440	345
66/67	15,405	946	180	300	300	362	600	757	260	144	97	173	300	560
67/68	15,775	1,087	460	315	540	447	2,523	750	411	52	143	150	418	400
68/69	15,545	1,825	121	800	500	648	2,600	750	411	52	142	150	478	350
69/70	16,233	1,938	85	2,800	300	650	3,800	788	546	230	162	134	504	600
70/71	16,520	1,238	21	760	335	556	2,200	983	859	318	283	82	196	686
71/72	17,023	1,807	122	500	380	670	4,000	1,187	554	89	171	140	527	600
72/73	17,023	3,719	80	1,530	100	332	3,300	767	761	80	113	137	342	833

C= coffee, T= tea, Py= pyrethrum, Cot= cotton, Cas= castor and To= tobacco.

Source: Annual Reports for Eastern Province.

Table 10. Flue-cured tobacco production in Mbere Division of Embu District,
1967/68 - 1973/74.

Item	Year						
	67/68	68/69 ^a	69/70	70/71	71/72	72/73	73/74
1. Hectares planted	150	116	165	105	202	72 ^b	67 ^c
2. No. Growers ^d	200	274	350	456	400	232	395
3. Av. Yield/ha.Kg.	228	300	358	189	189	-	328
4. Av. Price/Kg.	4/09	4/40	4/78	4/05	4/44	-	5/59
5. Av. Gross Income per Grower (f)	13.9	28.5	46.3	8.4	21.2	-	15.5
6. Av. Gross Income per ha. (f)	46.6	66.6	85.7	36.5	41.9	-	91.8
7. Total Sales Kg.	18,479	35,513	59,450	18,944	38,304	-	22,008 ^e
8. Total gross Income (f)	3,778	7,812	14,219	3,832	8,498	-	6,156

Source: Annual Reports, AAO Mbere SRDP.

N.B. Flue-cured grown mainly in Mbere and air-cured in Embu.

- a. Cooperative Society was begun in this year.
- b. Excluding 28 acres air-cured; quarrel between growers and cooperative resulted in little acreage or data.
- c. Excluding 52 acres air-cured.
- d. This is the estimated number selling to B.A.T. This number is less than the total number of growers and more than the registered number of growers in the Cooperative Society.
- e. Air-cured production was 6,291 Kg. valued at Kf 1,322.

Table 11. Estimated total value of crops sold in Embu District for selected Years. (K)

A: CASH CROPS	YEAR			
	67/68	70/71	71/72	72/73
Coffee	588,794	812,484	655,156 ^b	1,010,699
M142	52,055	75,483 ^a	166,755 ^b	99,000
Tea	19,949	53,208	91,685	103,103
Coriander	15,891	69,150	17,488 ^c	12,000
Wattle	14,525	6,857	9,161	2,085
Tobacco	10,695	5,051	11,470	8,760
Castor	4,065	1,299	2,606	700
Cotton	2,238	10,773	5,164	13,137
Pyrethrum	1,197	333	695	564
Subtotal	709,409	1,034,638	960,180	1,250,048
% of total	88.2	87.0	85.0	87.8
B: FOOD CROPS				
All Grams	50,514	46,634 ^d	11,679 ^e	7,900
All Maize	19,162	40,996	27,877 ^f	57,525 ^g
White Bean	16,211	406 ^h	275 ⁱ	0
Rose Coco	3,029	4,139 ^h	23,471 ⁱ	42,165
Root Crops	2,745	2,995 ^j	2,995 ^k	2,995
Sorghum)		0 ^j	0 ^k	2,512
Milletts)	2,626	0 ^l	0 ^m	3,364
C. Wonder	1,045	1,934 ^l	2,830 ^m	14,100
I. Potatoes	-	53,150 ⁿ	98,638 ⁿ	33,600
Pigeon Peas	-	3,750 ^o	0 ^p	0 ^q
Cowpeas	272	521 ^r	0	0 ^s
Mixed Bean	14	659	1,994	9,850
Subtotal	95,618	155,184	169,759	174,040
% of total	11.8	13.0	15.0	12.2
C: TOTAL	805,027	1,189,822	1,129,939	1,424,088

Source: Compiled from the Annual Reports for Eastern Province and Embu District. Unless otherwise stated, sales were to Maize and Produce Board or other statutory bodies.

a.	total value est.	K£105,604	k.	Total value est.	K£51,645 -S.
b.	"	"			K£113,080-M.
c.	"	"	l.	"	"
d.	"	"	m.	"	"
e.	"	"	n.	"	"
f.	"	"			including consumption
g.	"	"	o.	"	"
h.	"	"	p.	"	"
i.	"	"	q.	"	"
j.	"	"	r.	"	"
		K£ 40,690 for Sorghum &	s.	"	"
		K£ 44,763 for Millets			K£ 216

CHAPTER SIX

CROP DEVELOPMENT IN KAPENGURIA SRDPGENERAL ASPECTS OF THE CROPS PROJECTS

The Kapenguria SRDP area covers a high altitude, high potential area as well as large areas of the low, arid northern plains. A belt of marginal lands lies between the plains and the highlands, and the crop development projects cover the highlands and parts of the marginal lands. The SRDP crops projects focus on maize, sunflower, coffee, pyrethrum and English potatoes, and an extensive soil conservation programme is meant to support the crop production projects.

The high potential parts of the area are suitable for all five crops, but significant expansion has occurred only with hybrid maize and sunflower. No expansion worth mentioning has been achieved with coffee, pyrethrum and English potatoes. According to the officers interviewed, almost all farmers in the highlands now grow hybrid maize. Sunflower was introduced only recently, but is being adopted very rapidly. The adoption of both crops was supported by demonstrations (SRDP spent about shs 20,000/- on maize demonstrations.), and their diffusion now is considered self-generating.

It may be asked why the expansion of the other three crops, coffee, pyrethrum and English potatoes, has been so limited.¹ One general answer is given by a look at the economics of these crops, as shown in Table 1.

Table 1. Labour mandays and capital input at average production levels.

	H. Maize	Sunflower	Coffee ²	Pyrethrum ³	English Potatoes
labour mandays (per hectare)	average (108)	lower (93)	very high (480)	higher (190)	higher (180)
capital input (per hectare) in K shs	average (310)	very low (70)	very high (1,910)	very high (2,650)	very high (1,230)

In Kapenguria there is still much more land available than the local farmers can cultivate, but this situation will probably change within the next ten years because there is a very high rate of in-migration. Most farmers practise shifting cultivation, especially with maize, and in this way they minimise the need for fertiliser and thus reduce expenditure on capital inputs considerably. Cultivation is commonly done by tractor, reducing the labour mandays needed per acre. Since seasonal labour bottlenecks and to some extent capital are the main

1. SRDP funds were set aside for coffee demonstrations (shs. 15,000/-), pyrethrum bulking (shs. 16,000/-) and English potato bulking (shs. 26,000/-).

2. According to M.O.A. recommendations, calculation for coffee should be made from the high production level only.

3. First year.

constraints on crop production, farmers can achieve the highest incomes by concentrating on hybrid maize and sunflower which require relatively little labour or cash.⁴

Yet there is good reason for planning crop diversification now. If the present rate of in-migration continues, and officers who are familiar with local conditions believe that it is even likely to increase, the availability of land will be limited within the next few years. Once land becomes a constraint, farm incomes will depend more on labour- and capital-intensive methods of cultivation. Then coffee, pyrethrum and English potatoes will be desirable crops, because with higher inputs of capital and labour they can bring considerably higher gross profit margins per acre than maize or sunflower.

If these three crops are very well cultivated, production levels will be high and they will become extremely profitable, but this requires that the farmers have well developed skills and the financial resources to purchase inputs. Thus, in Kapenguria at the present time it is appropriate to direct programmes to the majority of farmers which will enhance their incomes under present conditions and to focus projects for the development of coffee, pyrethrum and English potatoes on the more progressive farmers who have the skills and financial resources to grow these crops profitably.

Another prerequisite if coffee, pyrethrum and English potatoes are to be grown more profitably than maize or sunflower is that the necessary inputs be available and that extension, credit and marketing be well organised. It seems that organisational deficiencies in these areas are the main reason that these three crops have not been taken up more widely among progressive farmers in Kapenguria.

THE COFFEE PROJECT

Coffee has been grown in Kapenguria for a long time, and according to observations and grading reports from the Kenya Coffee Board the soil and climate in Kapenguria are suitable for coffee. Yet at present, out of 300 coffee growers only 60 actually deliver coffee to the cooperative society and the other 240 farmers neglect their coffee shambas completely.

⁴ Tractors are usually brought from Trans Nzoia, and their availability at the appropriate times seems to be a constraint which prevents even more extensive cultivation of maize and sunflower.

The local officers concerned with coffee development in Kapenguria found that farmers reported having lost interest in coffee growing because of heavy losses from Coffee Berry Disease (C.B.D.). SRDP initiated a spraying campaign to counteract C.B.D. with the ultimate objective of mobilising farmers to grow coffee again.

Evaluation of the Project

In fact, the incidence of C.B.D. is not as serious as had been imagined. The disease is more visible on neglected coffee in the field than on coffee which has actually been harvested and delivered to the factory. Grading reports on coffee delivered to the Kenya Coffee Board do not mention diseased beans.

A major cause of C.B.D. is poor husbandry, and spraying is being introduced to compensate for this. However, the cost of spraying materials is very high and the operation requires large labour inputs. Farmers also do not have enough spraying pumps. Given the cost of spraying, it has not proven very effective in eliminating the disease and it is suggested that the spraying project be discontinued.

The poor quality of the coffee delivered to the Kenya Coffee Board can be attributed to poor management at the coffee factory. The factory manager had practically no training and was not able to maintain the tanks and drying trays in good condition. He had also failed to adjust the machinery properly so that the skin of the beans was destroyed causing a bad flavour.

This means that the quality of coffee delivered by farmers is lowered considerably by poor handling at the factory, and the profits to farmers are thereby reduced. In addition, the cooperative organisation had failed to pay its members for the 1973 crop as of the end of December 1974. Given these problems, farmers will neglect their coffee with good reason and concentrate their labour and capital inputs on maize and sunflower which are more profitable under the circumstances.

THE PYRETHRUM PROJECT

Although pyrethrum has been introduced in Kapenguria, officials agree that the local farmers do not yet realise the potential profitability of this crop. This is due to the inadequate way in which it has been introduced. It seems that 15,000 pyrethrum splits were purchased from the Pyrethrum Board out of SRDP funds and distributed to ten farmers on credit or planted at a Government plot for further splitting (bulking).

Very few of the ten farmers planted at all, and those who did planted only between $1/16$ and $\frac{1}{2}$ acre.

A few other farmers have adopted pyrethrum without SRDP assistance, but the total area planted has never exceeded twenty acres, and each farmer has such a tiny plot that the potential profitability of the crop is not apparent even when yields are high.

Further, the crop must be transported 25 miles to the next cooperative society for marketing, and this reduced profits considerably due to lack of communication, high transport costs, delays in payment, and so forth.

Suggestions for Improving the Project

1. It makes no sense for farmers to plant less than $\frac{1}{2}$ acre of pyrethrum. A minimum of at least $\frac{1}{2}$ acre should be set.
2. It is planned to establish a pyrethrum cooperative society closer to growers to facilitate marketing. This is an important precondition for any further development of the crop.
3. To show farmers the advantages of pyrethrum growing, two-day training and discussion sessions should be held in the villages. Experts from the Pyrethrum Board should be asked to assist the local crop and extension staff in carrying out these training sessions.

THE ENGLISH POTATO PROJECT

Potatoes are grown in Kapenguria as a food crop already, but they are highly susceptible to disease. Certified English potato seeds were introduced because they are more resistant to disease than the varieties already used, but they also require very high capital and labour inputs and skillful cultivation. Farmers are generally not able or willing to invest a high level of inputs into a crop grown only for home consumption, so that efforts to introduce certified English potatoes would be more appropriate for farmers who would like to grow them as a cash crop. This requires marketing arrangements first of all. Furthermore, recent studies⁵ reveal that the main demand for potatoes in Kenya is not for English potatoes but for 'red' potatoes. Unfortunately there are no certified seed programmes in Kenya for 'red' potatoes.

The proper target group for the introduction of English potatoes would be the progressive cash crop farmers who have the skills, cash and labour necessary to grow them successfully. But it would be by far more promising to promote the cultivation of 'red' instead of English potatoes.

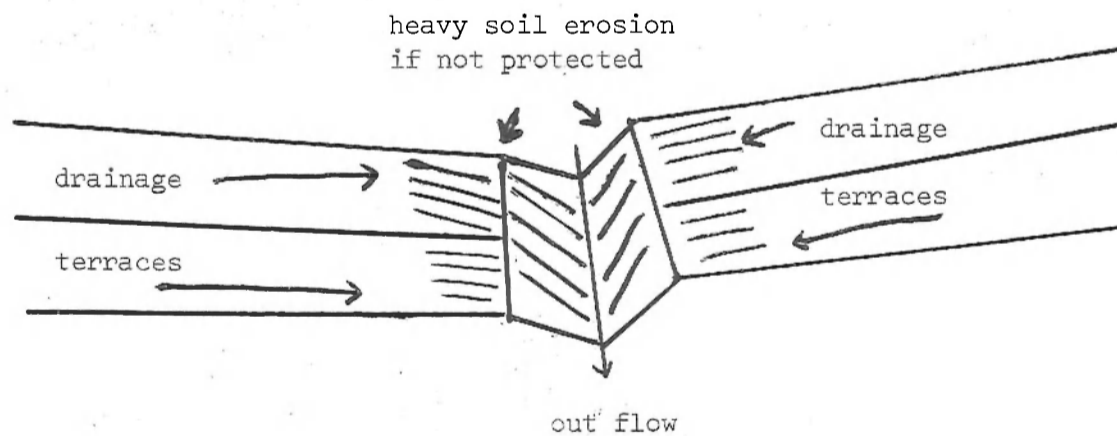
5. Prof. G. Lorenzl, Faculty of Agriculture, University of Nairobi, Economic Analysis of Potato Industry in Kenya, (forthcoming).

SOIL CONSERVATION IN KAPENGURIA

The objective of the soil conservation programme is to protect the high potential land in the very hilly areas of Kapenguria. These areas are just now being opened by local farmers who do not seem to worry about soil conservation because if one area becomes eroded they can simply shift to another. However, shifting cultivation will not be possible for many more years due to the high rate of in-migration into the area, and proper soil conservation will become crucial.

Present soil conservation activities are carried out by the Government Soil Conservation Unit at Nakuru. The major conservation method is terracing, and about 5,000 acres have been terraced in the area so far. In financial terms, this is one of the largest projects in the Kapenguria SRDP area, with £5,700 spent so far and plans to spend another £6,500.

The soil conservation project faces some serious problems. For one thing, the tractors used for terracing can only work up to a 12° (maximum 15°) declination. Work on steeper slopes has to be done by hand, but it seems that Ministry of Agriculture staff have not taken over the responsibility for this part of the work. In addition, when an area is terraced, a water outflow system is created as shown in the sketch. This outflow area is in particular



danger of becoming eroded, and its protection is the responsibility of the Ministry of Agriculture, not the Soil Conservation Unit. As a minimum, this area must be protected by planting permanent vegetation, but neither the Ministry of Agriculture staff nor the local farmers have assumed the responsibility for this task.

CONCLUSIONS AND RECOMMENDATIONS

1. Given present conditions in Kapenguria, hybrid maize and sunflower are the most attractive crops for promotion among the great majority of farmers. (except in the very high altitude areas).

2. Coffee, pyrethrum and English potatoes do not give any relative advantage to average farmers compared with hybrid maize and sunflower so long as land is abundant and labour and capital are limited. However, they could profitably be introduced to more progressive farmers. In the very high altitude areas pyrethrum and potatoes are more feasible than the other crops. But their economics of production should be compared with those for livestock.

3. The major constraint on coffee development seems to be organisational problems, rather than disease as was assumed. We recommend that the spraying project be dropped and that priority be given to hiring a highly qualified factory manager, upgrading the machinery at the factory, paying farmers promptly, and training them in improved cultivation methods.

4. A marketing cooperative for pyrethrum needs to be established in the area. All pyrethrum plots should be at least $\frac{1}{2}$ acre.

5. Certified potato seed requires too great a capital input to be adopted as a food crop. Efforts should be made to improve marketing and promote potatoes as a cash crop. It would also be much more promising to develop 'red' potatoes instead of English potatoes.

6. Short training and discussion courses should be held in the villages to inform farmers about pyrethrum and potatoes. An expert on each crop should be asked to assist with these courses. Farmers should not be asked to plant new crops about which they have been given little information.

7. Systematic crop development experiments should be carried out in the marginal belt of the Kapenguria SRDP area.

8. Soil conservation activities should be continued, and priority should be given to coordination within the Ministry of Agriculture to solve erosion problems produced by incomplete conservation work.

Table 2. Economics of English Potato Production (Irish Potatoes).

	Production level		
	Low	Average	High
1. yield in 90 kg bags	40	78	170
2. output @ 25/- per bag	1,000/-	1,950/-	4,250/-
3. seed	850/-	850/-	1,350/-
4. fertiliser	60/-	240/-	660/-
5. sprays and dusts	20/-	100/-	300/-
6. other costs e.g. transport	20/-	40/-	100/-
7. total variable costs (3 to 6)	950/-	1,230/-	2,410/-
8. gross margin per hectare (2 minus 7)	50/-	720/-	1,840/-
9. labour mandays per hectare (average)			
seedbed preparation	50		
planting, fertilising	30		
spraying	20		
weeding, ridging	45		
harvesting	35		
total mandays	180		
10. gross margin per manday (8:9)	4/00		

Remarks: Two crops per year can be grown with lower yields during the short rains.

Potatoes must be grown on land which has not grown potatoes or tomatoes for at least four seasons.

Seed costs for the high production level assume certified seed is being used. Supplies of certified seed are limited.

Table 3. Economics of Pyrethrum Production.

(A) First year (establishment)

	Production level		
	Low	Average	High
1. yield in kg	125	250	400
2. output @ 5/50 per kg, 1.3% pyrethrum 6/45 per kg, 1.5% pyrethrum (high level)	690/-	1,375/-	2,580/-
3. planting material from P.B.K.	2,500/-	2,500/-	2,500/-
4. fertilisers	-	90/-	360/-
5. sprays	-	20/-	40/-
6. other costs	20/-	40/-	60/-
7. total variable costs (3 to 6)	2,520/-	2,650/-	2,960/-
8. gross margin per hectare (2 minus 7) -	1,830/-	-1,275/-	- 380/-
9. labour mandays per hectare			
seedbed preparation	50		
planting	30		
weeding	75		
picking	35		
total mandays	190		

Remarks: If farmers are carefully trained, once they have started growing pyrethrum they can produce their own splits (planting material). Then the costs of planting material may be around 250/- (instead of 2,500/-).

Table 3. Economics of Pyrethrum Production (continued).

(B) Average of the three years following the year of establishment

	Production level		
	Low	Average	High
1. yields in kgs	200	400	700
2. output @ 5/50 per kg, 1.3% pyrethrum @ 6/45 per kg, 1.5% pyrethrum (high level)	1,100/-	2,200/-	4,515/-
3. sprays and dusts	-	40/-	140/-
4. other costs	20/-	40/-	60/-
5. total variable costs (3 to 4)	20/-	80/-	200/-
6. average gross margin per hectare (2 minus 5)	1,080/-	2,120/-	4,315/-
7. labour mandays per hectare (average level)			
weeding	65		
picking	65		
other tasks	20		
total mandays	150		

(C) Including year of establishment

Average gross margin per hectare (per year)	370/-	1,270/-	3,140/-
Average gross margin per manday (average level)		7/94	

Remarks: The average gross margin will be considerably higher if farmers produce their own splits (or sell splits).

Table 4. Economics of coffee production.

(Data represent mature coffee)

	Production level		
	Low	Average	High
1. yield in kg of cherry	550	2,200	7,000
2. output @ -/70 per kg	385/-	1,540/-	4,900/-
<hr/>			
3. seed	-	-	-
4. fertilisers	15/-	60/-	750/-
5. spray and dusts	20/-	180/-	900/-
6. other costs e.g. transport	20/-	160/-	260/-
<hr/>			
7. total variable costs (3 to 6)	55/-	400/-	1,910/-
<hr/>			
8. gross margin per hectare (2 minus 7)	330/-	1,140/-	2,990/-
9. labour mandays per hectare			
(high production level)			
picking and sorting	230		
transport	50		
weeding	120		
pruning	50		
spraying	30		
total mandays	480		
10. gross margin per manday (8 : 9)	6/25		

Remarks: Price received for cherry will vary considerably. Labour mandays given above relate to the high production level. Picking labour is based on 30 kg cherry picked per day. Since adequate picking labour is a major factor in determining yields, labour should normally be budgeted for at high levels to ensure proper picking.

CHAPTER SEVEN
RURAL CREDIT AND CROP PRODUCTION IN VIHIGA/HAMISI

Out of a list of 26 SRDP projects listed for the Vihiga/Hamisi area on November 15, 1974 (ADM. 15/3/B/28), 7 are directly concerned with crop production. These projects, which are described as 'on-going', are listed as follows, with the funding organisations in brackets: vegetable production (SRDP), cooperatives (GoK), fertiliser demonstrations (FAO), extension (GoK/SRDP), tea credit (SRDP), stockist credit (FAO) and maize credit (SRDP). The training of farmers and of extension staff is listed separately, but these projects could also be subsumed under extension. Two additional projects could also be added to the list, the sunflower and Mexican 142 extension projects, but they have not been in operation long enough to permit evaluation.

The three credit projects are considered in separate sections of this chapter. The maize credit scheme is treated most fully, and the general problems affecting all small-holder credit schemes are considered with reference to the maize credit project. The tea and the stockist credit schemes are treated much more briefly.

The greatest attention in this evaluation is given to credit schemes for a number of reasons. First, there is presently a good deal of interest and debate concerning the effectiveness of credit projects in assisting the development of small-holder agriculture. Second, the other crop production projects in Vihiga/Hamisi are of less general interest for various reasons. Third, the extension programme, although certainly an important aspect of efforts to enhance crop production in Vihiga/Hamisi, is examined thoroughly in another chapter of this Report. Finally, an evaluation of all SRDP projects in Vihiga was completed in October-November 1974 by two USAID consultants, and the findings of the present evaluation have been much the same as theirs. The most important conclusions concerning the credit programmes are also similar in the two reports, but a more extensive discussion of the maize credit scheme is presented here.

VEGETABLE PRODUCTION

The major constraint on the expansion of vegetable production in the Vihiga/Hamisi SRDP area has been that existing demand is already met by supplies available in season, and there is no way demand out of season can be met except by irrigation. A Horticultural Officer was posted to Vihiga in 1974 whose main task is to assist women's groups in developing kitchen gardens through the Home Economics Programme. SRDP funds have been used only to buy vegetable seed.

Another project frequently mentioned under vegetable production was a scheme to bring a new variety of bananas into the area. Trees were obtained in Uganda, but they were found to be infected with nematodes, so they have been quarantined in an agricultural research station.

COOPERATIVES

There has been even less activity in the Vihiga SRDP area in the field of cooperatives than in vegetable production. When the SRDP was initiated, the Provincial Cooperative Officer felt that there was no need for cooperatives in the area. His successor would have liked an SRDP cooperative project, but considered it too late to initiate one.

This may not have been a serious omission. The Assistant Cooperative Officer for Vihiga mentioned a need for a vegetable marketing cooperative, but the constraint on increased vegetable production seems to be the lack of irrigation or a larger seasonal demand, not insufficient organisation of marketing. The coffee cooperatives in the area are said to be functioning well and have apparently not suffered from the absence of SRDP assistance. There is no other apparent need for cooperative development in the area.

FERTILISER DEMONSTRATIONS

In line with similar projects in other areas, fertiliser demonstration plots are scattered throughout the Vihiga SRDP area at points where they are likely to be viewed by large numbers of farmers. The first demonstrations were set up by F.A.O. in 1971, with one plot fertilised with nitrogen and phosphates, a second with phosphates only and a third control plot. Additional demonstrations were set up as part of SRDP, with one plot fertilised with both nitrogen and phosphates and a second control plot. Reports on numbers of demonstrations vary, but it seems that there have been a little over one hundred each year, counting the F.A.O. and the SRDP demonstrations together.

The plots have successfully demonstrated the large increases in yield made possible by the use of fertiliser, and local farmers have evidently learned this because they have become unwilling to provide land for control plots. However, a survey of 300 farmers carried out in 1973 by an SRDP advisory team revealed that only 40 per cent of the farmers were using fertiliser.

If the impact of the fertiliser demonstration plots has been less than the extension personnel believe, this is probably due to the high cost of fertiliser which hinders adoption by farmers. As of early 1975, the recommended amount of nitrogen and phosphate fertiliser for one acre of hybrid maize cost shs 450/-. Even though fertiliser prices were lower in previous years, they were still high enough to prevent many farmers from using fertiliser.

EXTENSION SERVICE

An effective extension service is probably the most important single means for encouraging small-holder agricultural development. Unfortunately, the extension service in the Vihiga SRDP area was not evaluated fully, but it was found that there has been no real experimentation to find alternative extension strategies. The USAID advisor has apparently suggested some specific improvements, and the A.A.O. expressed his appreciation for this advice, but the traditional extension approach has not been altered in any fundamental way. The chapter of this Report on SRDP extension experiments describes significant improvements to be gained from new extension approaches, and it seems that an opportunity has been lost in the Vihiga area to learn through experimentation how extension services can be carried out most effectively.

RECOMMENDATIONS FOR VEGETABLE PRODUCTION, COOPERATIVES, FERTILISER DEMONSTRATIONS AND EXTENSION

1. The vegetable and cooperative projects are not sufficiently important to be listed as SRDP projects. Vegetable production might be encouraged as part of the Home Economics Programme, but not as a separate project.
2. The value of fertiliser demonstrations could be enhanced if different sorts of tests are carried out. For example, alternative methods for enriching the soil could be demonstrated, such as the application of compost and manure. Also trials could be carried out with smaller applications of fertiliser, and different yield increases measured and compared. This would help farmers judge the economic impact of different levels of fertiliser application. These types of experiments are mentioned in the discussion of the maize credit scheme.
3. Similarly, the value of extension efforts could be increased if a genuinely experimental approach is adopted. Innovative extension approaches have been carried out successfully in the Tetu and Migori SRDP areas, and these approaches could be tried in Vihiga or different new approaches developed.

CREDIT FOR SMALL-HOLDER TEA PRODUCTION

The purpose of this project is to increase tea production to 1,500 acres and thus provide farmers with an opportunity to earn a cash income. The availability of credit is publicised through Chiefs' and Sub-Chiefs' barazas, and applications from farmers are then considered by a committee including the District Tea Officer, the Divisional Officer and the SRDP Area Coordinator. The criteria for eligibility are that:-

1. The farmer should have at least two acres, one for tea and one for subsistence crops;
2. The farmer should demonstrate that he actually needs credit. An earlier limitation that applicants could not have any off-farm employment has been dropped; and
3. The farmer should demonstrate competence in farming and a real interest in producing tea.

Credit is provided to purchase materials necessary for setting up nurseries for tea plants. Five nurseries with 1,200 plants in each nursery are started for each proposed acre of tea, this number having been proved necessary because of the low survival rate of the plants. Each nursery costs shs 66/-, so that the total loan for one acre of tea comes to shs 330/-. Few farmers have taken loans for more than one acre.

Repayment is not due until the tea is marketed, and then the amount due is deducted from the farmer's sales made through the Kenya Tea Development Authority (K.T.D.A.). In addition to the loans, farmers are provided with extension advice from agents with special training in tea husbandry. In the Vihiga SRDP area there were seven Agricultural Assistants (A.A.s), one from the K.T.D.A. and six from the Ministry of Agriculture, and eighteen Junior Agricultural Assistants (J.A.A.s).

Evaluation of the Project

According to figures supplied by the Assistant Tea Officer, 878 acres were already under tea at the end of 1974. The response of local farmers has been good, so that the target of 1,500 acres under tea is almost certain to be exceeded. Because of this high response rate, the tea project is considered one of the most successful in the Vihiga SRDP. Since plants purchased with loans have not yet begun to produce, the question of loan repayment has not yet arisen.

Two rather serious problems have occurred, however. First, money was not available through the K.T.D.A. in time to establish the nurseries on schedule. This meant that the plants were not sufficiently mature when they were transplanted to the fields, and as a result the survival rate has been low. This will lead to a small initial harvest, which will make loan repayment more difficult.

The second problem is that the extension service seems not to have been successful in instructing all farmers in proper tea husbandry. Although the A.A.O. showed us one shamba where tea was apparently growing very successfully, most of the other tea fields which were observed were in much poorer condition. Although a thorough survey was not made, a number of farmers interviewed mentioned that they did not know what husbandry techniques would improve their tea. Further, the Provincial Tea Officer made a survey of the area and concluded that the number of poorly established tea shambas was a serious problem.

The K.T.D.A. prides itself on its extension services, and every tea grower is supposed to be carefully supervised. However, in Vihiga many plants have died, and the survivors are spaced unevenly and often far apart. To the extent that this is due to late establishment of the nurseries, the situation could have been remedied had farmers taken cuttings from their own plants, but they did not know this was possible. One farmer had lost his entire nursery except for two or three plants which stood at the edge of his maize shamba. This loss would not normally exempt him from repaying the loan, but in this case the Provincial Tea Officer planned to remedy the situation.

Although the K.T.D.A. is responsible for the tea extension service, it is surprising that the SRDP extension personnel did not know about the problems which have occurred. They seemed to feel that the project was doing well, although evidence to the contrary was within one mile of the SRDP and extension service offices. This failure can apparently be attributed to the perennial extension problem of concentrating on the most successful farmers and paying less attention to the rest. The SRDP experiments to discover new extension approaches, as described in another chapter of this Report, are intended to help remedy just this problem.

Recommendations for the Tea Project

1. The tea project should be continued since tea growing is feasible in the area and many farmers are willing to grow tea.

2. However, steps should be taken to see that extension is directed to all farmers, especially the majority who are not the most progressive and who are in greater need of assistance.

THE VIHIGA CREDIT SCHEME FOR MAIZE INPUT STOCKISTS

It was pointed out in the 1972 SRDP evaluation report that stockists were bearing much of the burden of the maize credit programme because they were obliged to supply maize inputs (fertiliser, hybrid seed and D.D.T.) to farmers before being paid. They experienced delays in receiving reimbursement from the Agricultural Finance Corporation (A.F.C.), and later they were reimbursed by wholesale suppliers only by replacement of the goods which they had sold to farmers. Extension personnel also said that due to a shortage of transport, the stockists did not always obtain sufficient quantities of inputs in time to meet demand. Finally, stockists were sometimes able to obtain higher prices than the amounts specified on the loan recipients' coupons from other customers.

The suggestion was made in the 1972 evaluation report to provide the stockists with credit to remedy this situation. Whether or not the I.D.S. report was the source of the initiative, arrangements were made for local banks to provide stockists with credit during the short rains of 1973 and the long rains of 1974. About ten stockists were approved for loans during the second season, but only three actually took loans out. It seems that the other stockists were well enough established to either be self-sufficient financially or to have access to credit through normal channels. (In Migori loans were also given to stockists, who responded in greater numbers, but there, unlike Vihiga, the inputs had not been available locally until credit to stockists was provided.)

Because the difficulties experienced by stockists in providing inputs for the maize credit scheme have not been resolved, the SRDP staff in Vihiga wish to arrange for wholesale suppliers to deal with loan recipients directly, selling the inputs to them at specified times and places. In this way the local stockists will be by-passed completely. This new approach raises the question of whether large companies are not benefiting at the expense of local entrepreneurs, but the SRDP staff feel that local businessmen are only losing a small portion of their clients and are sufficiently developed not to require assistance in the form of credit. It was not possible to investigate these new arrangements more thoroughly.

Recommendation

1. It is recommended that the SRDP staff at Vihiga be allowed to continue with this project as they see fit.

THE VIHIGA SMALL-HOLDERS' MAIZE CREDIT SCHEME

This report on the Vihiga maize credit scheme begins with a description of the project followed by a look at the project's aims and the extent to which it has conformed to the four basic principles of SRDP. Next the benefits and costs of the project are assessed as far as available data allow and the argument is put forward that the deficiencies of the Vihiga project are those to which small-holder credit schemes are generally prone. Finally, conclusions are drawn concerning the proper role of small-holder credit, alternatives are considered and recommendations are made.

It should be emphasised that although this evaluation contains criticisms of the Vihiga maize credit project, there is no intention to underrate the work of either the Kenyan or expatriate SRDP personnel in the area. They have shown a commendable willingness to evaluate the project and modify it in the light of their findings. It is hoped that they will regard this evaluation as one further contribution to help solve some of the problems of small-holder agriculture which builds on the efforts they have already made.

Description and History

This credit scheme grew out of a proposal in the 1970 Outline Programme for the SRDP effort in Vihiga which aimed at bringing about increased agricultural production through an improved extension and demonstration programme. Maize was identified as the most important crop on which to concentrate because the supply of this basic food was estimated to be insufficient in the area. The question of credit arose because it was calculated that a large proportion of farmers would require credit if they were to purchase the fertiliser and hybrid maize seed which they would be encouraged to use. As the implementation of the general maize project got under way and the difficult questions of how to allocate and administer the loans had to be faced, credit became central to the project and the main issue became the effectiveness of small-holder credit in raising the level of maize production.

The Loan Record: The way in which the project has evolved has been well documented in both the I.D.S. Overall Evaluation of the SRDP of 1972, Appendix F, and the recent USAID-sponsored evaluation by Harmon and Zalla. Here only the basic facts will be repeated.

The maize programme was supposed to be directed to a group of 600 randomly chosen farmers, who were first surveyed to obtain baseline data. Loan recipients were required to grow two acres of hybrid maize and to be creditworthy. These requirements eliminated all but 54 of the original 600 farmers. Others were sought and 22 more approved, so that 63 ultimately received loans. No interest was charged and the repayment rate was 82 per cent.

In 1972 the number of loan recipients was increased with 383 farmers approved and 323 accepting loans. The criteria for selecting loan recipients were the same as in 1971, but an interest charge of 10 per cent was added.

In 1973 the project was expanded and loans given to 920 farmers. This was achieved by changing or removing the two greatest obstacles to qualifying for a loan. The minimum acreage to be planted was reduced from two to one acre, and the **creditworthiness** criterion was dropped. On the other hand, a 2 per cent penalty interest rate was imposed on all outstanding amounts not repaid by the loan expiration date.

Unfortunately, as the number of recipients went up the repayment rate fell off precipitously. In 1972 it was 65.6 per cent and in 1973 it was only 27.6 per cent. In 1974 an attempt was made to find ways of encouraging repayment without changing the terms of the loan. The farmers were divided into four sets. In one set they all had title deeds and gave their land as security for the loans. In the second set the purpose was to develop social pressures to repay. The farmers were divided into groups, with the stipulation that no member of a group could obtain any more loans until all members of his group had repaid. The third set contained farmers who had unsecured loans but had repaid previous loans and thus might be expected to do so again. The fourth set was made up of farmers new to the project, and their loans were administered in the same way as all loans had been administered in previous years. They had no repayment records, offered no security and were subject to no special group pressure. The results of this experiment are not yet available, but the overall repayment by the end of November 1974 was around 20 per cent.

SRDP personnel felt that some farmers were not repaying loans because they did not understand the loans and thought they were gifts. For this reason, credit barazas or seminars have been held to educate farmers concerning the

mechanics and uses of the loans. These meetings have been led by the A.F.C. Loan Officer for Vihiga, extension agents and USAID advisors, and loan recipients have been required to attend. The response has been encouraging, with 76 per cent of the recipients actually attending, and some farmers have come forward at meetings to repay their loans. It is planned to hold these meetings every month in each location, and the scope has been broadened to include farmers who are not loan recipients and to discuss other farm development topics.

Table 1. Number of loans and repayment rates, 1971 - 1974.

<u>Year</u>	<u>No. of loans</u>	<u>Total K.Shs.</u>	<u>Repayment*</u>
1971	63	17,062	82.0%
1972	323	73,551	65.6%
1973	920	248,557	27.6%
1974	320	84,048	approx 20.0%

*Repayment refers to the volume of money recovered as a percentage of the total sum lent.

Source: A.F.C. branch, Kakamega.

The Organisation of Loan Disbursement and Repayment: The maize loan applications are processed by a committee comprising the A.A.O.s, the Chiefs and a representative from the A.F.C. Loan applications have been processed smoothly and quickly, though some difficulties have been reported due to the A.F.C. Loan Officer not appearing on schedule.

In the first year of operation each recipient was given an Authority to Incur Expenditure (A.I.E.) of up to Shs 105/-. He could then purchase inputs from stockists in varying proportions up to set limits. The stockists claimed reimbursement through the A.F.C. Unfortunately there were delays in obtaining this refund and the stockists were subsequently reluctant to accept A.I.E.s from farmers.

In 1973 a different system was **adopted**. The A.F.C. provided recipients with coupons on which were stated the precise quantities of the goods to be purchased and also the prices of the goods. The coupons could then be passed on by the stockists to the wholesale distributors who would then be reimbursed. This system resulted in two further difficulties. One was that the distributors wanted to re-supply the stockists only with the goods named on the coupons even though the season for selling them might have passed, and would not accept the coupons as payment for other commodities which the stockists might have

preferred. Second, the stockists could get higher prices than those specified on the coupons so that the loan recipients sometimes could not purchase the inputs without supplementing the coupons with cash from their own pockets.

The SRDP personnel propose now to arrange for the distributors to bring the inputs directly to the loan recipients on designated days at specific places. This would circumvent the stockists altogether. The idea has not yet been approved by the Ministry of Agriculture, however.

The procedures for collecting repayments have also caused some problems. The A.F.C. office is in Kakamega, which is a journey of about 20 miles for farmers in Vihiga. Nevertheless, in the first two years of operation farmers were required to pay back their loans at that office, and they were sometimes disappointed to find on their arrival that the A.F.C. officers authorised to receive repayment were out on other business.

In 1973, one of the A.A.O.s in Vihiga was appointed by the A.F.C. to collect loan repayments, and he performed this task until November 1974 when he refused to collect any more because it took too much time away from his extension duties. The A.F.C. has now agreed that the Loan Officer who covers Vihiga will go there to receive repayments. The A.F.C. has made this gesture with some reluctance, because since these loans are not made from A.F.C. funds, the Corporation does not wish to bear the primary responsibility for their recovery.

Evaluation of the Maize Credit Scheme's Aims

The aims of the Vihiga maize credit project have been:

1. To raise the level of production of maize in Vihiga so as to make the area self-sufficient in this crop, with a particular emphasis on assisting small-holders to raise their standard of living.
2. To conform to the four SRDP principles of experimentation, evaluation of results, use of local resources, and replicability.

This second aim is obvious and hardly questionable, but the first received considerable attention in the 1972 evaluation report. The report pointed out that 'self-sufficiency' is a concept which requires both more justification and more clarification than it received. One of the fundamental conclusions of economic analysis is that an area should concentrate on producing those goods for which its resources are most suited, and it cannot be assumed

that Vihiga would necessarily be best off if it became self-sufficient in maize. Perhaps other crops should be produced in Vihiga, some of which could be sold in order to purchase maize. Furthermore, should self-sufficiency mean that every farmer in the area should produce enough maize to meet his family's needs, or that some farmers should specialise in maize, leaving others to produce other goods and buy at least part of their maize needs in the local market?

The 1972 evaluation recommended that the objective of self-sufficiency be reconsidered. In fact, there was apparently no significant reappraisal until a proposal for a farm development loan was drawn up in 1974. This omission has probably not been very serious in this particular case because conditions for growing maize may be better in Vihiga than in most other parts of the country. Dr. Weisel, the USAID evaluator for the project, has calculated from survey data that an appropriate medium yield for the area is 18 bags per acre, while a low yield would be 10 bags and a high yield 30 bags. This compares favourably with yields assumed elsewhere in this Report of 10 bags, 6 bags and 18 bags respectively. (See the tables appended to the chapter on SRDP experimentation and farmers training.)

Nevertheless, a project such as this, which is meant to serve as a model, should have given explicit consideration to this question before committing a large amount of resources. And certainly, even if the area as a whole should be self-sufficient, there is no reason why every family should be. Resources are used more productively when farmers can choose to concentrate on those crops for which they have the greatest interest and ability.

Evaluation of the Scheme's Conformance with SRDP Principles

Experimentation and Evaluation: These two principles can be treated together. In the 1972 evaluation, the researchers pointed out that the criteria being applied for loan approval (in particular the requirements of credit-worthiness and a minimum of two acres of hybrid maize planted) eliminated the project's experimental content. Second, there was nothing in the design of the project to allow the testing of different hypotheses.

These criticisms have been met in several respects. The credit-worthiness criterion was dropped and the minimum acreage of hybrid maize lowered from two acres to one. This allowed the concept of unsecured credit to be tried out. The division in 1974 of the farmers into four separate sets to test different incentives for repayment should also yield valuable information.

An important piece of evaluation was carried out in 1973, in the form of a 300-farmer survey to follow up the baseline 600-farmer survey made in 1970.

The most serious criticism of the project's experimental component is that no extension experiment has been devised to compare the results of improved extension ~~with those~~ of the credit scheme. USAID has maintained an extension advisor in the field who has apparently developed close and friendly working relationships with the local extension agents. A few specific ideas have been tried out on an ad hoc basis, such as the credit barazas, but no general plan for extension has been thought out. This same criticism was made in the 1972 evaluation report, and it is not clear why it has never been acted on.

Use of Local Resources and Replicability: The primary suggestion made in the 1972 evaluation report concerning use of local resources was that the credit scheme should be integrated more effectively with local commercial institutions. It was suggested that local input stockists be given credit facilities, but when this was tried in 1973 and 1974 it was found to be unnecessary.

The importance of the full participation of the local population has been illustrated by the Vihiga maize credit scheme. Experts determined that the farmers needed credit, so the project was initiated without consulting the farmers themselves. There is evidence that the farmers did not always understand what was expected of them, which has contributed to their poor repayment record. This situation is now being remedied by means of the credit barazas, where SRDP personnel have learned more about the wider needs of the farmers, and a newsletter, eventually to be written by local extension personnel and farmers, has also been initiated to improve communication.

Concerning replication, there are no special features of this project or of the Vihiga area which would limit its relevance for the rest of the country. Thus, the experience in Vihiga fully supports the general recommendations made at the end of this chapter concerning a national unsecured credit scheme.

Evaluation of Credit as a Stimulus to Agricultural Production in Vihiga

The Benefits: As the object of the maize credit scheme has been to encourage the use of hybrid maize seed and fertiliser, the adoption rate needs to be examined. This is done in Table 2.

Table 2. Percentages of farmers using hybrid maize seed and fertiliser in Vihiga.

<u>Year</u>	<u>Hybrid Seed Users</u>	<u>Fertiliser Users</u>
1969	43.6%	30.0%
1970	46.6	30.4
1971	49.0	32.4
1972	58.7	37.7
1973	64.8	39.7

Source: Survey of 300 farmers taken in 1973 by P. Weisel, et al.

On the face of it, this is a good record. The proportions of farmers using hybrid seed and fertiliser rose substantially between 1970, the year before the project began, and 1973. However, it would be rash to attribute the entire increase to the credit programme. One would expect to see some increase in the use of these inputs even in the absence of a credit programme because some farmers would be able to purchase inputs without credit. Unfortunately it is difficult without much more detailed data to be precise in distinguishing the impact of the credit programme from this independent tendency. There are, however, reasons for supposing that the impact of the credit programme was not terribly great.

First, the project reached only a small number of farmers in the area. In 1974, the estimated population of Vihiga division was 340,000. Assuming 8 persons per family, there are, as a rough approximation, 40,000 farms in the area.¹ By comparison, the total number of loans given from 1970 to 1973 was only 1,306. Even allowing for a 'demonstration effect', whereby other farmers would have been inspired to grow maize by seeing the success obtained by the loan recipients, the impact of the loan scheme on the overall production of maize in Vihiga cannot be supposed to be large.

More importantly, the loans were not distributed in a manner most likely to achieve a large impact, in that most of the farmers who received the assistance had already grown hybrid maize and used fertiliser before. In 1973 it was found that in a random sample of 300 farmers only 7 per cent of the loan recipients (outside East and West Bunyore) had not grown hybrid maize before and only 24 per cent had not already adopted fertiliser. The corresponding figures for farmers who did not receive loans (outside East and

1. As the Vihiga area is about 551 square kilometres, this would give an average farm size of the order of one hectare which is a reasonable estimate.

West Bunyore) were 22 per cent and 64 per cent respectively. Thus, far from concentrating on the laggards to assist them to rise to the level of the more progressive farmers, the scheme in fact benefited farmers who were already more progressive.² (12)

This same point was raised in the 1972 I.D.S. evaluation. At that time, the basis for criticism was that the requirement that all loan recipients be credit-worthy and grow at least two acres of maize was bound to result in a prejudice in favour of wealthier farmers. Both of these criteria were changed, credit-worthiness was abandoned and the minimum acreage of hybrid maize was reduced to one, but still the bias remained. In 1973 there were the greatest number of loan recipients, 920, so that the chances of obtaining at least a fair cross-section of farmers was greatest, but this was not achieved. Not only was the direct impact of the loan scheme on hybrid maize adoption low, but also the demonstration effect was low since most loan recipients provided the initial demonstration prior to receiving the loan.

The evidence thus suggests that the benefits of the maize credit programme were low in terms of increased production. The increase in adoption shown in the figures quoted in Table I must, according to this interpretation, be due to other factors. Moreover, the project cannot be said to have been very effective in improving income distribution by raising the level of income of the the poorest farmers, for the project benefited them less than the more progressive farmers.

The Costs: In a successful credit scheme the costs of the project are very small and are recovered in the form of service charges added on to the interest rate charged. Costs which cannot be avoided are those arising out of processing loan applications, disbursing loans and collecting repayments, including the extra costs of following up loan recipients who fall in arrears and writing off a small proportion of bad debts. An additional cost arises when the interest rate is subsidised.

In the case of the Vihiga project interest was free in 1971, but since then interest rates of 1 per cent a month or 10 per cent a season have been charged which is close to the commercial rate. A 2 per cent penalty

2. These percentages do not tally with those given in Table 2 because these exclude East and West Bunyore where adoption rates are low.

The USAID sponsored evaluation cites other figures which are less drastic but still show that a higher proportion of previous adopters received loans than the average for the division. We have not found the source of the USAID evaluators' figures.

rate levied **monthly** on late repayment not only adds an incentive to repay, but also should cover part of the costs of pursuing recalcitrant loan recipients, assuming they finally repay.

The difficulty has been that the number of recipients who have failed to repay has been ~~very~~ large. This inevitably raises costs in one or both of two ways: 1) there is a high proportion of loans which is never recovered, and 2) efforts must be made to follow up recalcitrant loan recipients to solicit repayment.

Figures on the costs of this project are not available other than the sums of money tied up in unrepaid loans. Yet it seems that the costs have been high due to poor repayment, and they must be set against the benefits which have been described here as low. Whatever the numerical benefit-cost ratio is, it must be considerably less than was originally expected.

The General Limitations of Credit Schemes

The Tendency Towards Low Benefits: The usefulness of credit provision as a means to stimulate agricultural production is often exaggerated, and the Vihiga project is not exceptional in producing disappointing results (See 7 for other examples.). The reason for this is that credit is provided to remedy a problem which is often not as serious as is supposed, and this diverts attention from those problems which are truly important.

The case for creating a small-holders' credit scheme runs along the following lines. To raise agricultural production it is necessary for farmers to begin to use new seed types, fertiliser and insecticides, all of which must be purchased with cash. The farmers who are most in need of increasing their production are subsistence farmers who are by definition short of cash. Credit must therefore be made available, but banks and other commercial institutions do not regard small-scale farmers as good risk, even where they have title deeds, since it is expensive to foreclose and the banks do not want to become involved in the real estate business. The conclusion follows that special credit schemes must be created.

Some of these assumptions are not always correct. To begin with, the large part of credit received is used to purchase fertiliser, and it is not always necessary for farmers to start off by using large amounts of fertiliser or even any fertiliser at all, because yields can often be quite good without fertiliser, at least for a long enough period to enable the

farmer to build up a cash surplus.

There is good evidence for this in a detailed study carried out in Western Kenya. (1) It was found that the determinants of high maize yields were, in order of importance:

early planting (50%)
 hybrid (as against local) seed (40%)
 optimum plant population (30%)
 proper and timely weeding (23%)
 phosphate fertiliser (13%)
 nitrogen fertiliser (4%)

The figures in brackets show by what proportion yield was increased by each variable in the trials. Clearly hybrid seed is important, but fertiliser is much less important than many people would have guessed. The trials were carried out in a variety of areas, and in some places fertiliser was more important than in others. Nevertheless, the point remains that this expensive input is generally not as important as the good husbandry practices listed.

The significance of this can be seen in the proportion of the value of the credit package which is accounted for by fertiliser. In 1975 the proportions of the various inputs are:

Seed	23/-
DDT	10/-
Fertiliser	210/-
Top dressing	<u>240/-</u>
	483/-

In previous years the situation was not so extreme because the price of fertiliser was not so high, but the most essential input, hybrid seed, has always been a small proportion of the total cost.

To the extent that Allan's study holds, therefore, the need for credit by small farmers is not nearly as great as might have been supposed. The proportion who cannot afford the Shs. 33/- required for seed and D.D.T. is likely to be quite small.

It must be acknowledged that in some areas fertiliser may be necessary if hybrid maize is to yield satisfactorily, but it would be a serious waste if it is merely assumed to be necessary for all areas. The question was never raised in Vihiga, but figures already quoted from the 1973 survey of 300 farmers show that most farmers in the area had already adopted hybrid maize without credit. Specifically 98 per cent of the loan recipients and 78 per cent of the other farmers outside East and West Bunyore were already growing hybrid maize without credit. A smaller proportion had adopted fertiliser (76 per cent of loan recipients and 36 per cent of the other farmers).

It is accepted that fertiliser is often necessary to prevent soil depletion. In particular, farmers whose plots are too small to leave some fields fallow may need fertiliser to maintain high yields. Even in these cases, however, not as much fertiliser may be needed as is commonly supposed.

It is possible to enrich the soil with compost or animal manure, or to interplant or rotate maize crops with beans to preserve the fertility of the soil. These practises may not completely replace synthetic fertiliser, but their potential advantages should certainly be fully investigated, especially now that the price of fertiliser has increased so drastically. Yet extension agents are still generally concerned only with the use of fertiliser.

Finally, synthetic fertilisers can be used, but in amounts less than the level which produces maximum increases in yields. Given the high cost of this input, the use of smaller quantities may actually maximise the farmers' profits even though yields would be slightly lower. Simple economic analysis shows that in general when the cost of an input increases, less should be used. Usually agricultural research stations only give figures for maximum yields, but farmers need to know how yields vary when different quantities of fertiliser are used so that they can make the best economic decisions.

Actual fertiliser needs may be zero when a farmer first plants hybrid maize; they may be fully met by the use of compost or manure; or they may be met with modest amounts of synthetic fertiliser. As production and incomes rise, farmers will be able to increase their purchased inputs including fertiliser, but initially there is no need to increase the financial burdens or to raise the costs of a maize development project by insisting on the purchase of large amounts of synthetic fertiliser.

Another limitation on the effectiveness of credit provision sometimes overlooked is that credit tends not to reach the farmers who need it most. This has been the case in Vihiga, as shown by the fact that a greater proportion of the loan recipients had had the initiative and funds to grow hybrid maize without loans than was the case for other farmers. This is a problem likely to affect most credit projects unless steps are taken to prevent it. One factor is almost unavoidable: that even a one acre minimum limit on the amount of maize grown would eliminate the poorest farmers, and any lower limit might be uneconomical.

A more tractable problem is that the most needy of those farmers who can qualify for loans may not be sought out by the responsible loan and extension officials. Two studies are available, one carried out in

Vihiga and the other in Tetu, which show that extension officers tend to focus their attention on the more progressive farmers, at the expense of the less progressive. (6, Tables 75 and 76, and 2, Tables 11 and 12) This could be a result of the traditional extension strategy of concentrating on most progressive farmers and hoping for a 'trickle down effect', or it could be due to a natural inclination for extension agents to concentrate their efforts where they bring the most rapid results. In any case, this attitude can be corrected through training and supervision, so that when the agents search out potential loan recipients they look for the poorer farmers rather than the 'safe risks'³

The Tendency Towards High Costs: Small-holder credit schemes are liable to face high costs even in the absence of subsidies to keep interest rates down. For one thing, it is inevitably expensive to service a large number of small loans. This is one of the ~~reasons~~ banks do not like to cater for small businessmen and farmers, and when Government agencies enter this field they must recognise and weigh the costs when considering alternative ways of developing agriculture.

The second reason for high costs is low repayment rates, for which a number of explanations can be offered. Farmers may not always fully understand the way in which credit operates, or their own obligation to repay. This was found to be the case in Vihiga when the 1973 survey of 300 farmers revealed that they often considered the money they had received more a gift than a loan. This problem can be dealt with through education, as is being done in Vihiga through the credit barazas.

3. One possibility which is not considered here is that there is no need for credit because, contrary to common belief, there are sufficient funds available in rural areas already. Factors which have been cited as evidence for this are:

The availability of funds for the purchase of former European farms in the early 1960s; the phenomenal collections for harambee projects; the extent of investment in trade, transport and other non-agricultural businesses in the rural areas; the growing amount of investment in urban property; the experience of the post office, commercial banks and cooperative societies receiving rural savings deposits. (5)

Although this question is very important, it is not pursued here because it is highly controversial and the evidence available is not conclusive. Finally, although there may be funds available in the rural areas, these are generally not accessible to the poorest farmers with whom this evaluation is most concerned.

Where the credit programme is successful in reaching lower income farmers, the repayment problem is likely to become more severe. It has been found in Vihiga that those farmers who have repaid all their loans have a significantly higher level of financial resources than those farmers who have not repaid at all. (12) Some farmers, even after harvesting hybrid maize, may have little or no excess to sell above their consumption needs so they do not earn the cash necessary to repay the loan. If the average yield is 18 bags from one acre of hybrid maize and the average family consumption is 15 bags (quoted in the 1972 evaluation report, p. F-7), then enough cash could be generated to repay the loan. However, many farmers fall below the average, and they will be unable to repay unless they have other sources of income. Empirical evidence to support this view of the problem is provided in a sample of 1972 loan recipients in Vihiga. Those who had repaid their loans in full had sold on average 7.5 bags of maize and most of the funds to pay off the loans had come from this source. Those who had repaid nothing had sold on average only 3.5 bags. (12)

Another reason that some loans were not repaid in Vihiga was apparently that they were not secured by title deed or in any other way. Aside from a sense of personal obligation, the only reason a farmer would have for repaying an unsecured loan would be in order to establish a good reputation with credit authorities in the event that he might want another loan in the future, but a number of farmers probably do not foresee a need for further loans. According to the A.F.C. Loan Officer for Vihiga, after a certain period of default each defaulter is sent a letter saying that "action" will be taken if he fails to repay. After a further period of default, another letter is sent saying the same thing. The increasing rate of default from year to year suggests that farmers have learned from earlier defaulters that no action will be taken for nonpayment. This is pure speculation, but some evidence will be available when the data on 1974 loan repayment are compiled, breaking down recipients into the four sets described earlier.

Should it turn out, however, that loans made on the basis of title deeds are more likely to be repaid, still no small-holder credit scheme could rely exclusively on this factor. For one thing, the cost of obtaining a title deed would discourage a number of potential applicants, and also it is too expensive to enforce repayment by foreclosing on land to allow this sanction to be applied in very many cases. Thus the security provided by title deeds is not generally effective in the case of small loans.

The only practicable security for small-holder loans is a system of marketing cash crops through one organisation which can deduct loan

repayments from farmers' sales. This is the case for tea, which can only be marketed through the K.T.D.A., and also for coffee and pyrethrum, though cooperatives officers can sometimes be persuaded to delay the deductions. Where there is a local market for the crop, loan repayments cannot be secured in this way.

CONCLUSIONS CONCERNING THE ROLE OF CREDIT PROVISION AND ALTERNATIVE WAYS TO DEVELOP AGRICULTURAL PRODUCTION

The objectives of providing credit to small-holders are in general to increase agricultural production and enhance the incomes of poorer farmers. We have seen from experience in Vihiga that unsecured loans to small-holders are not terribly effective in reaching these objectives. For one thing, benefits are low because fertiliser, on which most of the loan is spent, is not as essential to raising yields as has often been thought, and further credit is often not given to the farmers most in need. Given the limited benefits, costs are high, particularly because defaulting is likely to be high.

Still, small-scale farmers need assistance, but assistance through improved extension services and in some cases subsidised fertiliser prices is likely to be more successful than credit schemes. Ways to improve extension are discussed in the chapter on S.R.D.P. experimentation and farmer training in this Report and include improved training for extension agents and the group approach to farmers.

A far larger number of farmers can be assisted by an effective extension service than by a loan scheme, and all farmers can be reached, even those who would not qualify for an unsecured loan. In addition, improved husbandry methods as taught by extension agents can reduce the need for fertiliser and can raise yields for many crops even higher than the application of fertiliser alone.

When fertilisers are shown to be necessary for crops with local markets, it is preferable to subsidise small-holder fertiliser purchases rather than offering loans. As is the case with extension, subsidies can reach even those farmers who could not qualify for loans. Costs would vary, of course, with the extent of the subsidy, and they could be substantial, but they should not be greater than the costs of a nationwide small-holder credit scheme with large administrative overheads and probably a high defaulting rate. The cost of a subsidy could be planned for in advance in a way that is not possible with a loan scheme where the precise defaulting

rate cannot be predicted.

Small-holder credit is still an attractive alternative for crops that are marketed through one organisation, such as a cooperative or the K.T.D.A., which can collect repayments automatically from the farmers' sales. Yet even here the role of extension must not be underestimated. As the experience with tea in Vihiga has shown, crop production will not be enhanced if farmers are not taught how to use the inputs which are provided through credit, and they will not increase their incomes sufficiently to repay the loans without undue hardship.

RECOMMENDATIONS FOR THE VIHIGA SMALL-HOLDERS MAIZE CREDIT SCHEME

1. This project, having provided the information for which it was set up, should not be continued.
2. The efforts of the S.R.D.P. team in Vihiga should be directed towards properly designed experiments to improve the effectiveness of the extension service.

GENERAL RECOMMENDATIONS CONCERNING THE REPLICATION OF SMALL-HOLDER CREDIT SCHEMES

1. Attempts to increase agricultural production and improve the incomes of small-holders by granting unsecured loans should be discontinued, except where crops are marketed compulsorily through one organisation such as a cooperative society or the K.T.D.A.
2. The extension service should be regarded as the chief instrument for increasing agricultural production and raising farm incomes. Recommendations for improving the extension service are contained in the chapter on S.R.D.P. experimentation and farmer training in this Report.
3. Research should be undertaken to establish just when synthetic fertilisers are necessary and the amounts which are economically optimal.

The Maize and Produce Board is currently carrying out a survey on maize production in various parts of the nation. The primary objective is to develop a means of forecasting total maize production. However, as the data gathered will include variables affecting yield, such as times of planting, weeding, and fertiliser use, the survey will be valuable in shedding light on the importance of fertiliser relative to other factors. The results of this survey should be closely followed.

4. Until the results of such research are available, a moratorium should be declared on all projects designed to encourage the use of synthetic fertilisers among small-holders.

5. Improved seed and, where the need is established, synthetic fertilisers should be distributed to small-holders at subsidised prices. Any farmer with less than four hectares (ten acres) of land should be allowed to obtain subsidised inputs up to the amounts sufficient to plant one hectare. The farmers' eligibility would last for a maximum of three years. The extension service could issue vouchers to farmers who qualify.

This system of eligibility would result in some unnecessary subsidies to farmers who could afford the full price, but the administrative costs of sorting out the truly needy would be very great. Some farmers might choose to resell the inputs they obtain at subsidised prices, and it should be left up to them if they want to realise the benefits of the scheme in this way. However, part of the role of the extension service would be to convince farmers of the value of using the inputs on their own farms.

A small-holder could bring an amount of local seed to a trader, or its cash equivalent at official M.P.B. prices, together with a voucher issued by the extension service. The trader would give him in return an equivalent amount of improved seed and would be reimbursed according to the number of vouchers collected. Fertiliser could simply be sold at reduced prices on the presentation of vouchers, and the traders reimbursed. Neither seed nor fertiliser should be handed out free of charge, because people generally make better use of what they have paid for.

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AGRICULTURAL EXTENSION AND FARMERS TRAININGRESULTS OF S.R.D.P. EXPERIMENTATION IN AGRICULTURAL EXTENSIONIntroduction

Experimentation to improve agricultural extension was carried out in Tetu with a project to assist less progressive farmers, in Mbere where an extension staff management system was tried and in Migori where extension was directed towards groups of farmers and local participation was encouraged through Agricultural Village Committees. Further, two experiments were planned but not implemented in the early stages of SRDP in Migori, the 'Master Farmer Project' and the '630 Farmers Project'.

In Kwale an intensive extension approach has been planned but not yet implemented. A series of further extension experiments were devised by I.D.S. researchers - using SRDP funds - under the normal district development administration of Kisii and South Nyanza for the purpose of replication and further development of results achieved under SRDP conditions.

In this section we evaluate these extension experiments with a view to learning whether their results can help to solve the most serious problems of the present agricultural extension service in Kenya.

Efficiency Criteria for Extension

Probably for most agricultural innovations it would be far too expensive to establish extension services that are so well staffed and mobile that each and every farmer could be reached directly and thoroughly supervised, trained, etc.

Reaching every farmer directly seems unnecessary. Farmers have a great potential for learning (adopting) from each other. If this potential is activated the function of extension basically remains to introduce innovations to certain areas and certain communities. Eventually extension may also give 'infrastructural' assistance for the self-generating

diffusion process, e g. by improving marketing, the availability of inputs and the communication flow, etc.

From this concept of extension we can derive two efficiency criteria:

- 1) the success of extension activities in introducing agricultural innovations, and
- 2) the success of extension activities in promoting diffusion of agricultural innovations among the farmer community.

These two criteria are interrelated because the way an innovation is introduced has a strong effect on its diffusion.

Basic Problems of the Present Extension Services

We shall discuss first a general problem related to the efficiency criterion of diffusion. Then we shall go into specific constraints related to the introduction of innovations.

The Problem of Generating Diffusion of Agricultural Innovations among Farmers:

Within the existing extension machinery, an agent can directly reach only a few farmers in his area (due to the low extension-worker-farmer ratio) in order to introduce an innovation. Who should be selected to start with? Conventional practise is to choose the wealthier farmers, those who are better educated, more receptive to innovation or more ready to accept experimental risks, etc. - those farmers who in fact (in the absence of extension) are the more innovative ones already, for whatever reason.

In the more recent literature, and also among politicians and development administrators, one finds a growing awareness and concern for the long term results of this approach: developing societies which have adopted this approach have found that their agricultural extension aggravated dualistic development. This conventional extension approach does not take into account the communication and identification gap between the most progressive farmers and the masses of the others which is typical for the rural areas of developing nations. Agricultural innovations usually are too sophisticated to be adopted by less progressive farmers just by looking at a field belonging to someone else, and most progressive farmers are too busy or are not interested in teaching less progressive farmers.

They even may be afraid that too many adopters will reduce the income they derive from an exclusive innovation. Lastly, less progressive farmers usually feel that the farming conditions of progressive farmers are quite different from their own, and that the innovations adopted by the more progressive farmers are perhaps not relevant to their own situation.

Most progressive farmers adopt income generating innovations in a way which leads them to further innovations, which of course is desirable, but they have not been effective in transferring these innovations to others. We therefore have to distinguish clearly between the contribution most progressive farmers make in the economy, which can be valued positively, and their role as multipliers or models, which has been widely overestimated.

The extension worker - even if he does not know the conventional extension philosophy - will tend to follow the conventional strategy since he has to show results from his work. He can do this best by working with the 'best' farmers, since these adopt new innovations with the least difficulty.

Thus the most progressive farmers accumulate income generating innovations more or less exclusively. In economic terms, this is not efficient. The success of accelerating development among a small farmer elite will be eclipsed by the slow progress of the neglected majority.

Bringing the majority of farmers into a process of accelerated development would result in high economic benefits: it would reduce the costs of resolving social and other problems (e.g. unemployment, unwanted rural-urban migration, illiteracy, malnourishment and disease) on the one hand, and on the other it would mobilise the economic potential of millions of farmers and their millions of acres of land for the national economy. Extension should reach those farmers first of all who form the rural majority and who tend to be the less progressive farmers.

Efficiency Constraints as Perceived by Extension Officers: Most officers and agricultural experts when asked about the major constraints on extension mentioned the following:

- 1) There are not sufficient numbers of agents in the field;
- 2) The field staff is often not sufficiently qualified or motivated to give good extension services; and

- 3) There are almost no transportation facilities for the field staff and transportation is a serious problem to the officers in charge as well.

These problems exist in all SRDP areas and even more severely in the non-SRDP districts. But SRDP experimentation and research have shown that there are ways to reduce these problems without raising the costs of extension. These experiments will be described later. The implications of the three problems mentioned above will be discussed first.

Insufficient Extension Staff: In Kenya the extension worker-farmer ratio is around 1:500. This is very high compared with other countries (i.e. Tanzania 1:1,500; Uganda 1:1,800). (Roling, et. al, 11) As long as the existing extension personnel is generally considered inefficient, we see little rationale for expanding the number of staff.

The efficiency of the existing staff can be improved tremendously if they work within an appropriate extension programme with well planned and organised activities, if they approach groups instead of individual farmers and if they promote and utilise the innovative initiative which can be found in the farming community.

For example, three extension workers could barely convince twelve farmers to adopt soya beans with traditional extension methods in Kisii, South Mugirango Location. The same number of agents managed easily and very successfully to convince 200 farmers to adopt soya beans by following an appropriate, well planned programme and using groups and the farmers' own initiative in South Nyanza, Kanyamkago Location. This may indicate the potential for improving the efficiency of the existing number of extension staff.

Lack of Qualifications and Motivation Among the Extension Staff: Agricultural instruction requires a minimum qualification. At least the majority of extension workers in Kenya seems to have received training providing this minimum qualification.

However, for each extension project certain specific training is required. The type of training depends on the innovation and the relevant agricultural, social, economic and infrastructural conditions of the project

area. These specific training requirements, we think, should be part of each extension project.

Studies in Kenya and other countries show that there is very little correlation between the general education of the extension staff member and his job performance. There are even studies showing a negative correlation. (See Leonard, 9, 10, 14.) It seems that motivation is the one crucial factor for job performance. Motivation cannot be explained solely in terms of personality. Motivation is to some extent a result of certain conditions under which a person works. Most interviewees agreed that a very typical feature was that extension staff in the field did not have well planned and organised working programmes. They sometimes have general or specific targets such as to promote agriculture, to promote hybrid maize, to induce twenty farmers to start growing Mexican 142 pea beans, to prepare four demonstration plots for fertiliser trials, etc. Sometimes the extension staff member is able to meet such targets, but reaching targets often has little effect on the adoption of innovations; for example repeatedly in SRDP areas fertiliser demonstrations were conducted where farmers had refused to give control plots because they knew very well about fertilisers and considered control plots a waste of land. They were only interested in the fertiliser 'demonstrations' (free of costs). The field staff met certain quantitative targets in this case which had no relevance for agricultural development. The risk of irrelevant target setting is high if extension is not carried out as part of a well devised programme. Most extension workers have no specific programme to help them carry out their more general tasks.

It is to be expected that extension workers who do not have an adequate implementation programme will fail to a great extent in bringing about an innovation process among farmers. This will in turn tend to undermine the motivation of these workers. The situation would be different if the extension worker were integrated into a well planned and implemented extension programme. Then he could perceive whether or not he was successful. He would see his own contribution more clearly.

A further point often made concerning the motivation of extension workers was that there is no official reward for good extension performance and that even if an extension officer performs very well for many years he still finds that his chances for promotion have not improved.

This is a serious problem. A number of unofficial encouragements do exist; for example, an instructor's prestige among the community and among the officers depends to some extent on his performance. However, this is hardly an adequate solution to the problem of professional rewards.

Lack of Transportation Facilities: It has to be acknowledged that travelling is necessary to carry out extension work. A.A.O.s must see their staff in the field regularly, and the field staff should be able to travel to the A.A.O.s' (or district) offices from time to time to settle project matters. Each field staff member at a locational or lower level should have a bicycle.

Yet there is little evidence that allocation of vehicles, motorbikes or petrol beyond the minimum requirements would significantly improve the efficiency of the extension service under its present conditions. We are of the opinion that if there is a shortage of transportation facilities, extension should initially be organised in line with the facilities available. If there is a shortage of facilities, one response would be to organise extension activities in such a way that travelling is minimised. This can be achieved by directing extension efforts to groups of farmers. Using groups in extension is widely recommended in the literature for many reasons, not least of which is the advantage of reduced travelling. The typical extension approach of visiting scattered individual farmers is surely far less efficient than an approach which would have extension staff visit, say, a group of ten farmers in one part of a sublocation and a group of twenty farmers in another part. The particular groups contacted could be changed from season to season or from innovation to innovation to avoid giving too many services to the same people.

There are wide possibilities for improving efficiency without increasing travel. A sublocation comprising, say, 500 farming households could be organised into two dozen groups, each having its own chairman. The extension worker could even ask those chairmen to come to him, perhaps at the central market place, for certain instruction purposes. Good extension is still possible with limited transportation facilities.

SRDP Experiments to Reduce Extension Inefficiency

In all six SRDP areas, the efficiency of the extension service was considered by officers concerned to be a crucial factor for the

promotion of rural development. And in all areas more or less systematic efforts had been made to improve the efficiency of the extension service.

We stated the two basic efficiency criteria for extension earlier:

1. The extension service's ability to introduce innovations to certain people and certain areas, and
2. The ability to promote the spreading (diffusion) of innovations among the people.

We then discussed the most important constraints as perceived by the officers concerned, which affect the efficiency of extension: (1) the shortage of staff, (2) staff members' lack of qualifications and motivation, and (3) very limited transport facilities.

We shall now turn to the instruments or methods which have been tested to overcome these constraints. The methods tested for increasing extension efficiency come under four headings:

- 1) Methods to improve the individual working performance of the extension staff;
- 2) Methods to make the extension structure (especially communication between staff and farmers) more efficient;
- 3) Methods to mobilise and utilise the farmers' own initiative for extension; and
- 4) Methods to directly approach those farmers who guarantee the most efficient spreading (diffusion) of innovations.

The fourth category of methods, which is basically directed towards the second efficiency criterion of promoting the diffusion of innovations among farmers, is described and evaluated in the second half of this chapter.

Experiments to Improve the Individual Working Performance of the Extension Staff

The Agricultural Extension Staff Management System (Mbere): One of the systematic efforts to improve the performance of extension staff was carried out at Mbere in the early stage of SRDP. This project encompassed both

crop and livestock extension.¹ The implementation was monitored by researchers. (Chambers, 17)

The project had two components:

- 1) A detailed (but not sophisticated) reporting system for the lower extension staff was designed to improve the communication flow within the extension staff. This was thought to be a precondition for better decision making (planning), setting realistic targets, identifying constraints and providing better control and supervision of the activities on the sublocational and locational levels.
- 2) Monthly management meetings, held in each location, had the purpose of extension planning. The reporting system could be utilised for this. Furthermore, the participation of the lower extension staff in planning aimed at improving the motivation of the lower staff for better work performance.

The researchers who had monitored the project stated that it appeared to bring about the following beneficial results:

- Close operational control of staff work,
- More realistic target-setting,
- Better knowledge by supervisors of their subordinates and of what they are doing,
- Better motivation through participation in preparing work programmes and setting targets,
- A clear idea of who is reached by extension work through the accumulation of records of farm visits,
- The stimulation of farmers' interest through the farm visit books which have been in demand by farmers, and
- Harder and more effective work by junior staff.

Unfortunately there was no further monitoring and evaluation in Mbere and the project has withered away after the research input was withdrawn. Generally we believe that this experiment was a very appropriate trial to reduce supervisory and communication problems which are an important factor in the lower extension staff's work performance.

1. The system is discussed in more detail in the chapter on S.R.D.P. Administration in this Report.

The Master Farmer and 630 Farmers Projects in Migori and Intensive Extension Projects in Kwale: Some other projects, aimed at improving work performance, were based on the concept of allocating the services of the junior extension staff to a few most progressive farmers. Those farmers would be known to the senior staff so that extension activities could be controlled much more easily. This approach was used in the early 'Master Farmer Project' and the more recent '630 Farmers Project'. Each of the 63 extension workers was supposed to concentrate on 10 farmers in Migori, but neither project was implemented.² The 'Intensive Extension Project' devised for Kwale (but not yet implemented) seems to follow a similar concept although it is not yet clear whether only most progressive farmers are supposed to be recruited. We do not consider the concentration on most progressive farmers to be efficient for the reasons discussed earlier. But there are also other reasons for being sceptical about an approach which concentrates advice, training, inputs, credits, pest and disease control measures, special marketing arrangements, farm management devices, etc. on a minority of farmers - irrespective of whether they are more or less progressive.

It may be possible to improve the agricultural practises of these farmers significantly, but this occurs under rather artificial conditions, under protection and intensive assistance. Once protection and assistance have been removed, there remains the risk that the once favoured farmer can not keep up the standard he has reached. One should keep in mind that helping a few farmers improve does not change the administration, communications and marketing facilities of a whole area, and these facilities are often inadequate to maintain a high general standard of farming. However, the so-called most progressive farmers, no matter how they have attained this status, usually do not depend on the general administrative, communications and marketing channels. Typically under dualistic economic and social conditions, they have channels of their own.

2. The reason for not implementing the 'Master Farmer Project' was described in the first I.D.S. Evaluation Report (1972). In short, it failed due to uncoordinated planning activities between the expatriate team (then stationed at Migori) and the Kenyan officials. The farmers for the '630 Farmers Project' never were recruited. The recruitment was supposed to be done by a special committee chaired by the DAO, but the DAO never took action to start the project.

But even if the minority of specially assisted farmers achieve a lasting high standard of farming, this standard can hardly spill over to other farmers, because the various innovations and far-reaching changes in economic and social behaviour are too complex and new for an average farmer confronted with them all at once, and lacking special assistance.

These two factors far outweigh the fact that innovation can be achieved more easily the greater the advantage of the innovation. (Rogers, 18) No doubt in terms of income, innovative farming methods show great advantages compared with the income of the ordinary farmer. Most probably the common farmer would realise this. But the accumulation of a number of innovations necessary for a high standard of farming took years of concentrated extension effort among a few farmers. This is perceived as a highly complex entity, and it is usually impossible for the average farmer to see the various components of the innovation entity and ~~their interrelationships~~. The whole system of innovation (called 'high level farming') becomes impossible to adopt due to its complexity.

Further research revealed that when a particular innovation is compatible with the conditions of a potential adopter, the probability of actual adoption increases. (See Rogers, 18.) High level farming methods involve so many changes that an average farmer will not consider this entity of innovation relevant to his own situation. If the same farmer were confronted with the single components of the innovation system, he would be much more likely to consider these relevant to his own farming conditions.

From this we have to conclude that the step-by-step approach (successive introduction of less complicated innovations) is more efficient for diffusing innovations among the majority of farmers. The farmers who are just a little more innovative than the others have the highest chance to function as models or reference persons for the others. Innovations spread more effectively from the marginally more innovative farmers than from those who are far ahead of the general farming practises.

Coming back to the original purpose of this approach - the improvement of the work performance of the field staff by concentrating their work on improvements for a few farmers - one is forced to conclude that this working performance is irrelevant if the economic effects are low by definition compared with the potential effects of other extension approaches.

Field Staff Inservice Training for Project Preparation: In recent experiments in SRDP areas in Kisii and South Nyanza, the I.D.S. researchers in cooperation with district agricultural staff and the Institute of Adult Education attempted to determine how the working performance of the lower staff could be improved by means of inservice training. During a one-week training session at the Farmer Training Centre(F.T.C.) to prepare extension staff for organising a soya bean extension project, emphasis was placed on increasing the motivation of staff members for better performance. This was based on the widely accepted theory that the motivation to carry out a particular job will be improved:

- (1) If a person expects that the outcome of his work will be of value,
- (2) If he knows exactly how to carry out this work, and
- (3) If he himself has some responsibility for planning this work (participation for identification).

The first step of the course was to discuss the advantages of the innovation for the farmers as well as the advantages of the different components of the extension project such as farmer recruitment patterns, farmers' field training, demonstrations, etc. The second step was to equip the staff with the practical skills they would need to introduce the innovation and ensure its extension. The third and probably most important step was to involve the extension staff in programming and planning the extension project for its implementation at the locational and sublocational level. The staff members had to draft their own outlines for instructing the farmers and conducting demonstrations on the farmers' fields. They also had to prepare their own action programmes for extension, which, of course, were discussed and coordinated afterwards. These action programmes were precisely specified and timed and then officially accepted or amended by the senior staff. The adoption results were extremely good. (See Table 1.)

This Inservice Training Programme as well as the Extension Staff Management Programme described earlier had very similar objectives but used different instruments to achieve them. There are arguments showing advantages for both instruments. Inservice training cannot be held very frequently. It is not suited for handling day to day extension problems. The Staff Management Programme, although most helpful for day to day management, probably is inadequate for extension projects which

need more detailed preparation than what is possible in a management meeting. Therefore we recommend that new extension projects or changes in extension strategies (and methods) should be introduced to the staff by means of inservice training including the motivation component described. Implementation can be controlled and supervised efficiently by the Staff Management System.

Experiments to Make the Structure of Extension Work (especially Communication between Staff and Farmers) More Efficient

The group approach in extension is already practised by some extension staff. A common practice of the more active extension workers is to address farmers during Chiefs' and Assistant Chiefs' barazas, and this method is closely related to the group approach. But we are not aware of any systematic or regular arrangements by which extension agents approach farmers in groups.

One of the problems articulated by extension staff members themselves is that they are simply unaware of techniques for establishing group extension systems among farmers. There is usually not much response among farmers if an instructor merely goes around and tells a number of farmers to form a group. To our knowledge the only experiments with the group approach which have been carried out were those made during the SRDP replication experiments in Kisii and South Nyanza in 1974 and still ongoing.

With the creative involvement of some experienced officers (D.A.O., Kisii, A.A.O., Migori, Locational Instructor of Kanyamkago (Migori) and Wanjare (Kisii) Locations), a simple but effective group recruiting pattern was developed with the following organisational steps:

1. Extension staff informs Chief and Assistant Chiefs about the recruiting pattern. Then Assistant Chiefs are requested to call sublocational barazas for the purpose of forming farmers groups for agricultural extension.
2. Sublocational baraza;
 - a) Farmers get detailed explanation about the groups;
 - b) Farmers have to choose by voting a rather small initial area with no interference from administration or extension staff;

c) Farmers have to propose farmers from the selected area to be members of the group. Only neighbouring farmers can be selected. Finally farmers select by voting a specific number of the nominees to form the group.

3. The group members select by voting their chairman and secretary.

The most important elements are area-based selection and the popular selection procedure. Area-based selection guarantees firstly that group members represent the average farmers³ and secondly that the supervision by extension staff is easy and efficient. Popular selection promotes not only community control of those who are chosen to initiate an innovation, but also provides a social basis for the selected farmers to form a cohesive group.

This group recruitment pattern was altered in connection with the establishment of Agricultural Village Committees (which will be discussed later) in the Migori SRDP area. The community first selected the group leaders who later formed the area-based groups on their own.

Both patterns resulted in functioning groups. The latter pattern has administrative advantages if many groups have to be established within one sublocation.

Communication between the extension staff and the farmers is conducted through the group's representatives and/or the group of farmers in toto. For example, the instructor might arrange the date for a planting demonstration with the group chairman. The chairman in turn communicates this message to his farmers, selects a demonstration plot and asks all farmers to come at the appointed time. The instructor then carries out the demonstration, and afterwards the group leader supervises implementation of the demonstration on the plots of the group members.

3. In the rural areas of Kenya more and less progressive farmers are distributed rather normally over an area. One seldom finds geographic concentrations of either more or less progressive farmers.

During the first stage of experimentation with groups in Kisii and South Nyanza during the long rains of 1974, one instructor was allocated for each group of twelve farmers. During the second stage in the short rains of 1974, one instructor had to look after several groups (up to about eight).

The results from the first stage are shown in Table 1.

Table 1. Successful adoption of soya beans by group and individual extension approaches.

Area	Number of farmers recruited	Allocation of extension staff	Number of farmers who planted	Number of farmers who marketed
Kisii	72 (6 groups)	6 (one for each group)	72 (100%)	72 (100%)
South Nyanza	22 (2 groups)	2 (one for each group)	22 (100%)	22 (100%)
Control Unit	12 (individuals)	3 (one for four individuals)	12 (100%)	7 (58%)

Although the extensionist-farmer ratio was three times higher in the control area (this ratio was considered necessary by the extension staff of the project there), more than 40 per cent of the individual farmers failed compared with 100 per cent success of the groups. Furthermore only 2 (less than 20 per cent) of the individually approached farmers had yields above 7 bags per hectare (highest yield: 15 bags/ha), whereas about 50 per cent of the 94 farmers organised in groups achieved this result (highest yield: 19 bags/ha).

Twenty-seven of the extension workers, all of whom had experience with the group approach during the first and/or second stage of the soya bean project, were interviewed about their experience in working with groups of farmers. They were asked to comment on the advantages and disadvantages of this method. Of the 27 interviewed, 25 mentioned only advantages. The following advantages were mentioned most often:

14 extension workers said that more people can be reached than with the individual approach, and information spreads quickly among the farmers;

13 stated that the work is easy or quick and saves time;
9 mentioned that supervision and follow-up were easier, and
they had better control of problems;
2 responded that the extension results are better;
1 said that teaching and instruction is more thorough;
and
1 gave no answer.⁴

This means that the field staff - once used to it - clearly recognises the advantages of the group approach.

Experiments to Mobilise and Utilise the Farmers' own Initiative for Extension

Some extension work can be carried out by farmers themselves if the extension service succeeds in mobilising them for this task. The group approach has a built-in mobilising component, since the groups and their leaders organise a substantial part of the extension work themselves.

The extension service does not fully exploit the potential for utilising the farmers themselves for extension when only one or two groups are formed in each sublocation. This was realised by officers in the Migori SRDP area. On the initiative of the A.A.O. from Migori Division, Agricultural Village Committees were introduced - an institutional innovation meant to mobilise the population for extension. Agricultural Village Committees were established in all 23 sublocations of Migori and Macalder Divisions in mid-1974. They are meant to be established in Kihancha Division of the Migori/Kihancha SRDP area as well. Asked about the background of this project, the A.A.O. quoted his earlier experience during land consolidation and sugar extension for outgrowers at Muhoroni where village committees had played a useful role in mobilising the people. Agricultural Village Committees aim to reach everybody, at least everybody interested since the whole organisational set-up is based on the following rules:

1. The sublocational community elects committee members at Assistant Chief's barazas who will be the leaders of area-based groups from different parts of the sublocation.

⁴. There are more than 27 responses since many interviewees gave more than one answer.

2. Committee members then form area based groups in their home neighbourhoods. Membership is voluntary.
3. Agricultural Village Committees meet weekly. They decide about extension matters and watch the farmers' cultivation practises as well as the performance of extension staff.
4. The Village Committee member, who is chairman of his neighbourhood group, or his deputy keeps a book where he enters all extension-related visits and activities of the group.

A comprehensive evaluation of the Agricultural Village Committees is not yet possible, but there are already indications which show that this method for mobilising farmers for extension is very promising. During the short rains of 1974, these Village Committees had mobilised 1200 farmers in the Migori and Macalder Divisions for growing soya beans. Unfortunately, seed was available for only 310 farmers but all 310 planted and harvested. Furthermore, about 100 farmers adopted Mexican 142 pea beans. Here as well, the seeds were the only limiting factor.

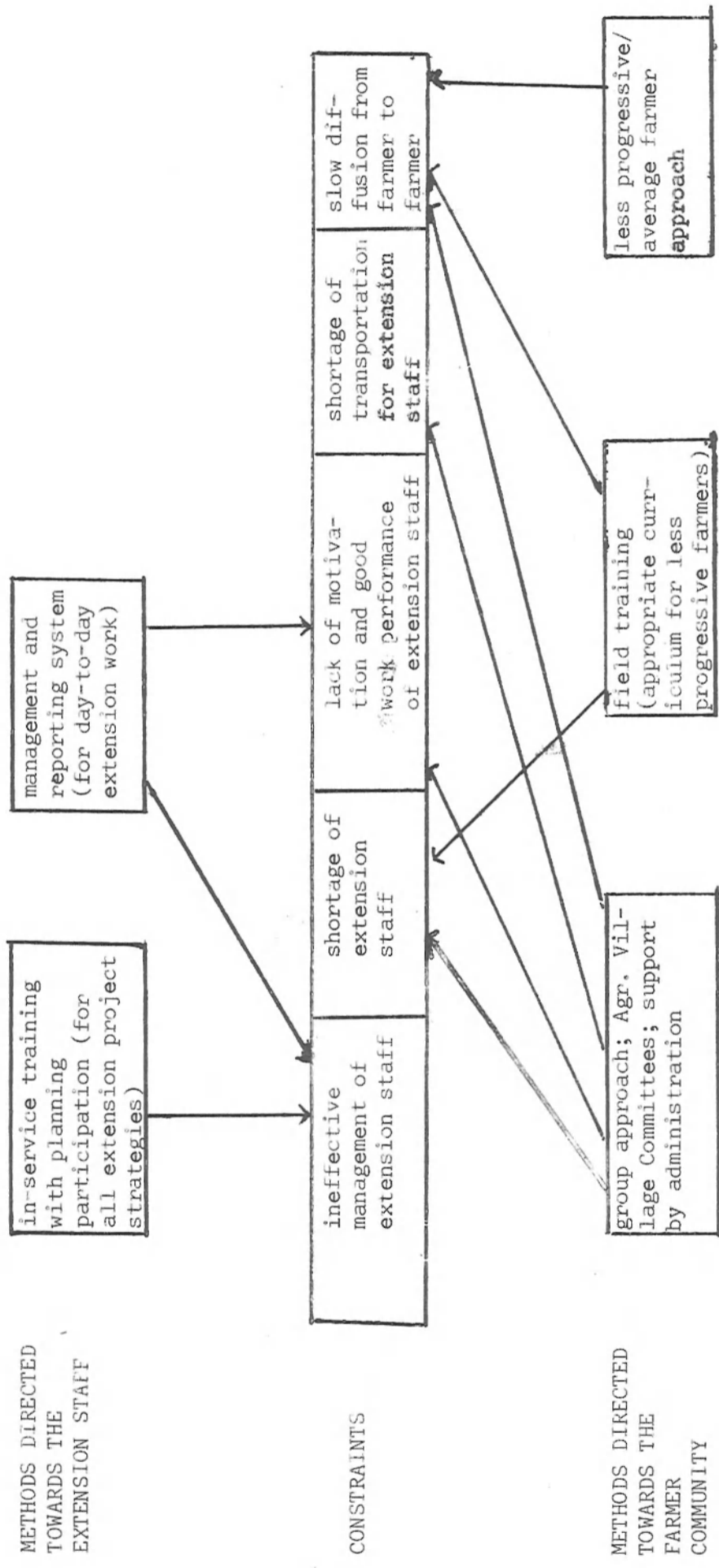
Early in December 1974, it was decided to emphasise adoption of tobacco strongly in Migori Division. All who have experience with tobacco extension know how difficult it is to convince farmers to build the big curing barns necessary for treatment of the tobacco leaves after harvesting.

In the second week of January 1975, more than 300 farmers had started building the barns, and most of them were already thatching the roofs. This tremendous organisational achievement within such a short period of time was only possible because the farmers were mobilised and partly supervised through their Village Committees. The extension service merely gave technical advice.

Another advantage of Village Committees is that they have reported irregularities or negligence of extension staff to superior officers, showing that they can also function as a control institution for the extension staff. The officer who introduced these committees views them as another form of Harambee oriented towards agricultural development.

The central section of Figure 1 shows the basic problems facing present extension services in Kenya. The top section shows the various approaches directed towards extension staff which have been tested with a view

Figure 1. Summary of Experimental Methods for Improving the Efficiency of Agricultural Extension.



to reducing the basic problems. The arrows indicate which approach is directed towards resolving which problem. The bottom section shows the approaches directed towards the farmers. Again the arrows show which approach is directed towards which problem area.

Finances

The experiments which were found to be successful followed the principle of better utilisation of existing resources. They aimed especially at more efficient utilisation of the existing extension staff and of the initiative of the farmers. Effective intensification of extension activities was combined with methods for very considerably reducing the costs per farmer. The only minor additional costs occurred in connection with the Management and Reporting System, because some additional stationery was necessary. Credit schemes as components of extension such as in the Tetu Extension Project, should be considered ordinary agricultural finance activities and not specific extension costs (see also the chapter on credit).

S.R.D.P. PILOT TRAINING PROJECTS FOR EXTENSION INVOLVING LESS PROGRESSIVE FARMERS IN TETU AND OTHER TESTING AREAS

This section deals with farmer training and equitable rural development in the context of extension, in particular with the project carried out in this area in Tetu. This evaluation is reported separately in line with the request of the Kenya Ministry of Finance and Planning. In this section we shall refer frequently to 'less progressive farmers', meaning those farmers who do not belong to the minority elite who are fully involved in the agricultural development process. In most parts of Kenya three quarters or more of the farming population can be considered less progressive.

Basic Objective and History

The basic objective of this project was to accelerate rural development by mobilising the economic potential of the masses of small-holders lagging behind in agricultural development. The same objective was sometimes formulated in other terms, namely to promote more equitable rural development by involving the less progressive farmers in the income-generating agricultural development process with a high benefit-cost ratio.

The project was started at Tetu in 1972. A special training programme combined with an input credit and input supply system was designed to encourage less progressive farmers to adopt hybrid maize. These experiments were continued in Kisii and South Nyanza in 1974, and are still going on. In these places less progressive farmers are encouraged to adopt soya beans. All these experiments were implemented by government staff within and outside the SRDP area, and continuously followed up by action research (carried out by I.D.S. researchers) which was financed by SRDP funds. Thus, in terms of research, all these experiments are part of the SRDP, but in terms of implementation the experiments are partly SRDP, partly replication of SRDP and partly ordinary district projects.

Strategies and Project Components

Selection of Less Progressive Farmers: Quite a number of experiments had to be carried out to find a workable pattern for recruiting less progressive farmers for extension activities (training, as demonstrators, for farm visits, etc.). These experiments can be divided into three stages:-

Stage 1: Target group: below average farmers. The intention (Tetu) was to reach those farmers who were below average in agricultural progressiveness.

Selection method: below average farmers were identified by a survey (farm record cards). The extension staff was supposed to carry out this survey and finally to establish a farm record card cabinet.

This method worked well with a great deal of assistance from I.D.S. researchers, but it was too sophisticated for replication by locational and sub-locational staff. Therefore, it was later recommended to discontinue this method and search for alternatives.

Stage 2: Target group: below average farmers. (Tetu) Selection method: below average farmers were identified by the absence of certain innovations (farmers never planted hybrid maize and never raised grade cattle).

This method was more practical, but there were still problems in controlling the selection behaviour of the extension staff. Replication

in other areas would probably require different items of innovation whose absence would identify below average farmers. A further problem is that many progressive highly specialised farmers (e.g. mono-cash-crop growers) could fit under the same selection criteria as below average farmers.

Stage 3: Target group: average farmers.

(Kisii/ S. Nyanza) Selection method: groups of farmers selected in clusters by the sublocational community.

The reasoning behind the change in the target group from below average to average farmers was an efficiency argument: the benefit/cost ratio of extension was considered to be highest if those farmers were approached who form the majority of the peasant community - the average farmers. (For the theoretical reasoning behind this concept, see 12.) This is the largest fairly homogeneous group, and the diffusion process among these farmers can be expected to be rapid. Groups of farmers - all farmers being neighbours as far as possible - were selected by the sublocational community. Clusters of farmers were selected because area-based groups generally represent average farmers since more and less progressive farmers are fairly normally (randomly) distributed over an area. Any intentional bias in favour of more progressive farmers is therefore not possible. Besides being a very simple selection method which can be controlled easily, the selection of clusters of farmers facilitated the exploitation of group extension methods. The selection of the potential first adopters and demonstrators by the community (and not by staff) aimed at social mobilisation (more communal interest and communal pressure for adoption). Further details were discussed in the section on results of SRDP experimentation in agricultural extension.

In conclusion, the most efficient selection method for agricultural extension was the orientation towards average farmers selected in area-based groups.

Training: Training in F.T.C.s is criticised widely in the literature and among officials. The basic points of criticism are:

5. This is quite different from urban areas where different social groups are concentrated in certain areas.

1. The training often is not appropriate to the farmers' needs. It is too general and not oriented toward solving the farmers' specific problems. Often there is no curriculum, and usually farmers are treated as students and not as adults.
2. Fewer farmers attend F.T.C. courses than expected. Many F.T.C. run courses very much below capacity. Further it is argued that F.T.C.s are rather costly institutions in terms of the number of farmers who are actually trained within a year.
3. There is consensus among the officers concerned with farmers' training that the efficiency of most of these training institutions must be raised very significantly to justify their existence.

The SRDP experiments contributed towards finding more efficient ways to utilise existing training facilities and staff. These experiments were based on the concept that the purpose of farmers' training should be basically to motivate and enable less progressive, average farmers to adopt agricultural innovations.

The development of efficient training methods as part of the SRDP experimentation took place in stages:

Stage 1: Three days of training for farmers in an F.T.C. (Tetu) The experimental aim of the training had two components: First to develop an efficient teaching method for training less progressive, often illiterate farmers. This teaching method was based on group discussion with farmers, rather than lecturing in its narrow sense. The function of the teacher was to guide the farmers who discussed step by step all the course content.

The second component was a standardisation of training programmes for agricultural innovations. It was considered that each course should have the following standardised structure:

1. To create an economic motivation among the course participants to adopt the innovation by clarifying the advantages of the particular innovation.
2. To give the farmers a thorough knowledge about all aspects of the innovation (husbandry, seeds, marketing, credit availability, etc.).
3. To practice certain skills required for the innovation with which the farmers were not previously familiar.

This standardised structure was filled in with a detailed curriculum for each innovation. The farmers were considered the teachers' partners, and it was stressed that they had a great deal of practical agricultural experience which the teacher needed to mobilise for the course. The curriculum focussed on: (1) economic motivation to adopt the innovation (hybrid maize), (2) all aspects of husbandry related to the innovation and (3) understanding of the credit and input provisions.

In 1972/73, the training was monitored by researchers, and 798 less progressive farmers were trained. In 1973/74, another 210 received the training, but as of 1974/75 all SRDP training programmes have been suspended in Tetu due to lack of SRDP funds, according to the explanation of the local officers interviewed. The effectiveness of this course was evaluated by researchers in 1973, and they rated it highly in the sense that farmers adopted the innovation and precisely followed the instructions.

The final recommendation of the researchers, however, was that the role of farmers' training for accelerating rural development should not be restricted to F.T.C. training only. F.T.C. training is rather costly and has serious limitations related to the F.T.C.s' limited capacity for reaching many farmers quickly. Furthermore, many farmers have reservations about attending an F.T.C. course. The researchers recommended that farmers be trained in the villages whenever the more sophisticated training facilities of an F.T.C. are not necessary. This approach was later followed in Kisii and South Nyanza.

Stage 2: Training of farmers in the field.

(Kisii/

South

Nyanza)

Besides the limited capacity of the F.T.C.s, the F.T.C. teachers could only train a limited number of farmers in the field. However, in any district there are usually dozens and sometimes hundreds of field instructors (extension staff of the Ministry of Agriculture). If these field instructors could be mobilised to carry out systematic training, the scale of farmer training could be enlarged very considerably.

Since the basic activity of the extension staff is to instruct farmers, they have extensive informal teaching experience which should qualify them to conduct two-day formal training courses based on a standard curriculum.

In early 1974 the extension staff members of selected areas in Kisii and South Nyanza were trained to carry out two-day field courses in a one-week inservice course at the F.T.C. in Kisii. The curriculum for this inservice course was prepared jointly by Ministry of Agriculture staff, the Institute of Adult Education and the Institute for Development Studies. (See 7.) During the first experiment, F.T.C. teachers were seconded to the extension staff during the field teaching. In one location 6 instructors, assisted by 2 F.T.C. teachers, trained 240 farmers within 8 days to adopt soya beans.

In mid-1974 a second course for instructors was held in the F.T.C. at Homa Bay. The formal training of farmers in the field which followed was carried out by extension staff only. Within one month they trained more than a thousand farmers to adopt soya beans using the discussion method and following a curriculum with teaching handouts which had the three standard components.

Finally it should be mentioned that these particular inservice training course played a very important role in generally improving extension efficiency, as described in the first section, results of SRDP Experimentation in Agricultural Extension.

Credit: Cash for inputs was believed to be a major constraint in Tetu preventing less progressive farmers from adopting hybrid maize. Therefore, credit provision was considered an important part of the package approach

in Tetu. For the later experiments with soya beans, credit was considered of little importance. Loans were made as part of the hybrid maize project in Tetu, granted unsecured and without contract for all capital inputs plus the fees for the training course in the F.T.C.

The credits for the first group of farmers were financed by special funds and administered by the Area Coordinator; credits for the second and third groups were administered through the Agricultural Finance Corporation (A.F.C.). Only farmers who had attended the F.T.C. training course could receive loans. The incentive for repayment was supposed to be the granting of another loan.

The amount loaned each farmer varied slightly among the different groups. The third group received a total of Kshs. 120/- each. Ten per cent interest was charged per year so that Kshs. 132/- had to be repaid. About 98 per cent of the trained farmers purchased the inputs for hybrid maize on credit.

The loan repayment rates are shown in the following table.

Table 2. Repayment of hybrid maize loans in the Tetu Extension Pilot Project
(up to July 1974).

	Administered by	Number of loans granted	Full repaid %	Partly repaid %
First group ^a (1972)	Area Coordinator	217	83%	?
Second group ^b (1973) (1)	AFC	362	82%	7%
Third group ^b 1973 (2)	AFC	207	70%	7%

a. This information was received from the Area Coordinator by telephone early in 1974. It is likely that more farmers have repaid since then.

b. The data were compiled from the AFC files in Nyeri and cover the period up to July 31, 1974.

There was little organisational effort to collect the loan repayments for any of the groups. Two new Area Coordinators were transferred to Tetu during 1974 and both had little time to supervise repayment. Early in 1975 the Area Coordinator was transferred again. The A.F.C.

Branch Manager in Nyeri explained that the Corporation is not interested in these 'little loans' since the amount loaned to each farmer would not justify serious administrative efforts for collection.

He said that it was his impression that those farmers without title deeds were more likely to repay than those who had them, because the former had no alternative 'collateral' than a good repayment record, whereas the latter could always mortgage their land. This is an interesting observation which we had no time to investigate or verify. Conclusions and recommendations concerning smallholder credit are to be found in a separate chapter of this Report.

Finances

The extension Pilot Project in Tetu was administered basically by existing institutions. Special funds were only used for the credit component, which included the farmers' fees for the F.T.C. In Kisii and South Nyanza, no specific funds were involved in the Project. The Institute for Development Studies researchers who worked on this project were employed by the Institute independently of the SRDP. The cost of their activities was not charged to the Pilot Project. It could be argued that carrying out research for development is an ordinary activity of I.D.S. researchers.

Some Indicators of Efficiency in Extension to Less Progressive Farmers

The hybrid maize project in Tetu as well as the soya bean extension pilot project in Kisii and South Nyanza gave an indication that the combination of two objectives, acceleration of rural development and equitable development, is highly efficient. Furthermore a random sample survey showed that on average each of the 790 farmers who participated in the Tetu experiment influenced a further 2 to 4 neighbours, friends or relatives to adopt hybrid maize, although these neighbours, friends and relatives received neither loans nor formal F.T.C. training. This is an excellent diffusion effect.

In Kisii and South Nyanza, the soya bean project oriented towards less progressive farmers was started only recently, but already there are very encouraging results.

Table 3. Soya bean adoption in Kisii and South Nyanza with extension oriented towards less progressive farmer

	Adopters	
	long rains 1974	short rains 1974
	number of planters	applications for seed ^a
Kisii (only Wanjare and West Kitutu locations)	72	about 700
South Nyanza (only Migori Division)	22	about 1,200

a. The applications for seed are taken as an indicator of the diffusion process. Actual adoption depended on the very limited seed supply which could not satisfy nearly all the applications.

Although extension has to be intensified, if less progressive farmers are to become first adoptors of an innovation there is not necessarily any need for more finance. The Kisii and South Nyanza experiments have shown that extension can be intensified and the cost per farmer considerably reduced at the same time by training the farmers in the villages, utilising the field staff for training and using the group approach.

SUMMARY OF RECOMMENDATIONS FOR EXTENSION AND TRAINING

For the improvement of the effectiveness of Kenya's Agricultural Extension Service we recommend considerable changes in the present extension patterns. The recommendations focus on four aspects:

1. How agricultural development can be accelerated through extension without producing unwanted social and economic dualism.
2. How more farmers can be reached by extension without increasing the costs.
3. How the farmers' own initiative can be mobilised for extension.
4. How the working performance of the extension staff can be improved.

Recommendations for Accelerating Agricultural Development Through Extension
Without Producing Unwanted Social and Economic Dualism

1. Agricultural extension should not focus primarily on the most progressive farmers. The average farmers should be the primary target group. This will generate a stronger diffusion effect.
2. The most practicable method for identifying average farmers for extension is the group or cluster method: Extension activities are concentrated on an area-based group of farmers who all, as far as possible, are neighbours.
3. Making a few average farmers, or any other group, the best farmers by concentrating (intensifying) extension efforts on them is inefficient as well as inequitable. Agricultural innovations offered for adoption should be as simple as possible and as compatible as possible with the farmers' present conditions so that they can be widely adopted. Those farmers function as models who are marginally more innovative than the average farmers. From the 'best' farmers hardly any spill over can be expected.
4. For generating agricultural development among average farmers, unsecured loans were considered. Further considerations on this subject are discussed in the chapter of this Report on the Vihiga Small-Holders' Maize Credit Scheme. Cash constraints usually are less important than generally anticipated. The provision of unsecured loans must be restricted to conditions guaranteeing a high repayment rate. The repayment rate is expected to be considerably above 80 per cent in the first instance of repayment due if:
 - (1.) Only those farmers get unsecured loans who need loans urgently but have no security and no other loan resources,
 - (2.) The farmers get specific training on the nature and use of the loan,
 - (3.) The loans are given in a formal contract or document which gives a legal basis to enforce repayment,
 - (4.) The repayment collection is organised and administered carefully,

(5) Repayment is rewarding to the farmer, e.g. entitles him for another loan, and

(6) Defaulters are never written off.

Warning: Development projects based on provision of unsecured loans have a high risk of total failure (accumulative defaulting) and additional bad side effects such as spoiling the relations between farmers and development authorities. If the very careful handling of such a loan provision cannot be guaranteed it is better not to start with it and utilise the funds for alternative programmes promoting the development of average farmers (e.g. subsidised input supplies for a trial period, etc.)

Recommendations to Reach More Farmers by Extension Activities Without Increased Extension Costs

Group Approach

1. The basic method for initiating innovations (demonstrating, teaching, informing, mobilising) should be the group approach.
2. Exceptions from the group approach should be made only for innovations which are not feasible for average farmers, e.g. very sophisticated enterprises, innovations with very high cash inputs (without **sufficient** credit provision), innovations which have very limited markets or innovations which pay only with extraordinary cultivation skills.
3. To exploit fully the effectiveness of the group approach the groups should have leaders and the extension staff should communicate with the groups primarily through their leaders.

Farmer Training

4. A much greater proportion of farmers should receive training. This can be achieved if the farmer training which is usually done at F.T.C.s is taken to the farmers in the villages. This applies only to subject matter which can be taught without the specific teaching facilities provided in F.T.C.s.

5. Farmer training should be made more appropriate for the average farmer. One important change in training technique should be that the teacher considers the farmer not a student but an adult and experienced partner. Information should be transferred to the farmers basically by the discussion method. Two-day courses lasting from noon until late afternoon and taught in the villages proved to be successful.

6. Training courses should be standardised with the following three components:

- (1) Stimulation of economic motivation for adoption through discussing the advantages of the innovation,
- (2) Discussion which provides information about all relevant aspects of the innovation, and
- (3) Practise in certain skills required for the innovation.

7. Farmer training should not be exclusively the responsibility of F.T.C. staff. The extension staff should be used for training farmers as well. Enabling extension staff to teach farmers in the villages can raise the number of farmers trained tremendously.

8. For each training task the extension staff has to be prepared specifically and provided with teaching outlines (curricula). We recommend one-week inservice courses at the F.T.C. to prepare the extension staff for their teaching programme.

9. If farmers training in the villages is carried out by extension staff, it should be done jointly by two or three staff members. This reduces the risk of poor teaching performance by least qualified extension staff members. If F.T.C. teachers can be seconded, the risk of poor teaching will be further reduced.

Recommendations to Mobilise and Utilise the Farmers' own Initiative for Organising Extension

1. We very strongly recommend that the farmers' own initiative be utilised for extension. There are indications that this will be extremely effective in improving extension. Farmers' own initiative can be organised in

different ways. We recommend the organisation of farmers through group systems and through Agricultural Village Committees.

2. Only one or a few groups per sublocation can be formed, or, if it is considered appropriate to organise all or most of the sublocational farm community, Agricultural Village Committees can be set up.

3. Organising the farmers' own initiative for extension needs the voluntary commitment of the farmers. Therefore, the group as well as the Agricultural Village Committee systems must be based on voluntary membership and voluntary leadership. Leaders must be selected by the farmers concerned, never appointed by extension staff or administration.

4. The following patterns for forming groups or Agricultural Village Committees are recommended:

Forming Groups

- a. The farming population of a sublocation meets in the Assistant Chief's baraza where they get a thorough briefing by the Assistant Chief and M.O.A. staff about the purpose of forming a group for an extension project.
- b. The farmers select a rather small area within the sublocation where the group should be recruited.
- c. The farmers suggest names of potential group members from the selected area. Priority for selection will be given to those neighbouring each other. No exception should be allowed. The size of the group should not be less than 8 and not more than 20.
- d. The farmers who form the group select their group chairman and secretary.
- e. Group leaders should be farmers working permanently as agriculturists in the respective areas (not pastors, teachers, shopkeepers, etc.).

Forming Agricultural Village Committees

- a. The farmers meet at an Assistant Chief's baraza with a senior administrative staff member and an extension staff member.
 - b. The sublocational baraza elects the Village Committee members (about one to two dozen). The members are supposed to represent the various areas of the sublocation.
 - c. The selected committee members elect their chairman and secretary.
 - d. After this baraza the committee members form groups in their respective areas. Each member will be the chairman of one group.
5. The group leaders organise the farmers to attend demonstrations (which, of course, have to be carried out by M.O.A. extension staff), they organise the seed distribution and they take part in controlling the individual group members in regard to the extension project. The Agricultural Village Committees should have greater responsibilities. They decide about the allocation of inputs (e.g. new seeds) within the sublocation together with the extension staff.
6. Group leaders and Agricultural Village Committees should be entitled to report about the working performance of sublocational instructors to their superior officers.
7. The functions of Agricultural Village Committees should be carefully restricted to agricultural development issues. No mandate for political or other issues whatsoever should be given.
8. Since forming group systems is a community affair, the administration should be involved: administrative representatives must know about the purpose and must be present during the barazas. Without recognition of the group system by the administration, the groups and their leaders will be weak and unstable.

Recommendations to Improve the Working Performance of the Extension Staff

1. The extension staff member should be an extension generalist.
2. It should not be left up to him how he performs his day to day extension work. Rather, it is strongly recommended that the extension work be programmed. For each innovation to be promoted there should be a well organised programme precisely defining the roles of the staff members and the sequential implementation steps, giving a detailed time table and incorporating a practicable system of supervision, communication and control as well as methods for identifying and resolving any problems which may arise during implementation.
3. Each extension project should be started with specific inservice training for all divisional and subordinate staff members involved to prepare them for their specific tasks within the project.
4. This inservice course should have the following components:
 - a. Staff should be prepared for teaching farmers in the village (as recommended above already).
 - b. Staff members should be briefed about all aspects of the particular extension project.
 - c. Staff members should participate in the detailed planning for the locational and sublocational level.
 - d. A senior staff member (D.A.O. or Crop Officer) should participate in the course at least part of the time since he must approve the plan details drafted by the extension staff.
5. A simplified Extension Staff Management System should be adapted for the group extension system. It should function as a day to day supervision system for the extension exercise on all levels up to the District.
6. All locational and sublocational extension staff members should have bicycles. This should be controlled regularly. There should be control of the use of bicycle allowances as well. Staff members should be encouraged to purchase bicycles. If Agricultural Service Centres are

established to serve Agricultural Village Committees, Government-owned bicycles could be posted in these Centres for the use of extension staff.

7. The rewards to individual extension workers for good work performance are not adequate. We recommend that this situation be improved, although no specific proposals are presented here. An upgrading system combined with further training or some sort of achievement bonus could be considered, among other alternatives.

8. The problem of identifying good or weak extension staff members can be reduced by the introduction of group extension. Control of the field staff's work performance is ~~also~~ ^{also} ~~improved~~ ^{improved}.

Recommendation for Replication Procedures

1. Extension should be considered as a package consisting of a number of components. Replicating just one improved component will not show high benefits, even for that component. The various components are highly interdependent - they influence each other. Therefore we recommend replication of a whole package of improved extension methods.

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CHAPTER NINE
IMPROVEMENTS IN KENYA'S LIVESTOCK ECONOMY:
LESSONS FROM THE SRDP

Kenya's livestock economy is extremely heterogeneous. Physical environments vary through the whole spectrum from semi-desert to rich agricultural areas and thus farming systems vary from pastoral nomadism to intensive mixed farming. The cultural backgrounds of farmers and pastoralists are equally disparate. We shall therefore discuss separately the general problems of livestock economy and, in another chapter, those of the ranching areas.

THE 'SPECIAL' ELEMENT IN SRDP LIVESTOCK PROGRAMMES

There is very little 'special' in the SRDP sense (i.e. experimental and potentially replicable) about efforts at livestock development in the SRDP areas, and in some respects we should not expect there to be. In the case of livestock, the general requirements of a development programme are fairly clear and have been so almost from the outset: increased interest by pastoral peoples in commercialised operations, the introduction of proper range management and regulation of livestock numbers in the range areas, control over disease, upgrading of livestock and improvement of marketing facilities. The problem has been rather one of implementation, together with lack of funds. It follows that improvements under SRDP have been largely within the confines of this framework, and are more difficult to distinguish from what could be considered a normal development programme than in the case of, say, crop experimentation.

Table 1 gives the livestock projects listed under the SRDP in each of the six areas at the time of our evaluation. The comments made concerning project descriptions in the overview chapter at the end of this Report apply with particular force here. There are still listed projects which are in fact no longer in existence. Some of these are failed projects, such as the idea of bull camps in Kapenguria, which nevertheless were not deleted; others are projects which never got 'off the ground', such as fodder and ley establishment in Kapenguria, and pig production in Vihiga - either because they were ultimately not approved, or funds proved inadequate, or because the local officers themselves realised at some point that they were impracticable. In the case of the beef production experiment in Tetu, the Area Coordinator (admittedly new) could not specify the content of the project, and it turned out to be one

Table 1. Livestock projects listed for the six SRDP areas.

<u>Migori SRDP</u> 1. Livestock marketing 2. Model dairy farms 3. Animal disease control 4. Dips programme 5. Pig demonstration	<u>Kapenguria SRDP</u> 1. Livestock marketing 2. Group ranching 3. A.I. services, Mnagei 4. Bull camps 5. Fodder and ley establishment 6. Stock and milk census 7. Dip construction 8. Sheep development, Lelan
<u>Mbere SRDP</u> 1. Ranches 2. Livestock production 3. Livestock improvement 4. Disease control 5. Dips	<u>Vihiga SRDP</u> 1. Dairy cattle and milk production 2. Livestock staff build-up 3. Pig production 4. Poultry production
<u>Tetu SRDP</u> 1. Dairy products 2. Beef production experiment 3. Dips 4. Pigs and poultry production	<u>Kwale SRDP</u> 1. Mwereni group ranch 2. Animal health and husbandry

listed in the original SRDP proposal of 1969 which had simply been carried forward.

There are, secondly, what may be termed 'non - projects', activities which cannot properly be termed projects. Some consist of very general titles, such as livestock production (Mbere), animal health and husbandry (Kwale) and livestock marketing (Kapenguria). Others are at most component parts of an integrated programme such as dip construction and 'disease control' and 'livestock improvement' (Mbere), which are only supports to productive activities. In the case of dips, a special element is the offer of 50 per cent funding by the Government from SRDP funds as an incentive to self-help: but this assistance cannot really be described as a project.

Finally there are activities which may be new to the area but which are already in practice elsewhere. These may be experimental, but are not replicable as they are already replications - the experimental aspect is to see whether the activity may be replicated in this particular area. This would be true of artificial insemination services in Kapenguria and Vihiga, and of pig and poultry production.

Thus the livestock projects actually in existence under SRDP turn out to be either part of what would be a 'normal' livestock development programme in Africa, or part of an integrated or larger-scale effort to improve the livestock economy, or are simply new to the area rather than of the experimental/replicable type. This does not mean that no general lessons may be drawn from the livestock experience under SRDP: indeed we shall attempt, by reviewing the experience of these areas¹, to indicate some elements of a possible strategy for livestock development outside the ranching areas.

THE EXAMPLE OF TETU AND NYERI DISTRICT

An interesting approach to dairy production extension was carried out under the Tetu SRDP. Credit was given through the Agricultural Finance Corporation for the purchase of grade cattle, and the procedure was to start by selecting 300 farmers on a randomised basis for a single week's training in farm management and dairy production at the local Wambugu Farmers' Training Centre, initially during March 1970. None of the farmers selected owned grade cattle. Those who were less keen to proceed and those less obviously suitable were eliminated and the remaining 100 - 25 from each of 4 locations - were offered credit for the purchase of just one or two grade cows each. The average acreage owned by the farmers was only slightly higher for the sample group than the average of 4.8 acres for Tetu as a whole. Later, because of the scarcity of pasturage, credit was made available for foidders, apparently with success, and even zero grazing (with stall feeding) has been successfully carried out in some cases. The scheme has since been multiplied, and now about five times the original number of farmers are said to have obtained cattle, partly by purchase from the first group, and have passed through the short course of instruction at the F.T.C. This would suggest that management problems can successfully be surmounted, in favourable conditions at least, without favouring large farmers and even when assistance is spread thinly, including to those who are newcomers to the particular activity in question. While conditions in Tetu might be considered special, the experiment is potentially of considerable significance for dairy extension strategy,

1. In the case of Mbere, only ranching is considered, in Chapter Ten of this Report.

and we suggest below that partial replication in Kakamega District should be attempted.

Apart from this dairy project, there are pigs and poultry production projects which will be discussed separately, and "dips" which was listed as a project in Tetu as in other SRDP areas. The only other live-stock project listed is in beef production, which originates from the 1969 list of SRDP projects but has never been pursued.

Nevertheless, it will be instructive to examine briefly the salient features of livestock development in Tetu, as representative of Nyeri District. Livestock management on small farms in Nyeri has reached an advanced stage in comparison with most other areas and should offer some guidance for the long-term development of other regions and for a national strategy for the development of smallholder dairy production.

While other SRDP and non-SRDP areas are experimenting with the introduction of grade cattle on a small scale, often to progressive or 'model' farmers as in Migori, in Tetu Division most or all of the cattle will soon be grade animals. Table 2 shows that the percentage of grade animals in Tetu Division was approximately 85 per cent in 1974 and is likely to equal 90 or 95 per cent in 1975.

Table 2. Grade and indigenous cattle in Tetu Division, 1969-74.

	1969	1970	1971	1972	1973	1974
Grade cattle over 15 years	3,410	15,297	12,164	8,961	13,651	14,723
Grade cattle under 15 years	12,451	4,681	4,550	8,530	6,650	7,339
Total, grade cattle	15,861	19,978	16,714	17,491	20,301	22,062
Indigenous cattle over 15 years	2,673	7,205	6,909	4,365	4,109	3,146
Indigenous cattle under 15 years	7,055	1,488	1,473	1,643	335	928
Total, indigenous cattle	9,728	8,693	8,382	6,008	4,444	4,074
Percentage grade animals, over 15 years	56	68	64	67	77	82
Percentage grade animals, under 15 years	64	76	74	84	95	89
Percentage grade animals, all ages	62	70	67	75	82	85

Note: Figures for earlier years especially may be inaccurate.

Source: Tetu Division Annual Reports.

The percentage of grade animals in Nyeri District as a whole is not quite so high, but not far behind, as shown in Table 3: in 1970 the percentage of grade animals was 59 in Nyeri District as a whole compared to 70 in Tetu Division. An indication of the benefits from the conversion to grade cattle can be observed in Table 4. Despite an already high production level of nearly four million kilogrammes of milk in 1972, production of milk in Tetu Division was nearly doubled within two years.

Table 3. The increase in grade cattle population, Nyeri District, 1955-1970.

	1955	1959	1961	1965	1970
Grade cattle	1,000	4,500	8,650	30,000	53,000
All cattle	65,000	76,000	74,000	75,000	90,500
Percentage grade animals	1.5	6.0	11.7	40.0	58.6

Source: (2).

Table 4. Milk Production in Tetu Division, January-November, 1972-74.

	1972	1973	1974	% increase 1972-1974
Quantity ('000 kgs)	3,855	6,678	7,450	93
Value (shs. '000)	2,598	4,592	6,697	158

Source: Tetu Division Annual Reports.

Price rises assisted in bringing revenue from milk in 1974 to almost seven million shillings. The contrast with the low production levels possible with Zebu cattle is striking.

At the same time, while many areas are struggling to introduce artificial insemination services for the upgrading of cattle the problem of the Veterinary Service in Nyeri is not to obtain acceptance of A.I. services, but to satisfy demand. Table 5 shows the recent expansion in the number of inseminations in Tetu Division. The number has more than doubled within four years, and is now averaging 80,000 per annum. Currently nine daily A.I. car runs, three motor-cycle runs and five static point services are in operation in Nyeri District.

Table 5. The number of artificial inseminations carried out in Tetu Division 1970-74.

	1970	1971	1972	1973	1974	Total 1970-74
Grade cattle	33,708	42,644	66,277	75,362	74,415	292,406
Zebu cattle	2,632	3,719	4,996	5,058	2,893	19,298
All inseminations	36,340	46,363	71,273	80,420	77,308	311,704

Source: Veterinary Division, Nyeri.

It might be argued that this very substantial progress in livestock development has been achieved over a very long period. Certainly the introduction of improved stock started as long ago as the 1930s. (2, p. 14) There were also some special factors in the area, particularly access to improved stock by purchases from the estates, starting in the late 1920s but most importantly from the 1950s. The early introduction of A.I. services was also very significant. According to Cowen, "The main thrust, from 1956, to introduce purer grades of stock came from A.I.", although "the most immediate source of upgrading was to come from the purchase of pure grades from the white estates." (2, p. 56)

It was also the case that Nyeri District was well-endowed with entrepreneurs, and the high level of farm management in the area was noted as early as 1948. (2, p. 36) There is, however, no reason to think that Kakamega and many other districts are not equally well endowed now, although Nyeri has had the advantage of relatively rich, intensive agriculture. This has had two effects: given the small size of plots, cows have had to be tethered, making the control of disease easier, particularly for farmers who sprayed conscientiously; and profits from cultivation could be used to pay for fencing, dairy equipment, and to purchase the grade animals themselves.

However the main points to notice about Table 3 is the relative recency of the expansion in grade cattle numbers, its speed and its comprehensiveness. In 1955 only 1.5 per cent of cattle were grade animals. After an initial increase to 12 per cent in 1961, a major acceleration took place in the early 1960s, reaching 40 per cent in 1965. This has since continued, up to about 90 per cent, so that conversion to grade animals will soon be virtually complete.

A crucial factor in this has undoubtedly been the disease situation.

Despite early interest in and access to grade cattle, numbers were not likely to expand rapidly until disease was under control. While progressive farmers (athomi) favoured compulsory dipping and stringent health measures, the mass of farmers, owning Zebu cattle, which are largely immune to East Coast Fever and other tick-borne diseases, were less interested in dipping. Thus Tetu and Thegenge Locations in North Tetu Division were declared cattle cleansing areas in 1945, but a year later the application of the cattle cleansing ordinance had to be abandoned. (2, pp. 38-9) According to Cowen progressive farmers needed a broader acceptance of improved cattle in order to further the improvement of their own stock, and "this acceptance was dependent upon the acquisition and survival of improved cattle by the wider range of households". (2, p. 78).

This indicates the existence of what we may call an 'indivisibility' in livestock (dairy) development centred on the disease problem. This is associated with the fact that grade cattle in Kenya are highly sensitive to tick-borne diseases. As a result, the efforts of 'advanced' farmers to maintain grade cattle may turn out a costly failure, due to the spread of disease from surrounding plots. At the same time farmers owning Zebu cattle and without the same investment will have little incentive to support cleansing ordinances, if these exist, or to dip conscientiously. Only if a large proportion of farmers in the area have a private interest in improved cattle and disease control will the social interest be pursued. Thus a comprehensive or frontal assault on livestock development in a particular area appears likely to be much more effective than piecemeal attempts. This would be based on an effort to come to grips with the disease problem, achieving a so-called 'clean area', or something approaching it, together with securing a basis for mass support by giving a majority of small-scale livestock owners an interest in its maintenance (involving, for instance, an emphasis on an artificial insemination programme capable of reaching a large number of farmers). In contrast, piecemeal experiments with progressive dairy production in advance of disease control are not likely to have much success.

THE GRADE DAIRY CATTLE PROGRAMME IN KAKAMEGA DISTRICT

If we come to discuss animal production in Kakamega District, we shall be mainly concerned with dairy cattle: as a result of overpopulation and very small farm sizes, beef production is not likely ever to be feasible, and this District can be expected to be a permanent deficit area for beef.

At present Kakamega is an important market for Nandi beef, which is brought in on hoof direct, for sale in County Council auctions. However, there is a high demand for milk, which can be produced on small farms, as demonstrated elsewhere in Kenya; although the Vihiga-Hamisi Divisions alone are estimated to produce 1,700,000 gallons of milk per annum, another 700,000 gallons, nearly half as much again, are imported. (1)

It is not surprising therefore, that the main livestock development in the District, including Vihiga-Hamisi, is the grade dairy cattle programme. This programme, and related aspects such as grade cow mortality, have already received the attention of several investigators (See 1, 3 and 5.); but because of their contradictory conclusions and recommendations, as well as the importance of the programme, further careful examination is required.

The programme is based on an International Development Association (I.D.A.) credit scheme channelled through the Agricultural Finance Corporation in Kakamega, which issues loans covering the purchase of cattle, fencing and dairy equipment, as well as water development and pasture improvement. Though the project was begun in the 1960s substantial financing became available in the 1970s. It was incorporated into the SRDP in 1970, but loans are distributed throughout the District and not confined to the Vihiga - Hamisi Divisions, as Table 6 shows. The plan in Vihiga-Hamisi was to introduce 100 grade cows in 1970 and subsequently 300 each year during the period 1971 to 1976. Loans were issued at 8 per cent interest, repayable in 5 annual installments, with an initial 15 - month period of grace before the first installment.

The prima facie case for high returns from grade cattle is the differential milk yield as compared to local Zebu cattle. A specific survey carried out in the area by Bellamy covering 12 grade and 28 Zebu cattle showed daily yields per cow of 1.5 gallons and 1.5 pints respectively. Data quoted by Weisel showed an advantage for grade cows of three to four times the daily output of Zebu cows. Harmon and Zalla refer to "impressive" milk yields in the area, of 500 gallons per lactation.

The main problem has been the incidence of tick-borne diseases resulting in the deaths of expensive animals. Bellamy calculates a mortality rate of 61.4 per cent up to 1974 among animals purchased between 1968 and 1972, (1)². This is itself not a very meaningful figure,

2. There is an arithmetic error in Bellamy's table, however, and the mortality rate may be nearer to 50 per cent. Table 6 implies a corresponding figure of about this value.

Table 6. I.D.A. loan approvals in Kakamega by Division, related to grade cow population.

Division	I.D.A. Loans Approved		Estimated Grade Cow Population	
	1973	1974	1970	1974
Lurambi	208	173	550	950
Mumias	64	11	200	200
Central	47	106	250	300
Vihiga/Hamisi	52	47	300	600

Note: loans include all items, not just grade cattle; the grade cow estimates are extremely rough.

Source: (3).

Table 7. Mortality among I.D.A. financed grade cattle in Vihiga-Hamisi, 1968-1974.

	1968	1969	1970	1971	1972	1973	1974	1975
No. of animals alive at start of year	27	47	108	208	196	204	180	146
No. of deaths during year	3	7	15	31	37	37	34	-
Percentage dying during year	11	15	14	15	19	18	19	-

Source: Derived from figures provided by Weisel, supplemented by Harmon and Zalla.

since deaths are cumulated above a period of several years, and a more accurate picture is given in Table 7. This shows that the mortality rate, although actually increasing over the period, is currently just under 20 per cent a year, compared with what Harmon and Zalla consider as "reasonable" under competent management, 10 per cent. The existing rate implies a life per cow of around 55 years.

Weisel, the Programme Analyst in the area, carried out farm-level research in order to estimate the gross margin per acre (value of output less total variable costs, but including depreciation of the

cow) for 'average' farmers in grade cattle and in alternative farm activities. These he found to be as follows:-

Table 8. Gross margins per acre for grade cattle and other activities, Vihiga-Hamisi.

Activity	Gross margin per acre (shs)
Grade cattle (for a stocking rate of 1.25 acres)	856
Maize (one hybrid, one local variety crop p.a.)	774
Maize (two hybrid crops p.a.)	1,040
Sunflower (two crops p.a.)	980
Hybrid maize and sunflower (one crop each)	1,010

Source: P. Weisel (5).

On the basis of this data Weisel concludes that grade cattle are not the most profitable farm activity for the area.

It has been pointed out, however, that Weisel's figures exclude from the cash returns the value of the offspring (one calf per year) of the cow. Given the small difference in gross margins calculated of around shs 150, this itself would cancel out the advantage of the other activities. There may also be other errors of calculation which bias the results. Just before presenting his gross margin results, Weisel calculates average milk production per year over the 6 years of the project as 27,940 gallons, assuming 375 gallons per cow year of production. The error may be related to the mortality rate assumption, as Weisel refers to Bellamy's somewhat misleading figure of 61 per cent: using the data of Table 7, the number of cow years of production during 1968 to 1974 would be 803, or more accurately, if acquisitions and deaths were assumed to be evenly spread over the year, 734 years. These give estimates of average annual output of 43,000 and 39,000 gallons, respectively, about 50 per cent above Weisel's estimate. If this error in respect of the mortality rate is carried over into the gross margin calculations (this is not clear from the information provided), it would reverse the results in favour of grade cattle as an activity. Even if Weisel's figures are accepted as they stand, however,

his estimates are based on partial analysis, whereas the case for the introduction of grade cattle made here is based on the simultaneous adoption of a number of measures, particularly relating to disease control. Given the relatively small difference in gross margins cited, the effect of reduced mortality associated with a major reduction in the incidence of disease would easily reverse these results.

Harmon and Zalla dispute Weisel's results, stating that:-

Incomes to farmers from grade cattle under average management conditions are considerably better than expected average incomes obtainable from hybrid maize, sunflower, or Mexican 142 beans in any combination, when poor crop years and reduced yields during the short rains are considered. This is in spite of current very high mortality rates.

If the mortality rates are reduced, as we should envisage, the difference is even greater, for:-

A farmer who is able to hold cow and calf mortality to 10% and manage his cows so as to calve every 14 months can obtain a gross margin of 1500/- per acre under current average stock rates and 1800/- per acre at one cow and calf per acre. Many farmers are already achieving this,(3)

Our view is, therefore, that grade cattle should be considered a priority farm activity both in terms of short- and long-term objectives. A separate question has been raised by other investigators, however, regarding whether a credit programme is necessary or desirable for the achievement of this goal. Details of the credit programme and its impact on the numbers of cattle are given in Tables 9 and 10. These show that despite the mortality problem the numbers of grade cattle in the area have continued to expand: over 500 cattle were purchased during the six years. The number of grade dairy cows in the same area increased from 94 in 1968 to 491 in 1974. The importance of the grade dairy cattle programme within the Agricultural Finance Corporation's programme of agricultural credit for the District is shown by the fact that 2.5 million shillings out of 3 million for 1970-74 were used for cattle-related investment, about 83 per cent. The amount of funds invested has been maintained at a high and rising level over the five-year period, particularly expanding in 1973 and 1974.

One important question which has to be considered is the impact of this credit programme on income distribution in the area or, at least, its equity aspect. From Table 10 (sic) it may be calculated that the

Table 9. Purchases of grade cattle in Vihiga-Hamisi, Kakamega District, 1968-1974.

	1968	1969	1970	1971	1972	1973	1974	Total
Total no. of grade cattle purchased	41	42	77	129	86	112	n.a	500+
No. of grade cattle purchased with I.D.A. loans	27	23	68	115	19	45	13	310
No. purchased without I.D.A. loans	14	19	9	14	67	67	n.a	190+
No. of farmers receiving loans	11	10	28	55	10	20	5	139
Total I.D.A. loan funds expended('000shs)	42.0	31.3	112.3	178.3	28.6	84.4	30.4	507.3

Table 10. I.D.A. credit approvals for Kakamega District, 1970-1974. (Kshs.'000)

	1970 ^a	1971	1972	1973	1974 ^b	Total 1970-74
No. of applications	127	131	63	173	231	725
Loans for cattle	249	264	107	435	603	1,657
Other livestock-related loans ^{cd}	166	138	91	216	255	865
Total livestock - related loans ^d	415	402	198	651	857	2,523
Total, all loans	420	450	242	809	1,159	3,079

a From April only.

b Until November only.

c For dairy equipment, fencing, water development and pasture improvement.

d Excluding poultry.

Source: A.F.C., Kakamega.

average loan per applicant during the period 1970-74 was shs. 4,285, and if a number of small loans for purposes other than grade cattle were left out, the average figure for livestock loans would be greater still. The

tendency to favour richer farmers was accentuated by an A.F.C. policy of not offering loans to applicants without the title deeds to a plot of five or more acres in Vihiga-Hamisi, where the average farm size is three acres, or even less. This requirement may not in fact have been crucial, because loans actually went to farmers owning much more than five acres. Weisel refers to a survey of 350 farmers in Vihiga-Hamisi which showed the following average holdings for recipients of grade-cattle loans and a random sample of other farmers:-

Table 11. Bias in A.F.C. loans towards larger farmers.

	average farm size (acres)	average non-farm income (shs per annum)
Grade cattle loanees	11.1	234
Other farmers	3.1	138

For this reason the recent omission of the five-acre requirement may not bring a significant change unless a deliberate effort is made to assist smaller farmers. Weisel, impressed by the high level of animal husbandry required for grade cattle and conversely by the high cattle mortality rate without proper husbandry, suggests "the dropping of the existing objective of equity in income distribution in order to ensure only skilled farmers receive grade cattle". Yet, it should be pointed out that grade cattle are being kept very successfully in Central Province on no more than five acres. What is required is a comprehensive attack on the disease problem in the area in order to reduce the risks to grade cattle drastically. Apart from the equity aspect, the advantage of securing as wide a distribution of grade cattle as possible throughout the area is to improve nutrition by making cheap milk direct from the cow widely available. Milk is already fetching one shilling a litre in the local market in Vihiga, and farmers with a milk surplus are able to sell to neighbours. In fact, according to Harmon and Zalla, "most of their milk is sold to neighbours". This substantially reduces the price of milk by eliminating middlemen and the Kenya Cooperative Creameries. In a heavily populated area such as Vihiga-Hamisi, this nutritional benefit from the wider distribution of milk is potentially of the greatest importance.

Tetu's dairy production project, which was conducted as part of the SRDP, might provide the right model for Kakamega District as a means of overcoming the management problem, thus achieving the SRDP objective of replication. As described in the section on Tetu this project involved giving credit for the purchase of only one or two grade cows to farmers whose holdings were not especially large and who were not necessarily experienced in dairy production. The loan recipients were carefully selected and trained for one week in farm management and dairy production at the local Farmers' Training Centre. The project appears to have been highly successful, and is being widely enlarged in Tetu.

One negative aspect of the I.D.A. credit scheme in Kakamega is the high rate of default: in March 1974 the loan repayment rate was equal to only 31 per cent. This is just one of the factors underlying the Harmon/Zalla recommendation that the I.D.A. credit programme be dropped from the Vihiga SRDP, and presumably elsewhere. This is an extremely surprising conclusion (shared, however, by Weisel) in view of their assessment of the returns from milk production. The conclusion is based on:-

1. The default rate,
2. Their view that management (including dips and back up), not finance, is the obstacle to expansion, and
3. The notion that farmers do not need the loans, and that "farmers are no longer coming forward to take up the loans in any significant numbers. Most are getting animals on their own."

Weisel further suggests, with regard to the first consideration, that finance is not the limiting factor and that the high default rate may suggest the lack of "need" for credit. However, it is difficult to see the connection between failure to repay and lack of need for credit. Failure to repay may be due either to inability to repay (which may arise out of the premature death of the grade cows) or unwillingness to repay (which is a function of inadequate supervision of loans and insufficient pressure to repay). To separate these two elements, it would be useful to calculate default rates separately for borrowers experiencing and not experiencing serious mortality of cattle.

The second argument against providing credit is that management and standards of animal husbandry are the real constraints, rather than credit. This view is based on the high mortality rate: however Harmon

and Zalla's calculations show that, despite the mortality rate, returns from grade cattle have been relatively high, and this no doubt explains why quite a number of grade cattle have been acquired even without loans (67 in both 1972 and 1973). The Tetu extension experiment described above in any case suggests that the management bottleneck can be overcome or reduced. If a comprehensive attack on the disease problem were to be adopted, as proposed below, the mortality rate should be considerably reduced.

The third argument is that credit is no longer needed, that "fewer farmers are coming forward for loans", and that "the people getting the loans are not those in need of credit". While it is true that in 1972 and 1973 only 64 grade cows were purchased with I.D.A. loans, compared to 134 without loans, this is not a reason for slowing down the conversion from Zebus to grade cows. The percentage of grade animals is still small, and the need is to increase it over time towards 100 per cent. The equity argument would be met by making the loans to farmers with smaller holdings, as was done in Tetu.

It is important therefore not to abandon this credit scheme, but rather to expand its scope and place it within a wider framework of extension and disease control activity. Weisel criticises the use of a subsidised rate of interest, and recommends that a commercial rate be applied (and to all smallholder credit, not merely dairy cattle). However the present rate of 8 per cent does not appear unduly low, and since finance for development projects in large-scale manufacturing and other sectors is frequently available at this rate, Weisel's suggestion might bias investment against rural development. In fact, the current balance of opinion is very much of the view that credit availability is biased against the rural sector and is in favour of attempting to offset this in various ways. The much greater subsidy, and the most inequitable, arises out of a failure to pursue defaulters, who may be relatively well-to-do. Efforts should be concentrated on reducing the default rate. At the same time the credit programme should be related to the extension and training effort aimed at improving the management constraint.

The Case for Making Kakamega District a Priority Dairy Development Area

It will appear odd, perhaps, to livestock specialists and officials to single out Kakamega District as a priority area for dairy development.

One might sooner look to areas with plentiful grazing and a substantial surplus of cattle, whereas Kakamega is a deficit area in both beef and milk supplies. In fact, however, Kakamega is a suitable area for a comprehensive **effort** to eliminate disease, followed by intensive dairy development following the pattern of Nyeri District.

The area is contiguous to the disease-free area of Kitale and the aim would be to extend this belt southwards to include the more populated parts of Kakamega, and later on to expand the area further to the west and south in the direction of Busia and Kisumu. Already, according to one observer, "it is almost impossible to move animals out of this District", because of the strict quarantine required of not less than 28 days in a Government holding ground, and an additional 20 days for movement from Kakamega to Moi's Bridge. The area is well-designed for an effective disease eradication campaign in that cattle are generally not mobile, if not actually tied, as in Nyeri District; and with plots mostly demarcated and adjudicated, unnecessary livestock movements are reduced to a minimum. The heavy population in the area creates a need for cash-generating activities which do not require large areas of land, and small plots and intensive agriculture **afford** the greatest guarantee that grade animals will be properly looked after.

The potential **economic** benefits of substituting grade for local cattle appear tremendous. According to Bellamy's estimates for Vihiga-Hamisi in 1974 only 1,333 out of 40,000 cattle or 3.3 per cent are grade cattle.³ (1, p. 2) Weisel gave the figure for the number of grade cattle in Vihiga-Hamisi in December 1973 as 1,304. Of these, 491 were cows, compared to 23,400 native cows, a ratio of only 2.1 per cent.

A legitimate question is whether the market would be adequate for the increased milk supplies associated with a large-scale substitution of grade cattle.⁴ Weisel calculates that 'import - substituting' production

3. We have assumed the figure of 85,430 for local cattle in North Maragoli is a misprint which should read 5,430.

4. It is of course not necessary that the present number of cattle be maintained. With the introduction of grade cattle, the total number could be substantially reduced, releasing land for other purposes.

of the present 700,000 gallons deficit would require only an additional 1,865 grade cows. This itself, being five times the present level, indicates scope for considerable expansion of the existing programme, but would not support the large-scale transformation envisaged here. The primary objective however would be to substantially increase local consumption of milk per head by increasing its availability and lowering prices. The scope for this is large. Once local demand is fully satiated, however, the Kenya Cooperative Creameries could no doubt intervene to purchase milk for export outside the area, particularly to Kisumu. At the same time, if milk prices are to be reduced, it would be useful to reduce production costs also, in particular the cost of grade cows: this suggests much greater emphasis on the upgrading of the existing stock through artificial insemination services, as compared to expansion of the present A.F.C. loan programme for the purchase of grade cows. A less expensive programme also has advantages in terms of equity.

There are a number of promising indicators of progress in the area which encourage optimism. The number of grade cows in Vihiga-Hamisi has increased from 94 in 1968 to 491 in 1974. Cattle sold through auctions in Kakamega District have increased by 40 per cent in four years, from 23,733 in 1970 to 33,074 in 1974 (although this includes imported animals and is an index of consumption rather than production). The dipping programme in Vihiga-Hamisi has been disappointing, both in respect of the numbers of dips built, compared to the targeted figure, and the standards of maintenance and operation. However, it must be said that whereas in 1972 only one private dip was operating in Vihiga-Hamisi, by the end of 1974 thirteen had been built, of which eleven were in operation.

The success of the artificial insemination programme in Vihiga is also encouraging. Before the first run was started in 1970, there was already considerable interest in A.I. services, especially in the eastern area, with farmers bringing their animals to the Veterinary Office for service. The East Run now comprises 45 servicing points in the space of some 250 kilometres, an average of 1 servicing point every 5 or 6 kilometres. The inauguration of this run stimulated interest elsewhere, and the West Run, which was started in 1972, now comprises 33 servicing points over a distance of some 120 kilometres. A.I. works well in densely populated areas for a number of reasons: lack of grazing means that farmers cannot afford to keep bulls and are willing to castrate. More generally, they will be interested in the quality and productivity of animals rather

than increasing their numbers. It will also be possible with a limited number of runs to reach a relatively high proportion of the animals in the area, increasing the effectiveness of the programme; and it will be possible to operate at lower costs by servicing a reasonable number of animals per kilometre traversed, tapping economies of scale. We recommend therefore that there should be a concentrated effort to expand A.I. services throughout Kakamega District and that this should be seen not simply as a separate project but as part of an integrated livestock development plan for the area with the upgrading of the cattle population associated with a simultaneous effort at disease eradication.

THE POTENTIAL FOR LIVESTOCK DEVELOPMENT IN KAPENGURIA

The most important livestock proposals for Kapenguria relate to the establishment of group ranching for beef production **in the lowland** area, prospects for which are discussed in **Chapter Ten** of this Report. Partly related to this proposed development was a major proposal for a system of stockroutes passing through the area from the north and comprising a series of holding grounds and smaller outspans to be equipped with water and other facilities and used as staging posts for the shipment of cattle. These stockroutes can usefully be seen as part of a planned national system for which considerable World Bank finance has been made available. They are discussed in detail in a separate section of this chapter.

The Introduction of Grade Dairy Cattle

A high potential for dairying is said to exist around Kapenguria, where it is thought that the number of cows "could be increased to 5,000 within five years". At present there are about 1,300 to 1,500 dairy animals of mixed exotic stock (especially Guernsey) concentrated in Mnagei Location around Kapenguria. The quality of the animals is poor because of the low quality of the founding stock (often culled cows from Trans Nzoia), as well as poor management.

The main obstacle to development is disease. Kapenguria is at the junction of the two major stock routes converging on Mwisho Farm. This is an area in which there is a continuous movement of Zebu cattle back and forth under the traditional Pokot system, as well as a considerable amount of stock theft which spreads disease. Although grade cattle owners fence and use spray pumps, mortality among grade cattle has been estimated

as high as 30 to 40 per cent.

Credit for the purchase of dairy cattle has been quite limited so far, although 34 Ayrshires were recently obtained by members of the main cooperative society on a special Cooperative Credit Production Loan, to be repaid through milk delivered to Kenya Cooperative Creameries (K.C.C.) at Kitale. Difficulties in obtaining title deeds have hindered the expansion of loans, though recently twelve out of eighteen farmers applying had loans approved for the purchase of two or three cows each, subject to membership in the cooperative and improvements in fencing and paddocking. Title deeds will be given to these farmers. The fact that the farmers had an average of ten grade cows already raises a serious question of equity. The loans may be justified in this case because of the particular need for careful management and protection against disease, but the possibility of a wider distribution of grade cattle within the cooperative society should be investigated.

At present the Kitale K.C.C. send a vehicle daily to collect milk. Although the local price for milk is higher, cooperative members prefer the more reliable market (in periods of excess supply) which this provides. Despite the disease problem, therefore, there is a case for pursuing efforts to expand milk production within a circumscribed area because of the K.C.C. market and because of the absence of major production alternatives in the area.

Bull Camps and Artificial Insemination

Bull camps were introduced by a 1973-74 project for the purchase of fifteen pure-bred bulls. Only five were actually bought, at a cost of shs. 2,000 each, and one died.

Two factors contributed to failure. First, although bull camps may have in theory an advantage over artificial insemination in more remote areas, the disease problem and form of livestock organisation in such areas makes returns from upgrading uncertain. Secondly, the purchase was made without adequate consultation among SRDP officials so that no satisfactory arrangements were made for the effective utilisation of the bulls by farmers. To ensure some degree of utilisation, the bulls were sold to farmers at shs. 800 each, a subsidy of 60 per cent, with the intention that each would be shared among four farmers and other neighbouring farmers charged for bull services, an arrangement which appears to have proven problematic.

While further bull camps are not planned in Mnagei, there is a current proposal for one in Lelan Location, which should be re-examined. In general the problem of managing high grade bulls, the problem of transmitting breeding disease, the mobility problems of such bulls, and the relative ease of an artificial insemination point suggest that bull camp development should be abandoned in favour of artificial insemination. Apparently five Aberdeen Angus beef bulls have already been ordered for Lelan Location for breeding purposes. It is intended to group farmers for communal use of bull services. With each bull serving 40 to 80 cows a year, it is hoped to produce 300 half-bred calves in the first year. Because of poor communications, the plan is to start with beef cattle, introducing dairying later. Though artificial insemination would appear a superior method, it certainly seems important to investigate in a cautious way the livestock potential of Lelan Location. There is considerable local interest in obtaining loans for grade dairy cattle, and this extremely compact area of high potential land would, as a highland 'island', be unusually easy to protect from disease.

Development of Sheep Production in Lelan Location

An extremely promising project is the sheep smallholder credit scheme in Lelan. Although Corriedale sheep were introduced into the area in the early 1960s, failure to look after these properly and lack of credit for the purchase of new stock led to a high degree of interbreeding and a decline in the quality of the stock and volume of wool production. At present there are about 2,500 woolsheep and local hair-sheep in the area.

The scheme, which was initiated with eight farmers in October 1972, is for the supply on credit of new pure-bred Corriedales from Molo. Each farmer receives one ram and ten ewes. All necessary drugs are supplied during the first year, together with supervision in dipping, foot-trimming and general maintenance. Lambs are not to be disposed of without consultation, and to avoid inbreeding, rams are to be circulated among participants every two years. After one year each farmer is to return one ram, after two years a second, and after three years he is to return the capital in kind of one ram and ten ewes. Cash is not involved. By September 1974, 98 sheep had been supplied under this SRDP project. The plan was to supply 24 farmers by 1974 (8 farmers a year) with 264 pure bred sheep.

If wool prices are maintained, the prospects appear very good

for this development in view of the excellent pasture in the area and improved access now provided by a new road. Proceeds from wool sales increased from shs 19,000 in 1972 to shs 81,000 in 1973. One farmer visited had earned shs 1,350 the previous year. In view of this potential for success, the scheme is quite conservative in a number of ways. If we count a ram as equivalent to two ewes, the farmer must, in addition to paying off his loan within three years, pay a rate of interest equivalent to approximately 12 per cent.⁵ These are quite stringent terms for rural smallholder credit. Secondly, it is not clear why there should be the degree of self-sufficiency envisaged in the provision of new stock: at the planned rate new stock would equal only 10 per cent of the total after three years, despite the low productivity of local sheep, the large average size of holdings (of 200 to 400 acres) and the high degree of understocking. Finally, it may be pointed out that the farmers selected so far all had forty or more sheep already. How far this restriction is necessary, and what the possibilities are for assisting new and less well-established farmers, might be investigated.

PROBLEMS OF LIVESTOCK DEVELOPMENT IN MIGORI/MACALDER

It is estimated there are about 100,000 cattle in the two divisions of the Migori SRDP, mainly Zebu with only a few grade cattle. The Zebu exhibit the usual features of the traditional livestock economy of low milk yield and wide calving interval. The general plan at the outset of the SRDP in 1970 was to promote dairy production in the highland area, comprising the Kanyamkago Hills and part of the Kuria Hills, and beef cattle in the lower zones extending towards the lake shores, the latter on a cooperative ranching basis.

In particular it was thought that 400 square kilometres of "moderately good ranchland" in the central Migori River valley and 300 square kilometres of sandy ridges in the western area of Muhuru Kadem might sustain viable ranches for fattening stock. These suggestions, however, do not appear to have been taken further, nor the plan for sheep development in Mohuru Kadem also made in 1970.

5. This is obtained by application of standard discounted cash flow methods to derive an internal rate of return.

Livestock development in the Migori area faces two major problems: that of disease, associated in part with the transit trade in livestock from Tanzania, and that of stock theft. Tickborne diseases are endemic and remain almost totally uncontrolled. In addition, it is said that the attitude of the local Luo farmers towards livestock is unfavourable to commercial development.

The project area straddles an important traditional trek route for cattle, passing from Tanzania to Uganda or to the Kenyan market in the Kisumu area, and the large numbers of cattle passing through are considered to constitute a serious disease threat. To control disease, a system of stockroutes and holding grounds was planned, with one holding ground constructed in Macalder and a second under construction at Lichota. However, cattle traders have failed to use the Migori holding ground, apparently because it is located away from the traditional route and because by using it they would considerably increase costs and delays. This problem will be discussed in more detail in a subsequent section on stockroutes and livestock marketing. Whatever the benefits of the trade from Tanzania, it has made control of contagious stock diseases, particularly foot and mouth disease, extremely difficult. The area has been frequently closed for quarantine periods of up to nine months.

The problem of cattle theft is an extremely serious one. Thefts occur largely between tribes, provoking what has sometimes almost amounted to local warfare between the Kuria and Luo. This appears to be a major disincentive to cattle-keeping and in particular to cattle improvement. The strength of this disincentive is reflected in the farmers' reluctance, already remarked upon elsewhere, even to keep two oxen for the purposes of ox-cultivation.

The importance of the supposed lack of interest of the Luos in cattle-keeping, or their reluctance to sell cattle, is difficult to determine. Certainly the bride-price in the area is high - 40 beasts is mentioned. It is more likely, however, that this lack of interest in animal husbandry reflects opportunities for cultivation together with the combined disincentive effects of thefts and disease.

Milk Marketing

Constraints on dairy expansion are in the areas of output, markets and marketing organisation. As far as markets are concerned, the absence of the Kenya Cooperative Creameries in the area is a disincentive. Lack of marketing facilities means that most the area's

output is marketed in the form of ghee. This itself is a constraint on the purchase of grade dairy cows. A study of marketing was proposed in 1970, but there is no sign of its having been carried out. Since 22 dairy cooperative societies do now exist, this study would appear to be justified. Later the establishment of a central milk cooler was mentioned, from which milk could be sent to the K.C.C. at Sotik, but in 1974 there was "nothing to report" on this proposal. At the moment, **however**, the area is not even meeting its own demands for milk.

Model Dairy Farms

The main livestock production project is therefore the establishment of model dairy farms, of which four now exist for demonstration purposes. The aim is "to demonstrate clean milk production and skill, records and bookkeeping, disease control practices, calf rearing techniques (particularly artificial insemination) and grazing management". The model embraces the establishment of one acre of mixed grass/legume ley, a dairy shed, including milking space and a store for feed, a calf pen and a relatively elaborate crush.

However, these farms do not appear to be appropriately scaled either from the point of view of equity or of demonstrating and replicating the model throughout the area. The model farms would be 25 acres in size, representing a substantial holding in such an area. The estimated cost of shs 10,000 plus shs 1,000 for pasture improvement has already forced the abandonment of the plan to scatter such farms throughout the area. ~~Without~~ the level of subsidy enjoyed by these model farms there is not likely to be much emulation. We may compare this with the average Agricultural Finance Corporation loan for grade cattle in Kakamega District of around shs 4,000, which we criticise as being too large. The construction in any case appears unnecessarily elaborate, apart from the crush mentioned, with mbati roofing (a relative luxury even on a house) over the milk shed, and concrete flooring. As with a great many model farms, the demonstration is of what can be done with the subsidy, not what can be done without it, and this point is not lost on **unsubsidised** local farmers.

The other, even more serious, doubt is whether the promotion of grade dairy cattle in the area will go very far in the face of the endemic disease problem which exists. Even the grade cattle on the Government farm at Oyani did not look especially healthy. If dairying is to make

a substantial contribution to the local economy, it needs to be taken up by a relatively large number of farmers. To achieve this, the expansion of artificial insemination services at a suitable time is to be preferred.

While Oyani farm is not an SRDP project, its extremely anachronistic nature deserves mention as a clear case of a high-cost and ineffective method of promoting dairy cattle in an area such as Migori. The farm contains very high grade and pedigree livestock, much of it imported. Sophisticated management and feeding systems are practised, albeit unsuccessfully, and the farm **receives** continuous financial subsidies even for its running costs. The idea is that the farm should demonstrate the technology and the advantages of high grade dairy cattle management and make such cattle available at somewhat subsidised prices to local farmers. The fact that 80 per cent of the cattle thus sold have died of tickborne diseases on the farms of their new owners, imposing very high costs on the owners and a totally unacceptable level of waste on the economy, is the final comment on the scheme and the approach. There are times when the importation of improved cattle into an area is called for, but, especially in the early phases, cattle upgrading through artificial insemination permits the development of local expertise and local disease control facilities, without the unacceptable levels of loss encountered by introducing high grade cattle in areas where the level of expertise and disease control necessary to keep such cattle alive does not exist.

Artificial Insemination Services

Although artificial insemination is not currently listed as a project, it was listed as project MOA 16 in the 1972-3 Programme. The present service is centred on Oyani Farm, and it consists of one inseminator, without a car (The purchase of a Volkswagen was approved but not effected.) , who carries out only about 180 inseminations a year, compared with 40 per day on a single 'run' in Tetu Division, and 80,000 per year in all. This is indicative of the constraint imposed by transportation: however it is doubtful whether economical runs could be established without clearing the area of disease to a substantial extent and a major widening of interest in upgrading cattle. At the end of September 1973, there were just 57 grade cattle in the area, owned by 16 farmers. This, again, compares with 22,000 grade cattle in Tetu, and illustrates the major indivisibility which exists in livestock development.

Cattle Dips

Although the dips programme is listed in Migori as a project, response has been significantly less than in most of the other SRDP areas. Of the total number of 28 dips planned, 9 have been completed and only 6 are working. This does not reflect any weaker promotional effort, but an indivisibility is effective: because cattle in the area are largely Zebu, more or less resistant to tick-borne diseases, there is very much less incentive to construct or maintain dips.

Migori as a Non - Priority Livestock Area

The experience in Migori demonstrates the difficulties associated with the piecemeal establishment of livestock projects in an area where the disease problem has yet to be dealt with and emphasises the indivisibility in dairy production. Yet there are sound reasons for delaying an all-out effort in Migori. In the first place even if the disease problem were dealt with, there remains the serious additional one of cattle theft. Secondly, there is good sense in permitting the transit trade from Tanzania to continue as it is for the present. Such movement is as essential to the East African common market, to which Kenya is committed, as trade in manufactured goods. A more direct consideration perhaps is that it provides important supplies of beef for Kisumu and the surrounding areas. It is very doubtful also whether efforts to stem this trade could be effective at this time. Finally, while it may be necessary to grapple with these problems in Migori at a later date, it seems better to concentrate livestock development efforts where returns will be more immediate, and to re-double efforts here **later** when success has hopefully been achieved in extending the disease-free area further south towards Kisumu.

LIVESTOCK DEVELOPMENT UNDER THE KWALE SRDP

Excluding the major ranching proposal which we discuss at length in chapter ten of this Report, there is only one specific livestock project listed for the Kwale SRDP; animal health and husbandry listed as MOA. 8. We did not discover the content originally proposed for this project, which appeared dormant.

Livestock activities are included in proposals to develop the mixed farming areas of Kwale including proposals for agricultural extension. These proposals are still extremely tentative. A detailed

plan ~~exists~~ for the Kikoneni area for a 94-acre model farm (38.34 ha), of which 30 acres would be allocated to livestock and include a dairy farm. In an area in which the average farm size is 20 acres, according to one estimate, this development appears to be undesirable from the equity point of view. The proposed costs for cows and fencing alone of approximately shs 16,000 are far too high, and out of line, for instance, with the loans of shs 4,000 being given by the A.F.C. in Kakamega for this purpose, which we have already criticised from an equity point of view; yet this would be only a part of the proposed financial assistance offered. A costing has also been made, and included in the SRDP Review/Replan, for a small-scale dairy unit designed for a 10-acre farm. Such a unit, estimated to cost shs. 2,400, appears much more appropriate, though we were not able to investigate this further. What does appear to be lacking in support of the proposal, however, is evidence of research or data collection on local farm economics or, despite the importance of the Mariakani milk scheme, on the milk industry. The majority of stock in the SRDP area are in fact in the mixed cropping zone, and it seems possible that the attention accorded to group ranching in the ranchland area has been partly at the expense of research in the mixed cropping zone.

On the whole, this coastal area would appear not to deserve a high ranking in terms of livestock development. Very few grade cows are owned, and there is a lot of tse-tse and tick-borne disease. At one time, a considerable number of grade animals were kept in the Shimba Hills, mainly by Wakamba settlers, but most of these died in 1970-71 as a result of drought and an outbreak of East Coast Fever. Moreover, the Digos, who constitute the main part of the population in the coastal strip and mixed farming area, are much less interested in livestock than the Durumas who for the most part live further inland. The potential, however, remains largely unexplored, and the main need seems to be for more farm-level research relating to both livestock and crops. The most favourable element is the potential of the coastal milk market which should increase in importance.

THE DIPS PROGRAMME: A MAJOR PROPOSAL

The importance of dealing with the disease problem as a precondition for the improvement of livestock is clear from our discussion of the development of dairy production in five SRDP areas. Recognition of this importance is reflected in the proportion of SRDP funds allocated

in all the areas to the dips programme. Under this programme the government provides 50 per cent of the construction cost on condition that the other half comes from self-help. To some extent therefore the experimental content of the programme lies in the method used to elicit a self-help development effort. An indication of success in this direction is given in Table 12. In the case of Tetu, Danish assistance was obtained for the construction of twelve dips. The performance in Tetu is impressive even considering the early start made there: this no doubt reflects the much greater incentive to build and use dips when the majority of people in an area own grade cattle. In contrast, progress in Migori in particular has been relatively slow: in 1970 when the programme was launched, sixteen dips were under construction, but only six of these were operating in 1974. The response in Kapenguria and Vihiga has been quite encouraging in view of the small number of dips functioning prior to the programme (in Kakamega only one in 1972).

Table 12. Progress in self-help dip construction in four SRDP areas.

	Total number of dips	No. of dips operating	Dips complete but not working	Dips planned or being built
Tetu	44	41	1	2
Kapenguria	30	17	5	8
Vihiga	32	11	2	19
Migori	28	6	3	19

The main problems, however, have been in the effective maintenance of the dips after completion. As the Table shows, in the three areas excluding Tetu, 10 out of 34 completed dips were not functioning at all, usually because of lack of acaracides and only in one or two cases because of faulty maintenance. But in addition, a large proportion of dips throughout Kenya are understrength, even if functioning. Thus even in Trans Nzoia, one of the disease-free areas of Kenya, the District Animal Husbandry Officer recently reported that due to understrength dips in particular, tick-borne diseases had been a serious problem during the year. (District Animal Husbandry Officers' Conference, Nakuru, September 1974.) Over 50 per cent of dip samples analysed at Kabete, from all over Kenya, are said to be understrength. Even this is likely to be a considerable underestimate, since it is reported in Tetu, for example, that the 'doctoring' of samples

by the dip caretakers is a widespread practice (with cost savings presumably pocketed by the employee). Thus even in Tetu, despite the numbers of dips operating and conscientious dipping by stock-owners, 34 animals died of East Coast Fever in 1974, and 8 of anaplasmosis. In Vihiga owners of grade cows are said to be unable to rely on local dips because of under-strength mixtures, and are forced to use spray pumps. Apart from possible immediate losses due to disease outbreaks, the more serious long-term danger is that the ticks will develop increasing resistance to acaracides rendering the entire effort ineffective.

The same causes for this state of affairs are reported in all the areas: weak management committees and generally poor organisation; lack of 'working capital', that is a shortage of ready funds with which to buy acaracides; and most frequently in all areas, misuse of funds or materials by the committee or dip caretaker.

Apart from the question of the incentive to build and maintain dips, there is the question of the incentive to use dips that are operational. In this regard, there is a classic divergence between social and private benefit. If an individual owner decides not to dip his cattle, say, because of the dipping charges, not only will he bear the possible consequences; the cattle of other owners in the proximity may be affected. As we have seen if a majority of owners in an area do not dip, maintenance of grade cattle may be impossible altogether. In Vihiga and Kapenguria, grade cattle owners must purchase spray-pumps for this reason. This divergence between social and private benefits (caused by external diseconomies in this case) is reflected in requests by grade cattle owners, as in Kapenguria, for the introduction of compulsory dipping, and by the disappearance of the problem (and the need to persuade people to dip) once most owners have grade cattle. External **diseconomies** are particularly great here because indigenous Zebu cattle are highly resistant to tick-borne disease, and exotic and mixed cattle highly sensitive to it. As a result, Zebu cattle owners have much less incentive to dip, though this may impose serious diseconomies on grade cattle owners.

There is considerable evidence that dipping charges have a significant effect on the inclination to dip as well as on the proper maintenance of dips. The cost of acaracides is mentioned in Vihiga as a reason for not maintaining dips. In Migori it is said that "where dips are complete, they are used only half way or sometimes not at all",

especially because of dipping charges. In Kapenguria it was suggested that the use of dips might double if charges were abolished. A practical one-day experiment in free dipping at Bukuga village in Vihiga is said to have attracted a thousand cattle; whereas the average number of cattle using a dip weekly in this area is estimated at around 60. (Numbers using the dips in this area are normally small in part because the overall number of cattle is low.) In Kongelai, where special incentives might be needed, cattle are said to be dipped little more than once a month, a frequency which is not likely to be very effective.

Accordingly, we recommend that throughout Kenya as the budget allows, but initially in selected areas as specified presently, dipping charges be abolished for a minimum transitional period of three years and that maintenance of the dips (only in respect of supply of acaracides) be taken over by the Veterinary Department. The costs of this service will be fairly substantial but not necessarily high in relation to other development programmes or to the real costs of not instituting this change, since in the absence of this measure investments in a number of other proposed projects may be lost. Apart from dairy cattle, an immediate loss of investment exists in the form of misused dips: without drastic steps to ensure that the dips which have been built can be used, the labour and financial investment embodied in the dips are wasted. There are also signs in Migori, for example, where self-help dip building was energetic in the early stages, that, as one would expect, failure to maintain existing dips seriously undermines interest in other self-help efforts, implying a further loss of investment. There is also considerable competition for self-help efforts from other projects in health or education, so that incentives must be adequate if these efforts are to be attracted to dip construction.

However, the main argument for this proposed measure is that in the case of livestock development, a massive 'indivisibility' **exists: livestock projects require interrelated** investments in disease control, loans to farmers or artificial insemination for livestock improvement, and marketing facilities. Strictly speaking there are two indivisibilities, since partial efforts at disease-control may fail, and partial efforts at establishing the livestock activities themselves may fail, if disease is not first brought under control and other investments made. It was also mentioned in relation to Tetu that widespread interest in bringing cattle disease under control only occurred when a wide stratum of farmers obtained access to grade cattle.

Free dipping need not imply a subsidy to one small section of the community at the expense of the rest. In most areas where this would be applied, cattle are owned by a large proportion of the community anyway. And the outlay could be retrieved from the livestock owners in other ways in the same way as the cost of other 'public goods' is frequently met. In Tetu, for instance, the incidence of tick-borne diseases is estimated to have been reduced by two-thirds since 1968: the extra income generated would much more than pay for the cost of dipping subsidies.

A STRATEGY FOR IMPROVING DAIRY CATTLE IN KENYA

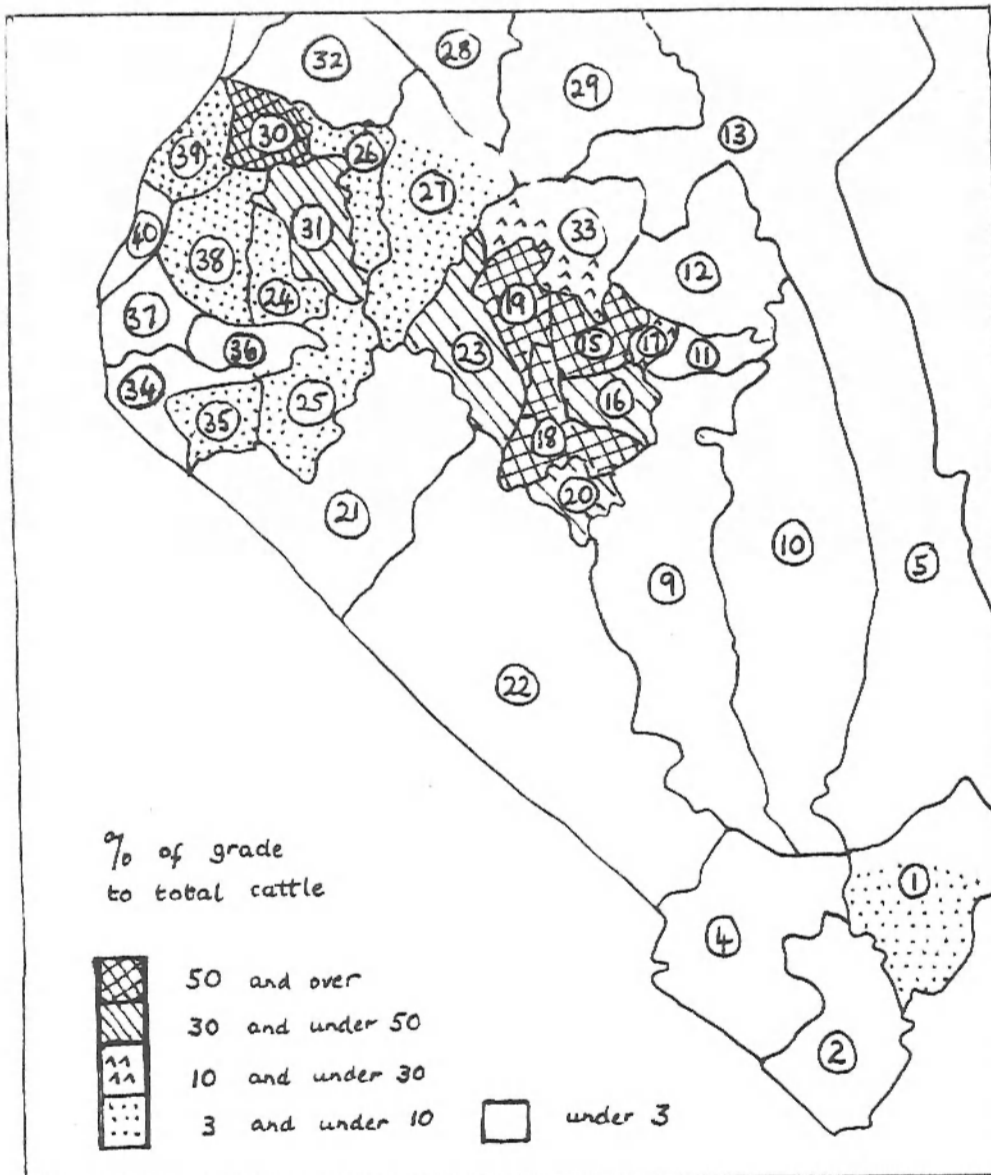
The existence of the 'indivisibilities' identified above points to a policy of focussing dairy development in particular areas, rather than pursuing projects on a piecemeal basis in all districts simultaneously. Which areas should these be? Table 13 gives rough estimates of the percentage of grade cattle to total cattle numbers in all districts of Kenya for 1970. **These** data **are** plotted in Fig. 1 which shows the areas of concentration of grade cattle in Kenya. The degree of concentration in the former 'White Highlands' shows up clearly but in addition intermediate areas are also indicated. It can be assumed that the distribution of grade cattle in Kenya is closely related to the geographical incidence of disease. An obvious strategy would be to consolidate the existing disease-free areas and to extend them outwards in the most convenient directions. This would suggest (a) Bungoma, Kakamega, Nandi and Kericho in the West (with southern parts of Elgeyo Marakwet and Baringo), and (b) Meru, Embu and part of Machakos in Central Kenya. Much later extension into Kisumu, Kisii and South Nyanza could be considered. The map tends to confirm our suggestion that of the present SRDP **areas**, Kwale and Migori should not be considered priority areas for dairy production, but that Kakamega should. This overall strategy would not of course exclude attempts at initiating small disease-free areas in specific locations such as those discussed in this chapter, or major developments less directly affected by tick-borne disease in the ranchlands and other livestock areas. A general strategy for improvement in the beef-producing areas is not considered here, but needs urgent attention. However, we shall consider the important livestock marketing and stockroute system, especially in two of the SRDP areas we have discussed, Kapenguria and Migori.

Table 13. Estimated percentages of grade cattle by District, 1970.

District	%	District	%	District	%
1. Kilifi	9.1	15. Nyeri	68.7	31. Uasin Gishu	47.8
2. Kwale	0.4	16. Murang'a	45.1	32. West Pokot	0.7
3. Lamu	0	17. Kirinyaga	16.7	33. Laikipia	10.0
4. Taita	2.5	18. Kiambu	52.4	RIFT VALLEY PROVINCE	7.5
5. Tana R.	0	19. Nyandarua	100.0	34. S. Nyanza	0.2
COAST PROVINCE	1.7	CENTRAL PROVINCE	60.1	35. Kisii	8.3
6. Garissa	0	20. NAIROBI	41.2	36. Kisumu	1.0
7. Wajir	0	21. Narok	0	37. Siaya	0
8. Mandera	0	22. Kajiado	0.1	NYANZA PROV.	1.9
N.E. PROVINCE	0	23. Nakuru	39.2	38. Kakamega	6.5
9. Machakos	4.2	24. Nandi	9.1	39. Bungoma	7.1
10. Kitui	0	25. Kericho	7.7	40. Busia	0
11. Embu	3.6	26. Elgeyo Marakwet	3.7	WESTERN PROV.	5.8
12. Meru	4.6	27. Baringo	5.0		
13. Isiolo	0	28. Turkana	0		
14. Marsabit	0	29. Samburu	0	KENYA TOTAL	8.4
EASTERN PROV.	2.0	30. Trans Nzoia	56.5	No. of grade cattle:	9,080,000

Source: Derived from Ministry of Agriculture files.

Fig. 1. Distribution of grade cattle in Kenya



Note: Figures from Table 12.
Numbers refer to Districts in the List

LIVESTOCK MARKETING AND STOCKROUTES FROM THE RANGE AREAS

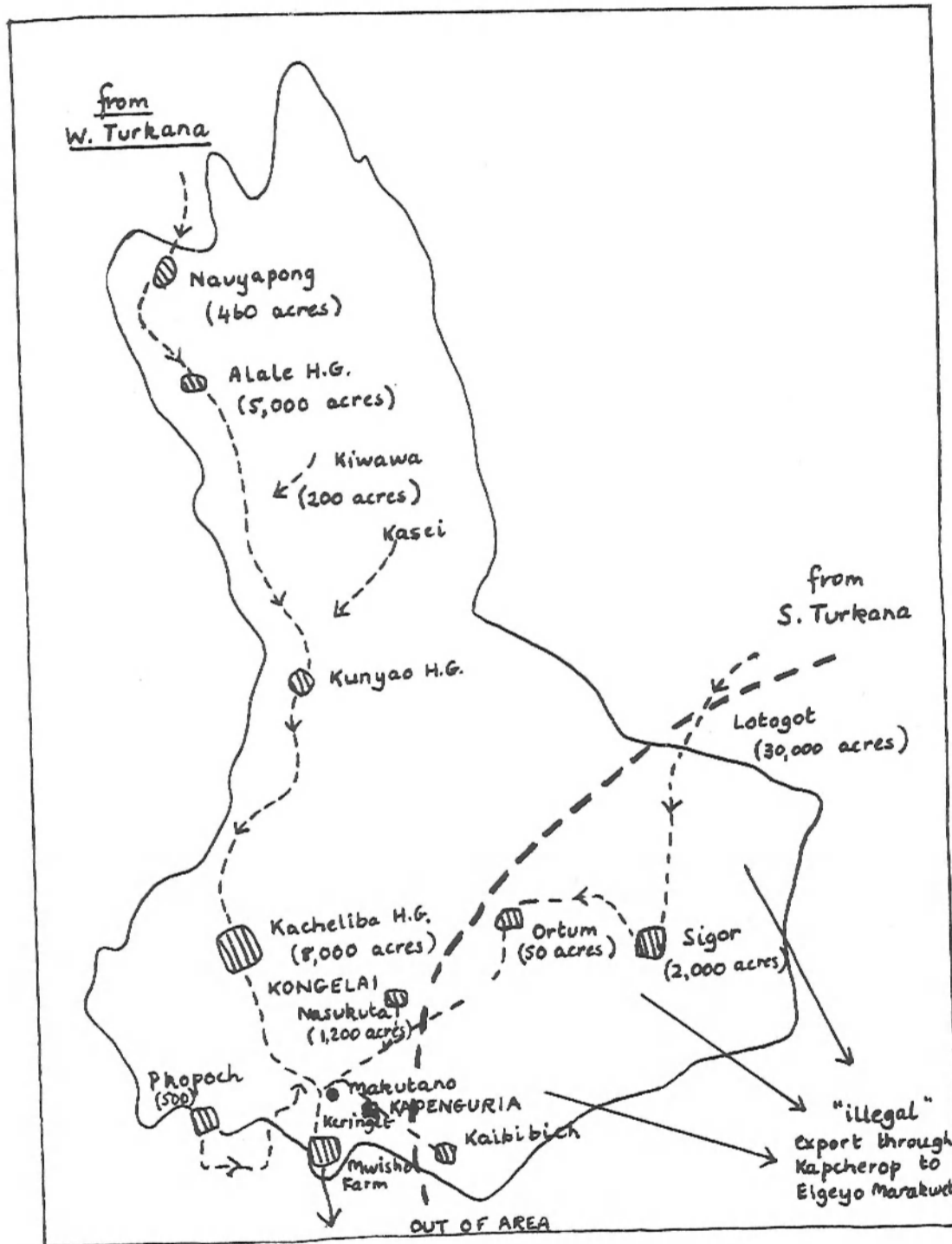
A major development effort is underway in Kenya to provide marketing facilities for livestock, particularly from the more remote **range** areas where the potential for commercial production is thought to be high but constrained by the lack of marketing channels and facilities. There is general agreement that, while livestock is principally used for subsistence purposes in these areas at present, given appropriate institutional changes, certain strategic inputs into their production systems and an outlet for their stock, these regions could become significant breeding areas, **responsible** for the production of large numbers of meat animals. The proposal is for the movement and marketing of livestock to **be accomplished** through a chain of stockroutes and holding grounds provided with adequate grazing, watering and disease control facilities. This system is a principle responsibility of the Livestock Marketing Division (L.M.D.), and considerable finance has been made available by the World Bank. Stockroutes have been established in two of the SRDP areas which have been discussed in **this** chapter, Kapenguria and Migori.

The Stockroute System in Kapenguria

Kapenguria Division borders on the **Trans**Nzoia 'disease-free' zone and serves as a gateway into that zone for an extensive dry-land range area in North-Western Kenya including Karapokot and **Turkana**, via a major collection centre at Mwisho Farm. Figure 2 indicates the location of the stockroutes and the various holding grounds and outspans to be provided. One of the most significant problems in moving cattle from the pastoral areas is the transmission of disease, and a substantial part of the L.M.D. investment in Kapenguria is designed to provide quarantine facilities so that cattle can move from the areas where foot-and-mouth, contagious bovine pleuropneumonia (CBPP) and other diseases are considered endemic into the 'clean' Kitale area and on, either to slaughter or to finishing and fattening operations.

A second, very important aim of the stockroute system is to stimulate local sales of cattle, especially from the lower part of Kapenguria. For this reason, the establishment of stock routes was to be combined with energetic campaigns to persuade owners to sell. The 1972 I.D.S. evaluation of SRDP described the proposal as follows:-

Fig. 2. The proposed stock route system in West Pokot, Kapenguria



To help facilitate increased marketing of cattle the Programme calls for the acquisition of a large holding ground/sale yard (Mwisho Farm), reorganizing existing holding grounds and sale yards and improving facilities on each, and the establishment of new holding grounds. In addition an intensive effort to organize regular livestock markets in collaboration with KMC buying agents was to take place. (P.A.5)

Apart from the physical amenities offered for facilitating the movement of cattle, and perhaps for the fattening of cattle at holding grounds (little was said of the detailed mechanics proposed for cattle fattening), protection would be offered against the periodic paralysis of the whole marketing system when auctions need to be cancelled as a result of disease outbreaks, since cattle would always be free to enter quarantine at holding grounds and to be sold immediately on arrival there. Quarantines would be much more effective than in the past when owners retained their cattle and were supposed to keep them in isolation for 21 days after inoculation.

Problems Encountered in Establishing the Stockroutes: The new system, taking over from the old County Council salesyards, came into operation in June 1972, although some holding grounds were not fully equipped. This is still the situation, and many of the other specific problems in establishing the system described by C. Barnes in the 1972 I.D.S. evaluation have not yet been resolved. At Nasukuta, the major holding ground near Kapenguria is said to have been "deserted by L.M.D. (Livestock Marketing Division) staff as a result of a misunderstanding between L.M.D. staff and the population". (Annual Implementation and Evaluation Review, Kapenguria, 1974.) The same report describes the acquisition of Kacheliba, the main holding ground for the western stock route and for the ~~group~~ ranching area, as "deadlocked", together with that at Pkopoch, also near the Pkopoch ranching area. At Kacheliba where the people had agreed to release 8,000 out of an original 10,000 acres of very low carrying capacity, they are now unwilling to give any. At Pkopoch, which is intended to serve the local Riwa area, the Land Adjudication Department has allocated only 500 acres out of the 2,500 wanted by the Livestock Marketing Division, and people are still living in this small area who are reluctant to move. Some problems remain at the Sigor holding ground, and even at Mwisho Farm construction is not yet complete.

Especially in areas where there are no clear individual land rights,

the establishment and alienation of holding grounds and other links in the stockroute chain present severe problems. Mwisho Farm, the final link in the chain of stockroutes is now half technically in Kapenguria District and half in Kitale for quarantine purposes. The farm was purchased outright from individual owners and presents no conflicts or difficulties of this sort. In most of the other holding grounds or outspans, by contrast, there is a seemingly never-ending dispute over the right to alienate the land. The results of these disputes can seriously hamper the development of the holding grounds, even to the extent of physical interference with the process of installing the necessary fencing and other infrastructure. Chronic grass-paching, intimidation and harassment, and a high incidence of stock theft are all further consequences of the local antagonisms created by disputes over land rights.

It must be realised that these problems are completely inimical to the logic and requirements of a functioning stockroute. This logic requires that holding grounds must be completely sacrosanct, that the grazing and other resources be preserved for the cattle using the route, and that contact with other livestock be minimised for purposes of avoiding the transmission of disease. The other point that must be realised is that a weak link can compromise the efficacy of the entire stockroute chain. If grazing or water or adequate security is not available in one of the links, the rest of the links in the stockroute chain can be rendered unusable despite the substantial investment and work already committed.

A case of the extreme difficulty of establishing L.M.D. rights to holding grounds is the Kacheliba holding ground project on the border between the Karapokot and the Pokot, the last Karapokot link in the route from Lodwar. Sales yard facilities already exist (though in need of some repair), and it is planned that the holding ground should play a crucial role in the quarantine programme to contain CBPP. The Pokot areas are regarded by the veterinary authorities to be clear of CBPP, but the Turkana and Karapokot areas are not (We will comment on this topic shortly.).

The problem is fundamentally one of establishing ownership of land that has not previously been owned by an identifiable group or individual. It has been particularly hard, under these circumstances, to find or identify a recipient for a lump sum payment that would allow the ownership issue to be resolved. The L.M.D. argues with some justification that payments to anyone under these circumstances would merely complicate the issue, since it would hardly be feasible to compensate all the people who might be able to come up with some sort of claim to the land. Since the L.M.D.

expressed interest in the land, there have been accusations that the local politician who represents the area has been moving additional people onto the land to try to establish their claim to any payment that might be made. The L.M.D.'s position is that since the land is not owned, no one is to receive payment and that the L.M.D. can simply fence and alienate the land without recompense to anybody. In view of the fact that the holding ground is designed to serve the population right up the stockroute and not primarily those in the local area, this position appears to justify. There is evidence, furthermore, that this solution is unacceptable to the people of the area, with all the consequent problems to which reference has been made.

Without any attempt to underplay the difficulties involved in land negotiations in circumstances of communal land ownership, some principles should clearly be established to guide the negotiations. The first is that communal land ownership should not be equated with the absence of ownership rights to land. The land may not be alienable by any one individual but it is a significant economic resource (in fact the most basic of economic resources in these areas) for the community, and there are in fact clear notions as to who has access to it and who does not. (These notions may not be very explicit in the abstract, but they can quickly be discovered when they are infringed.) For the L.M.D. to come in under these circumstances and fence and alienate the land does impose significant costs on specific individuals. These individuals may be hard to identify, but the principle is valid, and it suggests that land alienation should not take place without recompense.

The second principle is that the recompense for the land should go to those on whom the cost is imposed, in other words, those who would have otherwise used the land. If the land, following alienation, were to be used in a fashion that would benefit those who bore that cost (and in at least equal measure), no problem would arise. At the top end of a stockroute chain, this argument offers some support for the position that no payment is called for, on the grounds that the benefits from establishing the holding ground or outspan are distributed approximately in proportion to the costs imposed. Those with the greatest prior access to the land will presumably be the greatest beneficiaries from the marketing facility. However, at the bottom end of the stockroute, which has the characteristics of a funnel that gathers livestock from a wide area and feeds them through a narrow neck, this logic does not apply. In this case the beneficiaries

of the holding ground, which must necessarily be large enough to accommodate all the stock that is passing through from the whole area served by the funnel, are only to a very limited extent the people who bear the cost of the land alienation. Unless those whose land is alienated are compensated, they are in effect being taxed in order to subsidise the population served by the entire funnel. Transfers of this kind are unlikely to meet with the approval of those from whom resources are being transferred and, as we have argued, unless there is broad local approval for the transaction, severe problems arise.

In summary, L.M.D. acquisition of the land for the establishment of links in a stockroute should not in general be undertaken without recompense, and the distribution of that recompense should be, and should be seen to be, to the people who would otherwise have had access to the land.

The natural recommendation that emerges from these arguments, and from the severe difficulties of finding appropriate recipients for a cash payment, is that the recompense be of a non-monetary sort, i.e. some desired service to the local people. It seems likely that the specific service to be offered should be the subject of negotiation at the time of establishing the holding ground. It is possible that a health facility, a livestock health facility, a school or a water point might each be a candidate for the quid pro quo to be explicitly offered in exchange for the land.⁵ The location of the service would ensure that it was indeed accessible to the community that formerly had rights to the land, and the ongoing nature of the service is particularly appropriate in view of the continuing income stream that the community has forgone in its denied access to the piece of land. We would strongly reiterate at this point that land alienated for the establishment of stock routes must be sacrosanct. It is essential that the administration and all agencies of Government appreciate this and ensure the inviolability of the stockroute land units.

Problems Associated with the Functioning of the Stockroutes: As indicated in Fig. 2, there is considerable illegal movement of cattle towards the south-east which ignores the new system. This passes through Kapcherop and down the eastern side of the Cherangani Hills to Elgeyo Marakwet. One

5. Such an offer should however be clearly seen to be over and above the normal 'entitlement' of the area to such facilities, and not merely substituted for what they might in any case have received.

estimate put this at about one-third of the total movement, this third coming mainly from Sigor Division, Lelan Location and perhaps half of Kapenguria. Since redesigned stockroutes in Migori have also failed to accommodate the natural flow, it seems worth suggesting that more careful study by the L.M.D. of traditional trek routes is needed as part of the planning of improved routes.

Another aspect of the same situation is the apparent paucity of cattle owners or traders willing to use the facilities which have been provided, particularly at Mwisho Farm. Of course a contributory factor is that the group ranches proposed in the area have yet to "get off the ground", but these should not in any case be expected to increase sales very quickly. The north-south traffic through Mwisho Farm does not appear to have materialised, so that, because of the cost of upkeep, there was a Project Committee suggestion in January 1974 of "handing over the farm to West Pokot" or otherwise disposing of it.

The traders' reluctance to use the holding ground is apparently motivated by the inconvenience of the quarantine period, which imposes very substantial costs on their operations. The first expense, particularly for the smaller trader faced with limited financial assets, is the cost of tying up his working capital. Quick turnover is vital to the profitability of these trading operations. During the period in which a mob of cattle is held up for quarantine purposes in a holding ground, the trader might have utilised the money to bring two more mobs into the market. The risk of the trading operation, furthermore, is directly related to the time that the livestock are in the traders' hands. Death from various causes, theft, and other possibilities of loss are all significant elements of risk, and the longer the trader owns the stock, the greater are the chances of such loss. The final cost item is the traders' time and transport. Instead of being able to complete the transaction in a single trip, a minimum of two trips has to be made, with herding and guarding also required for the period of quarantine. Dipping, vaccination and sometimes grazing fees are also payable by the trader, and while these are relatively small they are an additional irritant and a disincentive to use the facility.

A significant effect of the delays and costs incurred in using a holding ground is that trade becomes restricted to the largest and best financed traders. Because of the lack of competition, these traders are then in a position to reap inordinate profits, to the detriment

of the initial producers and of the buyers.

Moreover, since the appearance of traders in the area is usually erratic and their numbers small, it is difficult to organise auctions in conjunction with the routes. The number of cattle available is also erratic, so that there may sometimes be a great many cattle and few traders or vice versa.

The Stockroute System in Migori

The Migori SRDP area straddles an important traditional trek route for cattle passing from Tanzania to Uganda, as well as to the Kenyan market in the Kisumu area. In 1970 for instance, permits were issued for the movement of some 20,000 cattle, well in excess of the estimated offtake and indicating a substantial trade. Whatever the benefits of such trade, it has made control of contagious stock diseases in the area, particularly foot and mouth disease, extremely difficult, and the area has frequently been closed for quarantine purpose for periods up to nine months. Since the trade would be difficult to stop, even if this were desirable, the sensible idea was formulated of trying to channel it through a controlled system of stock routes and holding grounds along which movement would depend on vaccination together with adequate quarantine periods. Ranches for fattening stock might also be incorporated into the system for additional commercial benefit.

Two holding grounds were planned, for Macalder in the centre-west of the area and for Lichota in the east. The Macalder holding ground is a substantial one of some 6,000 acres. Only one consignment of 35 cattle has stayed there so far. Even threats to withhold traders' licenses if they do not utilise it have been ineffective. A spray race for cattle which was erected had to be dismantled for fear of theft, since it was not in use.

There appear to be a number of reasons for the failure to use the holding ground at Macalder. For one thing, although it was designed to absorb cattle passing along the traditional route to Uganda, it is some distance to the east of the actual route, which passes more directly to Homa Bay from where the cattle are shipped. Traders do not appear to be willing to make the required diversion or to alter the location of their traditional auctions. This unwillingness, however, may be due to a second reason, which is that they would have to leave

their cattle in quarantine at Macalder for a minimum of 28 days, a major cost and inconvenience, and pay charges of shs 9/10 per head. What has to be remembered is that traders, unlike farmers, are only transient owners of the cattle and have little incentive to vaccinate unless they are actually prohibited from moving or delivering livestock to their destination. But neither Uganda nor the local butchers at Ahero or Kisumu require vaccination certificates. Another factor, of course, is the lack of substantial local supplies of cattle for sale which might otherwise have used the holding grounds.

A final reason for the failure to use the Macalder holding ground, according to several local reports, is a persistent dispute and considerable local acrimony over land rights, similar to the situation in Kapenguria already discussed. The land formerly belonging to the old Macalder mine was purchased and turned into a holding ground, but a number of the employees of the mine and other local residents were squatters on the land. Their removal was accomplished in a fashion that apparently left a number of them considerably antagonised, and some of these disgruntled would-be landowners have made it their business to mount a campaign of rumour and intimidation that has inhibited local livestock owners who might otherwise have made use of the holding ground.

Had **there** been substantial use of the Macalder holding ground, the absence of water supplies would have been a major problem, though there is a river from which pipes could have been installed at a cost. What could now be done is to calculate the cost of installing water supplies to permit grazing throughout, and thus estimate the viability of establishing a small ranch either as a state or cooperative enterprise.

The second holding ground located at Lichota in the east was meant to accommodate the more easterly stream of traffic heading for Kisumu, and also to be near to the cattle-owning Kuria who were "more interested in cattle than the Luo" and reluctant to bring their cattle right into the Luo area for fear of conflict or theft. At Lichota compensation had to be paid to landowners, at a cost of over £K 16,000 and another £K 3,000 was to be used for a spray race, fencing (2,500 cedar posts were purchased) and paddocking the area. While this holding ground is not yet operational, optimism is not high in view of experience at Macalder.

PROBLEMS ASSOCIATED WITH DISEASE CONTROL

Foot-and-Mouth Disease: The infective organism involved in foot-and-mouth has a number of different strains and a remarkable ability to mutate. Comprehensive vaccination campaigns are technically feasible, but as revaccination is necessary every six months or one year, the cost of a continuing vaccination programme is very large. Since the disease does not, furthermore, have a very significant effect on the productivity of local Zebu stock, such a vaccination programme is hard to justify. Three strains of foot-and-mouth (A, O, and SAT 2) are major problems in Kenya, with two further strains (C, and SAT 1) presenting more **minor** problems. A separate vaccine for each of these strains is necessary (but they can be combined for inoculation) and a constant **monitoring** is required to keep up with mutations and develop relevant vaccines.

In view of the costs and difficulties in mounting an eradication campaign in the whole of Kenya, the next best interim measure is the containment of foot-and-mouth in those areas where eradication cannot be justified economically or presents particular problems of feasibility. While complete containment is probably not realistic (The organism can be transmitted in slaughtered meat, on the tires of vehicles, by wild game and on the soles of human feet.), the principal method of transmission is by the movement of infected stock. To avoid this, areas where outbreaks occur are quarantined and an additional period of quarantine is required for any cattle moving from what are regarded as the endemic areas. The incubation period for the disease is relatively short (about one week), but cattle can be asymptomatic carriers for up to 8 months after recovery from an acute attack. A policy of compulsory vaccination areas and the classification of zones between which cattle movements are severely restricted is the current Kenya strategy for controlling the disease. In the meantime, eradication efforts in certain of the endemic areas are proceeding.

The requirement for a quarantine period during which any cattle to be moved out of an area are held, observed and vaccinated imposes the need for large holding grounds. The cattle must be fed, watered and dipped while the various veterinary observations and procedures are being carried out.

Contagious Bovine Pleuropneumonia⁶: In the case of CBPP, the situation is substantially different. Unlike foot-and-mouth, which is sometimes

6. For technical information on this disease see J.R. Hudson (4).

hardly noticed by the stockowner, this disease is a very serious one which can spread rapidly and lead to a large number of deaths in a short time. CBPP also has the severe complication that a beast can be an asymptomatic carrier for many years, and can then be the source for a new round of acute infection within a herd. The incubation period for the disease can also be long, with up to six months between infection and the outbreak of the disease. In many ways, however, the disease is far more susceptible to eradication. With good reporting techniques including systematic lung examinations in abattoirs, with rigorous quarantine and movement restrictions when the disease is identified, and with comprehensive and regular field testing, slaughter and vaccination programmes, eradication is a realistic possibility. This is not to minimise the problems of eradication in areas such as Northern Kenya where substantial cattle populations are widely dispersed at low density, where herd ownership patterns are complicated and difficult to establish, and where cattle movements over long distances are hard to predict or control. Nevertheless, very significant progress has been made with the control of the disease in Kenya and in the entire Rift Valley Province, for instance, there has been no reported outbreak of CBPP for the last five years.

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CONTROLLING DISEASE WITHOUT DISRUPTING THE MARKET: A PROPOSAL

The problem arising out of the existence of such diseases is how to restrict or control movement in order to minimise the transmission of disease, with all the costs imposed by disease outbreaks, while inhibiting as little as possible the efficiency of the marketing of cattle. The marketing system is the commercial and economic lifeline for the range areas and unnecessary or excessive interference with that system imposes significant costs. The present situation may be said to combine the worst of both worlds.

For example, in the case of CBPP, a three-month quarantine period is imposed while the cattle are tested, observed and vaccinated. However, if there had been an outbreak of the disease in the area served by the stockroute, this period would not be long enough to ensure that CBPP was not transmitted through the supposed barrier. (As has been mentioned, it is possible for a cow to contract the disease up to six months after the initial infection.) If, on the other hand, efficient reporting systems existed in the production areas (and the disease is relatively easy to

spot according to the veterinary authorities) and these showed that there had been no outbreaks, then a three-month quarantine period, at some arbitrarily chosen line, would clearly be unnecessary, or at least excessive.

If the problem is that reporting systems in the production areas are not adequate, then clearly investment and effort should go into improving them. Such measures are warranted not merely from the point of view of containing the disease, but also as an absolutely essential step in its eradication. There is a clear need to monitor abattoirs, not because there is any danger of infecting humans with the meat, as is the case with anthrax for instance, but purely because this is an important way of identifying herds in which the disease exists.

In Kenya's border areas the international reporting of scheduled diseases assumes particular importance. The principal reason why Turkana and Karapokot are treated as endemic CBPP areas is not because of any incidence of the disease in the cattle from those areas, but because there is considerable movement back and forth across the border among the Karamojong, and the Kenya authorities do not have confidence that outbreaks in Uganda will be immediately identified, reported and contained.

What is needed is proper reporting and disease identification when there are outbreaks, together with adequate and comprehensive quarantine impositions related to those outbreaks. Arbitrary and fixed requirements, imposed regardless of whether or not there has been a local outbreak or an outbreak over the whole of the area from which cattle are being funnelled, engender disrespect for the system and encourage its **bypass**. The present system is unrelated to actual disease reporting and may severely inhibit the movement of cattle without reducing the spread of disease. Beyond this, cattle are diverted into non-legal and illegal channels about which it is hard to get information, and which are particularly hard to control should the need truly arise. The result is the ironic situation that in the event of a significant outbreak of a particular disease, the authorities are less able to bring about the necessary movement restrictions than they would have been if the regular system had been less restrictive, and had attracted the bulk of the trade through it. The advantages of having the system used, at least by the great bulk of the livestock moving from these areas, are that the monitoring process is facilitated and that the flow

can be temporarily stopped when it proves necessary.

The importance of making sure that the stock route system matches the natural flow of livestock is thus underlined. It must be accepted that there is probably no completely safe way of moving cattle; but the risks, while they are significant, should not be seen to the exclusion of the benefits of the marketing system. In general, the diseases discussed here do not lend themselves to successful containment by reliance on holding grounds, especially if these are such that traders and others who move livestock make efforts to avoid them.

INTERVENTION OF THE L.M.D. AS PURCHASING AGENTS: A PROPOSAL

As mentioned above, the intention in instituting the stock route system was not merely to permit the **sale** of livestock, in the **face** of the disease threat, but also to positively encourage the selling of cattle in overstocked and non-commercialised areas locally, as well as from areas further north, by providing improved marketing facilities. In this second aim, the system appears also to have had little or no success, and a different approach may well be required.

It appears that in the area as a whole, including the north, the number of traders is small and their appearance erratic, and they are **reluctant** to pass cattle through quarantines and thus to use the routes provided. Consequently livestock-owners may **have** to travel long distances, with adverse effects on the cattle moved, to reach highly unreliable markets, involving a risk which must act as a considerable disincentive to sell at all. In the case of maize and other food or cash crops, it has often been accepted in East Africa and elsewhere that incentives to producers can usefully be improved by institutionalised marketing arrangements or guaranteed minimum prices.

Consideration might be given here not to comprehensive state marketing, but to intervention through buying **agents** to guarantee sales at scheduled auctions at some pre-announced 'floor' price, which might vary seasonally or from year to year. Such prices would be fixed low enough so that traders attending auctions and offering reasonable prices would be able to make successful bids, but owners would be guaranteed a sale for beasts of 'fair average quality' (The problems of grading and valuation would obviously have to be investigated extensively.) without having to return with their beasts from an auction. At the same time,

the buying agents could attend auctions arranged in the northern areas and could bring cattle down through the scheduled stock route system, performing all necessary inoculations, thus ensuring that benefits from this system are obtained. This suggestion does not represent a departure from principle since the L.M.D. is already empowered to act as marketing agents and indeed was intended in the original proposals for Kapenguria to commit itself to a much more direct marketing role. The need is for the L.M.D., or failing the L.M.D. a new agency acting as an intermediary for this particular purpose, to adopt a specifically development-oriented role in the pastoral areas, not taking over but supporting the marketing system with some form of 'minimum intervention'.

SOME COMMENTS ON PIG AND POULTRY PRODUCTION

The promotion of pig and poultry production is included among the projects in several of the SRDP areas: pigs in Migori, Vihiga and Tetu, and poultry in Vihiga, Tetu and Kwale. Livestock officers in the other areas are also involved in promoting pig and poultry production, if not as **SRDP** projects. There is very little to report regarding the actual projects, but a number of observations can be made on the development of pig and poultry production.

Pig Production

In the case of pig production, a tendency exists for livestock officers in each area of Kenya to ascribe the difficulties faced in promotion to the special problems of the locality or to associate them with the local people. This was observed in several of the SRDP areas. Thus in Migori, where a demonstration unit was started in September 1973 at Oyani Farm, it is stated that "the main constraint is the farmers' lack of interest in pigs" and also that "people are not used to eating pork". There is reference in Migori to the "very successful" production in Kakamega District, which is contrasted with their own experience. If, however, one inquires in Kakamega, it is difficult to trace this success. In Vihiga it is stated that "only two farmers produce good porkers", of whom one is a missionary farmer and one is the former head of a Farmers' Training Centre.

In fact there appear to be some very rational, economic reasons for the restriction of both production and consumption. The first is the availability and cost of feedstuffs. As mentioned in Migori, a pig

"needs one bag of maize a week or it is starving". The problem is, in the first place, that pigs are often fed much the same basic food as ~~human~~ in Kenya, maize, and this is not available as a surplus on small-scale farms. Likewise small farms do not generate large quantities of waste products, turnip tops for example, which can be fed to pigs. This is a major handicap to production in Vihiga for instance. As a result producers there are heavily dependent on purchased feedstuffs, the price of which is currently very high. Thus not only does the high price of feed relative to the price of pork make pig production a rather unattractive proposition at the moment, but the effect of costly feed on the sale price itself restricts demand. The second limiting factor is in fact the restricted local market which exists for pork especially at current prices. Local demand for commercial output in Kenya comes especially from institutions such as schools and hospitals which have a limited ability to pay, and Uplands which makes its purchases mostly from localities within range of its Rift Valley factory.

A second observation is that the promotion of pigs in an area seems to be a cyclical or periodic activity. Thus, in Vihiga the local District Officer was actively engaged in the promotion of pig production, with considerable success, in 1956 - 58, nearly twenty years ago. At this time a great many farmers became interested in the project, growing cabbages in particular and native potato leaves for feed. Estimates of pig production in Tetu show that the activity is by no means new. Table 14 gives, as an index of production, the number of sows kept by farmers. Since 1969 - 70, the number of sows has fallen

Table 14. The number of sows kept by farmers in Tetu Division, 1967-74.

Year	1967	1968	1969	1970	1971	1972	1973	1974
Number of sows	623	n.a.	1971	1835	915 ^a	599	703	572

a. includes gilts.

Source: Tetu Division Annual Reports.

by two-thirds. Two factors apparently underlie this trend: the rising cost of feed over the period as a whole and lack of markets, especially in the period 1969 - 70, when there was obviously excess production on the established pattern of the hog cycle. During 1969, as revealed in a pig census in December, the total number of pigs in Nyeri District

rose by approximately 80 per cent, and the number of pig keepers by 50 per cent. While some 10,500 pigs were ready for marketing outside the District in 1970, the cooperative union had a contract with Uplands for only just over 7,000. Producers were apparently seriously discouraged at this time and, given also the unfavourable factors mentioned already, production has not recovered since. This experience indicates first, the importance of finding specific markets if pig production is to be expanded; and secondly, that "lack of farmer interest" in pig production is not an inherent constraint but rather the consequence of prices and economic factors. In particular, if production is stagnant in Nyeri, where there is good access to the main outlet, Uplands, the prospects elsewhere are not likely to be favourable.

Despite this, there are periodic references in Ministry of Agriculture files all over Kenya to "the need to persuade people to eat more pork", with suggestions either for consumer campaigns or new drives to encourage producers. These can only have an adverse effect on the value attached to extension advice, as well as wasting the time of livestock officers, if they are not related to calculations demonstrating a favourable economic basis. Very largely, the economics of pig production involve knowledge of only two prices, the price of feed (input) and the price of pork (output). It should not be left to livestock officers all over Kenya to guess these: it should be routine for the Planning Division of the Ministry of Agriculture in Nairobi to monitor these two prices and inform local officers of the appropriate time to emphasise pigs.

A second point worth stressing is the need to distinguish between commercial and subsistence production of pigs. The commercial market in any area is generally quite circumscribed, depending on the extent of interest by Uplands and the number of local institutions making purchases. Promotion should be extended to subsistence production, i.e. production for consumption at home: it may be easier for small farmers to sustain one or two pigs for their own consumption, using offal from their farm, with very little commercial feed supplement, rather than breeding and keeping larger numbers of pigs, an activity inevitably dependent on commercial feed.

Finally, whether commercial or subsistence production is being considered, promotion should be concentrated in those areas where a large

proportion of the required feedstuffs is likely to be available on the farm, if possible as waste products. Government farm experiments appear chronically incapable of production methods of this sort, and generally themselves require heavy and unjustified subsidisation.

Poultry Production

The promotion of poultry production is a much more important farm activity than pig production because of its easy integration into traditional farm activities, the much wider local market (commercial and subsistence) for both eggs and broilers, and the important nutritional aspect.

Poultry production is not listed as an SRDP project in Kapenguria, but comments made locally on the subject are revealing of the general position. Modern poultry industry in the District, it is said, "tends to be erratic", and "a farmer picks it up and either abandons it half way or goes to the end, then swears never to reestablish it again". The reasons for this are again the high cost of feeds, the high competition from local eggs and a limited market. The cost of eggs from high-grade birds on commercial feeds is said to be higher than the ordinary 'local' eggs. This is again indicative of the need for the Ministry of Agriculture Planning Division to monitor the prices of inputs and outputs in poultry production, but also of the need for more careful appraisal of its economics than has been made so far. Beyond this, it suggests an even stronger need than in the case of pigs to examine the potential of traditional poultry production, which is clearly both important and competitive rather than simply to focus on a small number of 'progressive' or 'modern' poultry farmers.

In Tetu, two SRDP poultry projects were planned for broilers and for layers (the latter consisting of sending interested farmers to the local farmers' training centre for training), but these were not implemented, mainly because of the unfavourable impact of rising feed costs. Despite this, some **indications exist** in Tetu of the potential for poultry production, as shown in Table 15. What is significant here, more than the increase in the total number of birds in the last year, is the increase in the percentage of exotic birds from a very rough estimate of 18 per cent to nearly 30 per cent in two years, indicating the **possibilities** for increasing productivity in poultry production as a whole.

Table 15. Recent trends in poultry production in Tetu Division.

	1972	1973	1974
No. of exotic birds	4,151	4,682	7,245
No. of native birds	22,456	21,419	24,603
Total poultry	26,607	26,101	31,848
Percentage exotic	18%	22%	29.5%

Source: Tetu Division Annual Reports.

While poultry is an SRDP project in Vihiga, expansion has been assisted throughout the whole district by International Development Association loans through the Agricultural Finance Corporation, as shown in Table 16:-

Table 16. I.D.A. loan approvals for poultry production, Kakamega District, 1970-74.

Year	1970	1971	1972	1973	1974	Total	1970-74
Loans approved (shs '000)	7.7	6.9	18.0	50.3	179.0	261.9	

The local market for eggs is apparently very favourable, but it was not possible to make a detailed investigation of local production, or the impact of the loans issued. The aim should be to ensure as wide a distribution of poultry/eggs production among small-scale producers as possible: the extent to which the programme above is consistent with this aim might be examined. The SRDP project in Vihiga is for a central brooding house, which will cost Kf2,500 and will be run cooperatively by farmers, to take delivery of day-old chicks for subsequent redistribution among farmers. Currently, because of the distance from the hatchery and lack of proper care of new chicks by farmers, there is a very high mortality rate. Both the ideas, of providing local 'wholesale' distribution facilities and of cooperative operation of the enterprise, appear to be well designed to have a very widely spread effect on poultry production. This

is therefore an important experiment which should be carefully monitored, but which will require considerable assistance and supervision during the early stages.

The poultry industry in Migori has always been underdeveloped. Just before the SRDP started in 1969, there were only 270 improved birds in the Division. The local supply of eggs is still apparently small and subject to wide fluctuations. The eggs are small and often stale, pointing to a marketing as well as to a production problem. A 'poultry breeding and marketing' project was listed in 1972-3, to include setting up a nucleus poultry unit at Oyani Government Farm to supply day-old chicks to farmers, but this has not yet been implemented. In 1973-74, only three successful farmers were reported in the Division, with 266 laying birds, but with 32 other farmers interested. Poultry production appears to have much greater potential than pig production in Migori. However, it requires simultaneous efforts to organise marketing, something which has so far been neglected.

FINDINGS AND RECOMMENDATIONS

Dairy Production

1. Grade cattle development in Kenya needs to be based on a strategy for consolidating and extending existing 'clean' (disease-free) and 'semi-clean' areas. This should indicate priority areas for major effort.
2. Among the SRDP areas, Kakamega District offers a number of promising indicators and should be considered a priority, but not Migori or Kwale.
3. The maintenance of cattle dips in the country as a whole is atrocious. Because of external diseconomies from non-dipping (social benefits from dipping), we recommend as a radical proposal free dipping, if not in all Kenya then in strategic development areas as the basis for a comprehensive approach to the disease control/dairy development problem. This would be for a minimum transitional period of three years. Testing and maintaining the strength of acaracides should be taken over by the **Veterinary** Department. Costs should be financed from taxation (perhaps on cattle sales) as with other public goods, such as roads, yielding social benefits.

Beef Production and the Stockroute System

4. The appropriate strategy for improvement in beef-producing areas still needs consideration.
5. It is essential that in the process of establishing holding grounds and other links in a stockroute chain the issue of land rights be resolved so that the land which is part of the stockroute is considered sacrosanct. The logic of a stockroute requires that these land units be as free as possible from trespass, grass poaching and **stock theft**. Resolution of land rights is particularly difficult in areas where land is communally held. It is recommended that the problem of recompense to the existing users of the land should not be ignored, but that **the** provision of some service that would be particularly desirable and accessible to those users would be a way of solving the distributional problem and minimising conflict.
6. The current emphasis on quarantining cattle in a final holding ground should be replaced by an emphasis on radically improved reporting of diseases in the whole area from which the cattle are funnelled. Markedly liberalised movement along the stockroutes when quarantine restrictions are not necessary should be combined with far greater efforts to clamp down on stock movements when quarantines are warranted and such movements would involve unacceptable levels of risk. If movement along the officially recognised routes were liberalised, an additional advantage would be the relative ease with which disease problems could be monitored, with a minimum of policing.
7. The questions of where to establish the CBPP 'boundary' and, indeed, the question of whether it is necessary to have such a boundary at all, should be immediately reviewed. If the area from which the cattle are drawn is known not to have had an outbreak for years (as is the case for the Rift Valley Province), a three-month delay at an arbitrary point for quarantine reasons is very hard to justify. Once again this approach should be replaced by improvements in the disease reporting system and by an ability to impose the necessary quarantines and cattle movement restrictions, along with the other CBPP control measures, should any outbreak occur. (We would emphasise the word "necessary"; an outbreak in Mandera does not make it necessary to impose quarantine restrictions in Karapokot, merely because both are in the "Northern Frontier".)

Tetu and Nyeri District

8. The advanced livestock development here indicates what can be achieved, and can be considered something of a model for other areas. The history of livestock development in the area points towards a comprehensive approach as the best strategy, rather than a piecemeal one, and an approach which incorporates the mass of farmers rather than only the most progressive.
9. The credit/extension experiment for the promotion of dairy cattle appears to have been highly successful, and merits cautious replication elsewhere.

Migori - Macalder

10. The Macalder holding ground is unlikely to be used at this stage of livestock development in the area. The feasibility of some water investment to permit the establishment of a small cooperative ranch should be investigated.
11. A study of milk marketing in the area, proposed some time ago, should be carried out.
12. The model dairy farms are not appropriately scaled in relation to average farmers in the area.
13. The disease problem precludes efforts at substantial grade dairy cattle development at this time.
14. Artificial insemination services also cannot be profitably developed throughout the area as a whole.
15. Provided that the recommendation for general free dipping is accepted, then an attempt to establish a small clean area around Oyani Farm could be made, including a grade cattle credit programme and an artificial insemination run.

Vihiga - Hamisi

16. There is contradictory evidence about the relative profitability of dairy enterprise (with existing mortality rates) and alternative farm activities in the area. However dairy production appear at least competitive, if not superior. The advantages of moving towards the long-term goal of a disease-free area, as well as the immediate nutritional benefits, appear to move the balance decisively

in favour of dairy enterprise as a complement to existing cropping patterns in the farming system.

17. Dairy enterprise promotion should be combined with a frontal approach to the disease problem, based on a programme of free dipping. Promotion in the absence of effective disease control is likely to be disastrously wasteful.
18. The attempt should be made to distribute cattle as widely as possible among smaller farmers, replicating the Tetu experimental extension method.
19. Default rates should be calculated separately for borrowers losing cattle through disease and those not.
20. The grade cattle credit programme should not be abandoned, but attempts made to expand its scope, with due attention to the management problem and in the context of an effective disease control programme.
21. The eight per cent rate of interest should be kept, but an attempt should be made to remove the subsidy obtained by defaulters by more strenuous attempts to recoup loans and more careful selection of farmers.

Kwale

22. The 94-acre farm plan is inappropriately scaled for the area. Extension efforts should be concentrated on proposals which are more appropriate to small farmers and which would not create inequalities. The small-scale dairy unit for a 10-acre farm is much more promising. There might also be further experimentation with stall feeding with zero grazing.
23. Much more farm-level research needs to be carried out in the mixed farming areas.
24. The area has some severe problems which cast doubt on its potential as a priority area for grade cattle development, but more research needs to be done on milk supply and marketing. The coastal belt clearly offers a considerable market for milk, as the transportation of milk from upcountry involves very substantial costs.

Kapenguria

25. The system of stock routes has been extremely difficult to establish and facilities provided so far have been largely unutilised.
26. The possibility that the proposed system does not coincide entirely with the natural flow of cattle traffic should be examined. This flow should be more carefully studied before such routes are designed.
27. The Livestock Marketing Division (L.M.D.), acting as an intermediary between livestock owners and Kenya Meat Commission and other markets, has the specifically development - oriented function of encouraging sales and stabilising markets in pastoral areas. For various reasons L.M.D. has not yet established itself in this function. Either the L.M.D. should renew its commitment in this area or a new agency should be established which could act more positively as an intermediary in the pastoral areas, perhaps in the direction of establishing guaranteed outlets at some low reserve price.
28. Disease control measures and dairy production should be concentrated in a small disease-free area within Mnagei Location.
29. Neither bull camps nor artificial insemination services have been successful in Mnagei. The latter are largely premature. Possibilities for artificial insemination in the 'clean' area of Lelan should be examined, in preference to bulls.
30. The sheep farming development in Lelan is extremely promising. The possibility of accelerating the implementation of the programme should be investigated.

Pigs and Poultry Production

31. Periodic and uncoordinated efforts at promotion of pig production in different areas of Kenya are a waste of time. Calculation of the simple economics should be made in Nairobi, to be updated continuously as the prices of feed and of pork vary, in order to determine favourable periods and locations for the promotion of production.
32. Promotion of pig production should be extended to include production for home consumption of one or two pigs.
33. Promotion should be concentrated where a proportion of the required feedstuffs are available on the farm.

34. Much greater emphasis should be placed on poultry/egg production than on pigs, while the ease with which commercial egg markets can be **oversupplied** should be borne in mind.
35. As with pigs, the Planning Division of the Ministry of Agriculture should monitor the prices of inputs and outputs, and make a careful appraisal of the economics of poultry production.
36. The potential within traditional poultry production, as opposed to the 'modern poultry industry', should be examined.
37. The Vihiga project for a central brooding house should be carefully monitored to test the possibility of providing 'wholesale distribution' of one-day-old chicks, and of cooperative organisation of the enterprise. Comprehensive assistance and supervision should be provided during the early stages.
38. Poultry has a better potential in Migori than pig production, but will require simultaneous efforts to organise marketing in the main consuming areas.

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CHAPTER TENGROUP AND COOPERATIVE RANCHINGINTRODUCTION

Kenya has been attempting over the last few years to implement a major programme of group ranching in the ranchlands and semi-arid areas, and large-scale investments have been made and are proposed for this programme. Group ranching programmes exist in three of the six SRDP areas, and in view of the importance of the programmes, and the complexity of the issues they raise, we discuss here developments in these three areas, West Pokot, Kwale and Mbere, in considerable detail. Cooperative ranching societies are less important in these particular areas, but there are many common problems and general issues to be discussed affecting the institutional forms appropriate for development of the ranchlands as a whole, so that cooperative ranching societies are also discussed in part. Fuller discussion of cooperative ranching societies, in Machakos District particularly, is made in a separate I.D.S. Working Paper¹ which also incorporates much of the material in this chapter.

GROUP RANCHING IN WEST POKOT DISTRICT

Like many areas of Kenya where ranch projects are planned, there is in West Pokot District a long history of government proposals and plans, and very little that is established and functioning. While fresh and enthusiastic government officials (and expatriate advisors?) frequently put forward a project as if it were completely new, a long hard look at the history of development attempts in the area, and their wider framework, is essential: this would certainly appear to be true in this case.

1. I. Livingstone, *Cowboys in Africa: The Socio-Economics of Ranching in Kenya*, Working Paper No. 220, Institute for Development Studies, University of Nairobi, 1975.

A Brief Description of the Project

Six areas are proposed for conversion to group ranches, all situated contiguously in the hot, dry lowland area in the west of the District, towards Uganda. The main focus of attention at present is the Kongelai ranch and the others, although awaiting formal land titles, are not likely to be thoroughly investigated or pursued until some progress is made first with Kongelai. In Kipkomo, for instance, there is considerable opposition so far to the concept of a group ranch, though elsewhere there is some interest. Kongelai is the renamed Riwa Scheme, and comprises an area with long experience of officially promoted grazing schemes. It was **formally** adjudicated as a group ranch in September 1972. We can therefore concentrate on the Kongelai Group Ranch, focussing attention on the main objectives to start with, and looking at the detailed financial proposals later on.

The intention is to cut up the lowland range **area** as a whole into six blocks, each to form a separate group farm, with no movement of cattle between blocks or from outside the area into the blocks. Livestock management within each ranch is to be improved by a system of rotational grazing to conserve grass and to allow it to regenerate, and by voluntary destocking to reduce stock numbers to the officially estimated carrying capacity of the land, permitting improvement in the quality of animals, and thus opening up commercial possibilities as well as improving the quality of subsistence. There are proposals for complementary investments in water supplies, but, as is recognised, "there is no use in improving the watering facilities for livestock, if no destocking will be done at the same time".²

In contrast to many other schemes based especially on bought-in cattle, the present focus is on the introduction of improved rotational grazing and destocking. It is proposed also to supplement the development effort in animal husbandry with measures to improve living

2. S.K. Chesang, A Report on a Socio-ecological Survey of Riwa Proposed Group Ranch, District Range Office, Kapenguria, November 1971.

conditions in the area, particularly through settling the population to some extent in so-called residential areas with adequate water supplies, and to promote the expansion of cultivation; but these proposals are still vague.

The Extent of Overstocking and its Causes

A 1971 population/stock census in Kongelai³ revealed 412 **potential** scheme participants, including 334 resident family units or stock owners, amounting to a human population of some 2,000 people. Together they owned cattle amounting to 5,200 Kenya stock units⁴ and sheep and goats equal to 1,600 stock units (assuming 10 'shoats' equal 1 K.s.u.), a total of 6,800 units. The low productivity of the land was considered to yield a carrying capacity of one stock unit to over 10 acres, and thus a total capacity of around 5,000 stock units. Excess stock was therefore estimated at around 1,800 to 2,000 units in 1971. In fact the Range Management Division more often calculates 6 goats per stock unit: this would increase the total for 1971 ~~by~~ 1,060 to 7,860 stock units, ~~of which~~ sheep and goats would comprise 2,660.

In order to be in a position to take appropriate measures to control overstocking, it is necessary to appreciate how it arises. Both social or cultural and economic factors appear to be involved. The sociological **explanation** is based on the so-called 'cattle complex' of pastoral peoples by which cattle are kept for various social purposes, or even for their own sake, rather than for subsistence food supply or commercial cash benefit. This **explanation** is not necessary to explain overstocking, however, **since this could be explained by the** economist as arising out of a divergence between private and social (group) interests from the holding of cattle. So long as land is owned communally it pays an individual to maximise his own holding of cattle. He has no interest in restricting this holding in order to

3. S.K. Chesang, Kapenguria SRDP Group Ranch Project (During Financial Year 1974/75 and 1975/76), District Range Office, Kapenguria, June 1974.

4. One Kenya stock unit comprises the equivalent of 600 lbs of live weight bovine. The actual numbers obtained were 7,373 cattle and 15,964 sheep and goats.

preserve grass since, if the rest of the community does not follow his example, there will be no significant effect on the total numbers of cattle being grazed on the land and he will end up the loser. This is true even if all members of the community would gain in the longer run from a reduced aggregate herd and improved pasture, and indeed even if failure to restrict numbers posed a threat to the continued existence of the animal and ultimately the human population. So long as this is true, exhortations to the people "to change their way of thinking" may be a waste of time. At the same time enquiries made by the evaluators, reported below, suggest that the sociological factor is also important.

Historical Background: The Grazing Schemes of the 1950s and 1960s⁵

The buoyantly optimistic view of Government officials regarding the prospects for the group ranches are based in part on their previous experience of rotational grazing:

.. the population do know what rotational grazing can do to improve the grass growth, as they have good experiences with the grazing schemes of the old days. Promising is the fact that it is their idea to revive the conditions of those days.⁶

The area was originally part of the 1954 ALDEV Grazing Schemes, Kongelai, at that time constituting the Riwa Grazing Scheme. Considerable success was **achieved** over an area of 68,000 acres by compulsory or strongly persuasive methods. A four-paddock rotational scheme was employed, and each paddock was rested for four months every year. Grazing guards were employed, and arrests made for 'grass poaching' offences. There was also a stock tax based on the livestock **holdings of** each individual, the amount of tax paid depending on the use made of the common pasture. Towards the time of elections in 1963, local politicians were able to exploit the reluctance of the people to pursue such schemes. Scheme members were unhappy about the disciplinary measures involved, and non-members about being excluded from what had become good grazing. This contributed to the **schemes'** temporary abandonment about this time. Although the schemes

5. For a full account, see H.J. York, West Pokot Grazing Schemes, a Survey of the Community Grazing Schemes of West Pokot District, conducted January-March 1967, Ministry of Agriculture, Nairobi, 1967.

6. S.K. Chesang, op. cit.

were revived from 1966 up to the present, much of the considerably improved grazing which had been secured was wiped out during the interval by the large numbers of cattle which descended upon it. The success of the technical results obtained (whatever the other consequences) is measured by the fact that graziers were attracted from as far afield as Uganda to utilise the grass; and secondly from the fact that up to now they are remembered and acknowledged by a great many of the present population. Of the currently proposed ranches Kongelai and Chesera have previous experience of grazing schemes.⁷

The Agricultural Economics of the Pokot System

In the course of a sweeping condemnation of grazing schemes and group ranches in the area, Professor Carl Widstrand has argued that the ranching proposals ignore the agricultural economy of the area and are therefore not economically sound. In particular, they ignore the use made by the Pokot of six different ecological zones within the area:-

Through ownership and use of land in several zones, the Pokot have made a successful relationship to the land. The meticulous management of multiple environments is a necessary condition for the successful subsistence of the Pokot. Thus for example grazing schemes organized in only or any one of these environment zones are bound to fail.

Unfortunately this is presented in the form of an assertion, and is supported by no detailed agricultural economic data or case studies of individual family economy: certainly not by evidence of 'meticulous' economic management.

The vast area of pastoral movement, including the 'high cold forest' of the Cherangani Hills, which Widstrand assumes, appears to be more of historical importance than present reality. What does appear important however is a system of 'transhumance' between the hot plains and the hill slopes (kamass). Here there are contrary explanations of the lateral movement by Widstrand and by York, a District Officer

7. See H.J. York, op. cit.

8. C.G. Widstrand, Pastoral Peoples and Rural Development - A Case Study, Annales Academiae Regiae Uppsaliensis, 17/1973, Uppsala, 1973, p. 41.

who played a major role in organising some of the earlier grazing schemes. While the latter asserts that the graziers, having 'destroyed their own habitat', now want to encroach on the agricultural areas of the higher regions, Widstrand describes this movement as a long-established system of transhumance, that is, as the traditional grazing system. Widstrand produces a sketch map showing the distribution of cattle in Riwa and Kipkomo, and concludes that:-

There is not enough grazing in the proposed Riwa ranch. Today (late April 1972, before the rains) there is hardly a blade of grass in any of the grazing blocks and there are virtually no cattle at all inside the proposed ranch towards the end of a normal dry season. The cattle are all today in the kamass on the slopes beyond Serewa. (p. 52)

Although Widstrand is extremely vague about the geographical movement necessary for the Pokot, and apparently ignores the fact that the case for reserving and improving the lowland habitat through planned rotation of grazing is largely independent of such movement, this movement between plain and hill slopes would appear to be a very important element which has been neglected in drawing up the boundaries of the proposed group ranches. Unfortunately plans have advanced to a stage where modification may be difficult; given the likely importance to the success of the ranches, however, a close re-examination of group ranch boundaries in relation to the distribution of hill slopes and customary cattle movements (and to the distribution of cultivated areas) is called for. It is a pity in this regard that more attention was not given to the implications of Widstrand's paper: a copy of this paper (or even discussion of it) was not to be found either in Kapenguria or in Nairobi, and it had to be obtained from Sweden for the purposes of this evaluation.

Present Pokot Attitudes Towards the Scheme

In order to assess the chances of success of the scheme, which depend primarily on the cooperation of the people involved, present attitudes were investigated through the medium of a well attended three-hour baraza (meeting). The object was to assess the extent to which the boundaries of the Kongelai ranch were being respected, the extent of interest in rotational grazing within the ranch, present attitudes towards destocking and related matters, and a number of factors relating to the practical administration and organisational structure.

Ranch boundaries appeared to be quite well respected by pastoralists from other areas (and well defended by Kongelai members), with only occasional trespassing by Karopokot: this does not appear, therefore, to be a major problem at the moment (perhaps only so long as the pasture remains unimproved). At the same time not enough is known about customary cattle movements within and between the six proposed ranches, or of pastoralists from outside the area. As in the case of other ranching schemes, little or no analysis has been made of the potential impact of the schemes on pastoralists outside the demarcated area, or in general on people excluded from the project.

Three areas, Kongelai, Chesera and Kipkomo, have accepted rotational grazing. In Kongelai the District Range Officer produces the grazing schedule. There is a grazing committee of elders elected through a baraza. A rule is followed whereby a member whose cows are found trespassing on fallow land must forfeit one steer for the committee members to eat, a useful incentive for the latter to enforce the grazing rules. All members are said to report 'poachers' on fallow land, while youths collect cattle they find grazing there. In general it can be said that a definite attempt is being made to adhere to the rules, except where shortage of water elsewhere forces members to utilise the rest areas.

An issue to consider is whether a two-or four-paddock system should be operated. The present two-paddock system, with each paddock being rested for six months each year, may well be relatively ineffective, not giving vegetation sufficient time to regenerate. The difficulty is that once the grass has deteriorated to a certain level, the lack of spare grass makes it difficult to resist the immediate pressing needs for grazing. There is thus a problem of reconciling short-term needs and long-term objectives and of effecting a successful transition towards the optimum grazing pattern, which is likely to become more problematic the longer it is delayed. It is said that half the total area of Kongelai is at present capable of rapid recovery, while the other half might require several years of intensive management to reach its true potential. The reconciliation of short-term needs and long-term tendencies is a difficult one, which first of all requires very careful assessment and continuous monitoring of the grazing position. This is a major task which should not be left to one District Range Officer operating on his own and with little outside advice. Our discussion so far has already indicated

how much work and analysis is required. In general we can say that the problems of maintaining and improving a standard of living within a subsistence economy are just as important and in need of attention as those of a cash economy. An effort to remove the existing bias towards commercialised activities by Government agencies is **needed**.

The most crucial questions, however, are whether there is any increase in the extent of 'commercial-mindedness' among the Pokot (which would certainly seem to be a prerequisite for loans to be given, as in other areas, if only because such loans must be repaid in cash); and whether there is any change in their attitude towards destocking.

Participants in the baraza made strong statements to the effect that, for example, they "were here to accumulate wealth" (equating wealth with animals owned) and "animals are life". Suggestions that a smaller number of good animals might be more useful than a larger number of poor beasts were strenuously rejected.⁹ Similarly it was said that they "had no need for money, unless their children were starving". Cattle were sold only because of "calamity", i.e. drought, when there was a **fear that they might** in any case die. They agreed that cows sold were old ones, due for culling. These statements tend to confirm the recent statement made by Government officials that "at present animals that come from auction sales are nearly always the old and sickly type".¹⁰ Finally it was strongly asserted that their only problems were disease and lack of rain: the poor condition of animals was due to tsetse, not lack of grass. When they were asked to state the benefits which they expected to receive from the operation of the ranch, moreover, none mentioned improved organisation of grazing and collective control of excess stock (the main benefits in the eyes of Government): the benefits were the finance for

9. We asked if they would not prefer two or three beautiful wives to a larger number of unattractive ones. The response was yes, but this applied only to wives, not animals.

10. District Animal Husbandry Officers' Conference, Nakuru, September 1974.

water development and dipping facilities which the Government was to provide.

Information derived from a 3-hour baraza, even if attended by about 100 members, can hardly be described as systematic. That the information was not inaccurate, however, is suggested by the enthusiasm with which the most 'conservative' remarks were applauded, and the democratic way in which the meeting was conducted (committee members who tried to speak more than once were told to sit down in no uncertain terms).

It was suggested above that a fundamental reason for overstocking was the divergence between social and private interests. Since there is considerable inequality in ownership of cattle among members, this suggests that the best method of effecting a reduction in stock numbers would be to impose a ceiling on numbers to be owned by individual family units. This would permit a given reduction to be effected with minimum hardship; and it might be possible to enlist the support of the poorer members of the group in putting pressure on members who were, after all, using up a disproportionate share of the communal grass.

The intention, on the official side, is to carry out destocking on a percentage basis, with the D.R.O. advising on the absolute size of the reduction. It is not clear why the approach through the imposition of ceilings is not being pushed, unless it is simply that officials have so far not dared to mention openly any approach to destocking. Evident hostility towards the very idea of destocking made it impossible to even ask the question as to how the members themselves would wish to have any necessary destocking carried out.

There was no interest in the imposition of ceilings on holdings, and no apparent jealousy over numbers owned. Any such inequality was "God's will". The suggestion that, since the grass belongs to all, it might not be equitable for some members to use up a disproportionate share was rejected: the analogy was made by members between sending one's children to school and sending one's cattle to graze, the implication being that each cattle-owner should be entitled to use the common land for whatever cattle he possessed. The main practical significance of inequality was therefore only that the poorer members would resist destocking much more vehemently.

An interesting question, which had not been investigated by the Range Management Division, is whether, if the 'cattle complex' of the Pokot (or more economic reasons for maintaining cattle numbers) is very strong, the desired reduction in stock units could not be achieved partly or even largely by a reduction in the numbers of sheep and goats. The figures indicate that such a reduction, say, from 16,000 to 6,000 sheep and goats, would produce half of the required overall reduction, assuming 10 goats equals one stock unit (600 lbs liveweight bovine),¹¹ a very significant proportion. Beyond this, it appears that when a paddock is rested, the goats are left behind to graze. Given their numbers, this could have a major impact on the effectiveness of the rotation. This is a feature which might be investigated by the District Range Officer.

Given the resistance to destocking, an attempt was made to elucidate 'preference functions' as between cattle and goats by asking members whether they would prefer a reduction of, say, 10 goats or 1 cow.¹² No answers were forthcoming to this question, and the hostility engendered by it, causing the meeting to be terminated soon afterwards, provides further evidence of the obstacle to destocking. The officials' explanation for keeping large numbers of goats tends to be that goats form "the small change of the system" whereby stock is used as "legal tender"; but of course this would only justify keeping a small proportion of goats, not 16,000. Thus keeping goats appears to have primarily the

11. As already mentioned, the R.M.D. sometimes calculates six goats as one stock unit in estimating carrying capacity. Clearly the ratio should depend on the relative consumption of grass by the two kinds of animal, rather than relative weight. This would indicate the number of goats which would displace one cow by eating the equivalent amount of food. If goats ate only from thorn bushes, rather than eating grass, they would not be substitutes in this sense at all, and the ratio would not be meaningful: separate figures of carrying capacity based on the two types of food available would need to be calculated for the two types of animal. There appears to be some uncertainty among D.R.Os about this, and about the amount of grass consumed by goats: the ratio used is accepted as "given by headquarters" and applied mechanically. It is also applied equally to goats or sheep, whereas the latter clearly eat more grass. In part goats and cattle appear as complements, since goats keep down scrub, which if excessive reduces the amount of grass.

12. This was a bad tactical error: they should have been asked whether they would prefer an increase of one cow or six, eight or ten goats, etc.

economic function of use-value. One important social factor, however, apart from bridewealth, is the special position of goats within the household economy: wives are apparently empowered to sell goats in the absence of the husband, and thus without his specific authority, to obtain cash for the purchase of food. The division in the family economy therefore results in a separate reason for maintaining goats as such.

We may conclude that there is a fairly solid wall of opposition to the idea of destocking. The fact that committee members, who would be responsible for implementing whatever rules were applied in destocking, appeared equally opposed to the idea (or at least were not prepared to defend it in public) should offer further cause for pessimism.

Marketing Arrangements in Support of Destocking

The livestock marketing programme, comprising a system of sales yards, holding grounds and fenced stock routes (as originally planned), is an SRDP project which has already absorbed considerable funds. A major holding ground of 8,000 acres is still planned for Kacheliba, covering the approach from the north, through Kongelai to Makutano. Whatever their rationale in terms of large-scale movement of cattle through the area, such marketing arrangements have had no impact as yet in terms of local development within Kongelai. An empty auction ring stands in the prospective holding ground as evidence of inappropriateness from the locality's point of view. If there is overgrazing, and the development of the area depends on protecting and improving the available grass, then, rather than cater for a basically non-existent commercialism, marketing arrangements should attempt simultaneously to foster commercialism and aid destocking by making the most of any opportunities for offtake. These arrangements should be flexible, so that cattle may be bought as and when their owners want to sell and not merely at large-scale auctions, despite the obvious scale economies of the latter.

In this regard there is at present some discussion as to whether it should be the responsibility of the Range Management Division (the D.R.O.) or the Livestock Marketing Division (through the manager at Mwisho Farm, the main holding ground) to make such purchases. There is clearly need for some sort of intervention. Because of the low level of sales, traders come only infrequently and in small numbers to the area, while the nearest active salesyards may be thirty or even fifty miles away: scarcely an inducement to reluctant sellers. The L.M.D. is resisting any direct involvement, and argues that Range Management should take the responsibility of making direct purchases from pastoralists for

resale to L.M.D. at the holding grounds.

There are understandable reasons for such reluctance: such trade is clearly not likely to be very profitable; and also it is likely to be somewhat risky, given the uncertainty of resale prices. However it would seem to be much less appropriate, if any Government division is to enter this field, for the R.M.D. to do so, specialising as it does in the technical production side,¹³ than for the L.M.D., already involved in the purchase, movement and holding of animals in such areas. This should be seen as a development function of the L.M.D. as much as a commercial one. If it were too costly for L.M.D. to maintain close contact with the area for this purpose, an alternative would be to appoint the D.R.O. as a buying agent with the authority to make purchases on its behalf: this would seem preferable to making the D.R.O. buy and sell animals, with uncertainty as to the willingness of L.M.D. to purchase, and the possibility of incurring losses. Any commercial and marketing role for the D.R.O. will be a major diversion from his management and advisory role and should be avoided.

While the Provincial Livestock Marketing Division in Nakuru have stated that they would give priority to transporting cattle from the area, the Division also state that they can come to the area only about three times a year: implying a very different function from the one suggested here. In addition, the L.M.D. was supposed to carry out campaigns which, it is reported, it did not do.¹⁴ While campaigns and other forms of exhortation are frequently ineffective, the failure to pursue this intention is perhaps indicative of the need for L.M.D. to take more seriously its development role in pastoral areas, and to pursue a much more aggressive buying policy.

This may well be made more difficult by the nature of relations between L.M.D. and the K.M.C., which has also been criticised for pursuing narrow financial goals in its purchasing policy at the expense of social and developmental ones, particularly in respect of the more remote areas.

13. It is also awkward for the D.R.O. and his assistant, already directly involved in the management of the group ranch, to simultaneously act as a buyer of the ranch's output.

14. Review Re-plan Report, 1973-76, October 1973.

One would clearly hesitate to recommend a large bureaucratic organisation with monopolistic powers covering both livestock marketing and the production and sale of meat, along the lines of, say, the Maize and Produce Board. At the same time, like maize, livestock is a staple commodity and practically the sole means of livelihood for large sections of the population, even if only fractionally on a commercial basis. Hence it is important to ensure that the system as a whole, comprising Government agencies, statutory bodies, and private traders, does not neglect the broader and longer-run development objectives. The suggestion made by Widstrand that the K.M.C. emulate Tanganyika Packers in establishing a meat canning industry, using the lean meat of traditional Maasai cattle, might be taken up.

The Detailed Ranching Proposals

Detailed technical and financial proposals for the ranch project were given in a document issued locally in June 1974.¹⁵

In addition to the main proposals for livestock development, there are two subsidiary economic activities, namely cultivation of maize on individual plots and the development of modern beekeeping, which it will be convenient to consider first.

In the case of maize cultivation, acreage is to be increased from an estimated 162 hectares to about 320. More surprisingly, this is to yield a significant cash income estimated at Shs 233 per family (Shs 96,000 altogether, or Shs 300 per hectare). Presumably this is in addition to subsistence output. Yet the present output is on relatively low productivity land, largely for purposes of subsistence. No data are presented to show that yields would be sufficient to support commercial maize production as well as satisfying subsistence needs. Nor is it indicated where the market for maize would be: clearly not outside the lowlands, this area being the least suitable for maize in the region. Unless the proposal is to foster some degree of specialisation among members of the group between cultivators and larger stock-owners, market opportunities must be considered dubious. In any case the objective should be increased

15. District Range Officer, West Pokot, Group Ranch Project (During Financial Years 1974/75 and 1975/1976), Kapenguria SRDP, June 1974.

food output for domestic consumption rather than cash, which can more easily be obtained from livestock. Finally, it is not indicated how the increased acreage is to be obtained.

The plan for beekeeping within the group farm is to have some 5,000 'modern' beehives, yielding 75,000 kg. of honey and Shs 225,000 per annum. This is a very substantial revenue, and in fact would equal about half of the eventual revenue derived from sales of livestock. Unfortunately this turns out to be only **the Range** Officer's estimate of the potential of the area: no details are offered of actual progress made in establishing 'modern' beekeeping among the pastoral Pokot which might give us confidence regarding the actual realisation of this potential.

The main proposals for livestock involve an investment of Shs 1,060,000 over three years as detailed in Table 1. There is to be a substantial **destocking** of cattle and small stock over the first two years, the sales from which are to yield Shs 1,076,000 (at Shs 400 each for cattle), apart from the benefit of removing the excess stock. Subsequently, when the system is in equilibrium, a 10 per cent annual offtake of cattle and 24 per cent offtake for sheep and goats is assumed

Table 1. Financial Proposals for the Kongelai Group Ranch.

Activity	1974-75 (Shs'000s)	1975-76 (Shs'000s)	1976-77 (Shs'000s)
1. Grazing management	33.0	-	-
2. Grazing improvement	22.0	-	-
3. Bush control	9.3	390.0	100.0
4. Water supply (cattle)	77.7	77.7	30.0
5. Water supply (human)	150.0	-	-
6. Destocking programme	43.0*	-*	-*
7. Livestock upgrading	-	27.4	34.0
8. Disease control	-	30.0	30.0
9. Evaluation	-	-	5.0
TOTAL	260.0**	600.0**	200.0**

*Revolving fund.

** Total as given in source.

Source: Group Ranch Project (During Financial Year 1974/75 and 1975/76).

to yield a regular annual revenue of Shs 430,000, supplemented by that from honey and crops up to a total of Shs 608,000 per annum. This would give each family on average an income of Shs 1,480 (presumably excluding subsistence). Finally, it is anticipated that improved management practices might raise this figure by 30 per cent to Shs 1,920 per family.

It has already been stated that expectations regarding revenue from crops and honey should not be placed too high except perhaps in the long run. Given the solid wall of resistance to destocking which has been observed in respect of cattle, sheep and goats, the same must apply to livestock revenue. The figures depend on destocking 2,400 head of cattle over the first two years, out of an estimated (1971) total of 7,400 head (including immatures). This is equivalent to approximately 33 per cent over two years. Since sales should presumably be of mature cattle (Shs 400 per head is estimated), the percentage of mature cattle to be destocked would need to be something like 40 or 50 per cent! It is clearly impossible for any degree of persuasion short of force to yield a figure remotely like this. Subsequently the annual offtake of cattle is to be 10 per cent, and that of goats 30 per cent. The **difficulty** (or impossibility) of achieving such targets is completely covered up in the paper which under 'Programming of Activities' for the first year of the project states simply: "7. Arrange destocking and purchase weigh-bridge." (p.10)

It is worth speculating how such a discrepancy between the projected figures (especially those relating to destocking) and any realistic figure could occur. A minor element is perhaps the pressure felt by officers to produce an impressive figure of realisable income, as an indication that the scheme proposed is a good one. Certainly the figure of Shs 1,920 per family is a marvellous one, even if it were not, as appears, completely supplementary to subsistence output, which at the moment is sufficient to provide families with 95 per cent or so of their livelihood. The figures appear to be the result of a fairly standardised calculation made by Range Officers of 'optimal' culling rates, given natural rates of increase and sales in and out of the ranch, for a commercialised herd. Thus hypothetical or 'ideal' rates are transferred to real situations without comisance of social factors or adjustment to the realities of organisation and management.

Finally, we may look at sub-proposals reflected in three specific items of expenditure in Table 1. The 30 per cent increase in family revenue from Shs 1,480 to Shs 1,920 hypothesised depends on the adoption of improved management (item 1, Grazing management, Shs 33,000). This depends on leaving a substantial area fallow for a twelve-month period. It is questionable whether this would be accepted by the members, while the revenue (30 per cent is a rather hypothetical figure) depends also on the stated amount of destocking being carried out.

Item 2 (Grazing improvement, Shs 22,000) relates to a programme of grass reseeding with the objective of providing more nutritious grass by direct methods. It turns out that because "sowing grass...is an expensive affair...", the idea is to start on a small scale, more or less as practical field trials, to gain experience. Advice and cooperation of experts will be asked to maximize the possible results." (p.7) Thus this sub-project is at a very early experimental stage. It appears certain, in fact, that grass reseeding would be prohibitively expensive and risky, if the vast size of Kongelai (52,000 acres) and the uncertain rainfall are considered, unless its provision of a small controlled paddock is intended, as a stop-gap measure, to facilitate transition to an improved rotational system. In addition, however, the probability is that this expensive grass, given the degree of overstocking likely to continue, would go the way of the relatively good grass remaining after the termination of the Aldev scheme. This item must therefore be considered a very risky sub-investment.

Item 7 (Livestock upgrading, Shs 61,400 in years 2 and 3) depends on successful destocking and improved grazing management yielding the better grazing conditions which "more productive animals do need": to that extent therefore, this is also subject to uncertainty. There is no mention of prior experimentation with livestock improvement in the area as a means of testing probable response.

Apart from these substantive questions regarding the technical, economic and social aspects of the project, criticism may be made regarding its detailed formulation. A major cost item, water supply for human consumption, amounting to about 60 per cent of total expenditure in the first year, is in fact an item of pure social consumption expenditure, the justification for which lies entirely outside the project (except to the extent that it may act as an incentive to participate and destock).

The internal rate of return on investment which would be derived from the **figures** put forward is actually infinity, since in all years net proceeds are positive, including year 0. Arithmetic errors abound in the proposal. The most serious relates to the assertion that better grass management and animal improvement will increase revenue per family by 30 per cent from Shs 1,480 to Shs 1,920. These measures would, of course, only affect revenue from stock, not that from bees; yet the 30 per cent addition is applied uniformly to the Shs 225,000 obtained from honey sales. The correct estimate per family should therefore be at most Shs 1,760 rather than Shs 1,920 (itself erroneously given as Shs 2,020).

These comments are not made in order to indulge in petty **fault-finding**, or to criticise the author of the project proposal. Rather, we may draw two conclusions. First, it seems hardly reasonable to expect technical officers to prepare single-handedly projects of this type covering so many dimensions outside their specialised training.¹⁶ The R.M.D. as a whole must consider how to provide an input of economic analysis into its project appraisal and ranching schemes. Secondly, considering that the Kongelai ranching scheme is easily the biggest single development project within the Kapenguria SRDP, the failure to amend some of the more suspect elements in the proposal, or to correct ordinary arithmetic errors in a major discussion document does not say much **for** the level of teamwork which it was hoped would be an important element in project planning under the SRDP system.

Comments on a Development Policy for a Pastoral Area

We may conclude that there is a considerable lack of realism in the detailed proposals as they stand, mainly due to an exaggeration of the extent to which the local people will accept destocking. Change in this direction will not come quickly, even though the voluntary maintenance and policing of rotational grazing represents an important advance in the right direction. If the rotation is **rigorously** adhered to, it will

16. The most important qualifications for a D.R.O. would appear to be technical expertise in animal husbandry and range management and some sociological insight and rapport with the people with whom he is dealing. In these areas the D.R.O. concerned here was easily the most impressive we encountered.

in itself help to bring **home** the nature of the overstocking problem by limiting all the group ranch livestock to a quarter of the total land for the specified period.

Another sign which appears promising is the additional solidarity undoubtedly felt by the people as a result of obtaining their communal land titles. One example of its manifestation is the resentment felt by members regarding the excavation of sand in the area by a local contractor: even though this activity is unlikely to affect significantly the amount of grazing. Certainly the land title will help to terminate movement across the area by non-members, already substantially eliminated. At the same time it is worth at least posing a serious question regarding communal land titles. Despite the solid **wall** of resistance to modernisation which exists, there is a minority of individuals more directly involved in the sale of cattle and other forms of commercial production and trade. Since social change might come especially through the influence of such individuals, it is possible that formalisation of communalism will inhibit such a development.

A more important implication of the above, however, is that the development of the area should **not** be neglected pending the transformation of traditional pastoralism into modern commercialised ranching. The importance of commercial production relative to so-called 'subsistence' production should not be exaggerated (though monetary transactions are easier to tax): subsistence production is effectively supplying the people with their basic food supply. Secondly, economic welfare has several **components** besides consumption of food or manufactured consumer goods: it involves, for instance, access to medical facilities and to schools, and access to water for consumption. Welfare improvement in these areas should not depend entirely on expansion of local commercial production based on an implicit policy of regional **self-financing**. Nor does local appreciation of these items depend on acquisition of the taste for manufactured goods. Widstrand's criticism of policy towards such areas, if outspoken, is not without an element of truth:-

The attitude of the Kenyan administration, whether colonial or independent, towards pastoral peoples has been either repressive - for example the constant infringement on the rights of the Maasai - or one of benign paternalistic neglect - for example keeping of the Pokot and the Turkana in 'closed areas' cut off from the rest of the country and left with a minimum of administrative support. (p.37)

Unfortunately the Kapenguria SRDP has done little to change this, nor could it have done so with its limited funds. It has certainly been very far from representing a development programme for the area. After four years, scarcely any funds had actually been disbursed in the lowland area. The provision of water supply for human and livestock consumption was still an item in the estimates, and group members were still awaiting concrete evidence that they were in an area marked for special development. There is no SRDP provision for health or education. Even the plans for livestock development do not imply any substantial net investment into the area. The size of SRDP funds do not, as just mentioned, permit the funding of an integrated development programme for the area: what needs to be underlined, however, is that the operation of this limited experimental programme, with only an overlap into the lowland region, should not pre-empt the case for a more comprehensive social development effort in the area.

RANCHING IN KWALE DISTRICT

In this section we consider in detail the history of the Mwereni Ranch Project which has operated under the SRDP and been the main focus of attention in terms of ranching development in the area over a long period. Subsequently brief notes on other ranching developments are added.

The Proposed Mwereni Ranching Project

The proposal is for a group ranch located in South Kwale which would operate a cooperative central herd on a commercial basis. This SRDP area has been divided for planning purposes into four ecological zones, roughly parallel with the coast, comprising (1) the coastal croplands, which would have mainly tree crops and some mixed farming; (2) the Kikoneni croplands, for mixed farming; (3) the marginal lands, comprising dry crops and cattle; and finally (4) the ranching lands. The group ranch is to cover the last of these and part of the marginal lands. Covering the whole of Mwereni Location, it comprises 113,467 acres (46,343 ha.).

Registration of group ranch members has already been carried out. Under the group ranch formula all residents of the ranching area are registered. The population of the location has been estimated

at 12,839. In late 1974 the livestock were given as 7,001 cattle, 2,904 sheep and 4,624 goats (although a previous figure quoted in 1972 was 7,500 cattle; and one given by Pratt in 1974 was 6,700). Whatever the exact figure, the main point is that the main problem of the area is not overstocking, as in West Pokot: in April 1974 an estimate of the carrying capacity of the land put this at 20 acres per stock unit, which would give a 'full capacity' of 5,500 stock units. With improved grazing-arrangements, the carrying capacity could go up to 15 acres per stock unit, it was thought, and thus the total capacity to 7,333 stock units. The same statement estimated the current animal population at 5,200 stock units, implying a rough balance with carrying capacity at present and scope for considerable expansion with improved management practices.

The unique feature of the group ranch, however (although official discussions do no more than make occasional reference to it), is that the vast majority of people in the area who have been registered as group ranch members are not livestock owners at all. The 200 or so livestock owners (one estimate is 170) constitute only a fraction of the total population and group ranch members of some 3,000 families. Even within the group of 200, livestock ownership appears to be highly unequal, with half the livestock apparently held by less than 30 families. Hence it is likely that the proportion of actively participating livestock owners, i.e. those contributing to the central herd, would be even less: it could easily turn out to be no more than 2 per cent of group ranch members. In addition a proportion of livestock owners are 'absentee owners'. We shall examine the diverse issues raised by this ownership structure presently.

The project centres on the formation of a central herd run with improved management practices on a commercialised basis. The initial herd would be formed by contributions of cattle, while an International Development Association (I.D.A.) loan, raised on the security of the collective land title, would be used to buy in cattle for fattening or breeding purposes, expanding the size and especially improving the quality of the herd. The April 1974 statement says that the central herd should be formed by contributions amounting to a minimum of 15 per cent of stock units and a maximum of 20 per cent, which would equal between 800 and 1,000 stock units in terms of present numbers. With improved grazing, increasing the carrying

capacity of the total ranch areas, the size of the central herd could be increased to something in the range 1,100 to 1,500 stock units.

The changes to be introduced to ensure the economic viability and advantages of the project are first of all investment, particularly in water supply; upgrading of the animals; and a system of rotation to preserve and improve pasture. The proposed capital investments are:

Item	£
Water	14,000
Dips	2,800
Firebreaks	3,870
Roads	251
Bomas	1,580
Mineral troughs	90
Housing	2,640
Machinery, equipment and tools (including a Land Rover)	1,947
Total	£ 27,178

Together with the cost of bulls for breeding, the capital investment in the ranch can be taken to be around £30,000. It is intended that the cost of this infrastructural investment will be covered by sales of cattle from the central herd. A 25 per annual offtake is planned (amounting to a quarter of the herd each year), which is expected to yield around £7,500 initially, going up to £26,000 per year as the numbers and quality of the herd increase. A large number of question marks can be raised in relation to the scheme, of which two stand out: the problem of tse-tse fly, and the question of precisely how the ranch is to be organised and managed from the legal and social points of view.

The Problem of Tse-tse: Although the Mwereni Ranch Project was originated in discussion seven years ago, in 1968, it was only in June 1974 that anything like a thorough investigation of the tse-tse situation was carried out by a senior veterinary officer from Nairobi. His findings were quite startling in view of the effort and investment that had already gone into the **scheme:-**

The whole of the Kwale SRDP is highly infested with three species of tse-tse, Glossina pallipides, G. brevipalpis and G. austeni. The coastal strip is less infested, and so is the western part of the Mwereni area (but this latter has little water and grazing). There are so many flies in the central area of the SRDP that six Glossina entered a stationary motor car within three minutes of the windows being opened. The future of any ranching scheme is therefore very problematical and I would not advise any further development in this, save the completion of the water points and the cattle dip.¹⁷

According to this expert, eradication of the tse-tse is not feasible either:-

The question of eradicating tse-tse is one which, because of its complexity and enormous cost, must lie outside any S.R.D.P. effort. Hand clearing of bush will not avail of itself; to eradicate the fly at least 20-30% of the bush would have to be cleared, and removal of even 10-15% of bush might cause an irreversible trend towards erosion. Insecticidal treatment of bush is not likely to be effective by itself and in any case in this area there would be a danger of pollution of rivers.

On the basis of this statement there is no solution, but only a choice between the fly and serious soil erosion. The questions to ask now might be, first, whether reduction of bush by just 10 per cent could reduce tse-tse to a tolerable level, and how much this would cost; and secondly, whether a partial escape from this apparent vicious circle is possible by concentrating the scheme in specific more manageable areas within Mwereni Location, and how this would affect its viability.

A more general question which needs answering, however, is how serious any problem of tse-tse is in economic terms. It should be pointed out that, whether or not a scheme is launched, there are already 12,000 people in the Mwereni location, and 7,000 head of cattle, all apparently surviving, and without expenditures on inoculation. Tse-tse exists throughout the Province, yet ranching is a major activity. The local veterinary officer does not consider the incidence of tse-tse a

17. F.B. Halpin, E.A.D.D. Report on a Visit to Kwale S.R.D.P., 17th-24th June, 1974. Why he nevertheless recommends the expenditure of Kf17,000 on water and dip is not clear.

decisive matter, pointing out that there have been no major epidemics, and that occasional cases, as they are reported, can be treated. With efficient reporting, deaths can be **avoided**; such as occur may be fewer than, for example, the regular loss through lions at Kiu cooperative ranch in Machakos. Certainly it can be assumed that reporting cases within the central herd would be **efficient**. Halpin says that "the efficient treatment of animals every two months would cost some 18 Kshs. per head and the local people show no desire, in their non-monetised economy, to spend so much." This however is regular preventive treatment and implies a programme covering all cattle in the area rather than simply the central herd. The position is not so clear, therefore, that any scheme can be ruled out, and the need is to discover which scheme, if any, would best suit the geographical dimensions of the problem, and **how** far protection against tse-tse would raise costs.

The Form of Organisation and its Problems: The institutional arrangements proposed for the group ranch and central herd have from the outset been left extremely vague. At the same time the implications of these arrangements, which involve a number of difficulties, have not been fully explored. The difficulties probably hold generally for this group ranch 'model' and are worth investigating.

The **Mwereni** proposal incorporates the basic elements of a group ranch in that the land will be owned collectively under a group title and the cattle contributed to the central herd will continue to be owned individually, although herded, grazed and corralled together; members will also still own their own cattle outside the central herd. Once there is a central herd, however, the proposal begins to look very much like the cooperative model, and it is in fact referred to in occasional statements as a 'communal cooperative ranch', suggesting the combination of group and cooperative ranch elements. Despite the nominal ownership by individuals of the central herd stock, these holdings will be considered as 'shares', as in a cooperative; decision-making affecting these (including their sale) will be independent of the individuals, but determined by a committee; and the contributed cattle will be merged with, even cross-bred with, the bought-in cattle.

Unlike the cooperative form, it is completely unclear how the proceeds from the enterprise will be or ought to be distributed. The general intention here is to distribute the net proceeds among the participants. There are, however, two kinds of participation, associated with two different inputs: the provision of cattle, to establish the initial herd, and the provision of land. If participants are defined as all members of the group ranch, owning the collective title to the land, and if dividends are distributed among these, it becomes unclear what recompense is to be had for contributing cattle to the central herd or how the interest of livestock owners in running the central herd is supposed to be maintained. If, on the other hand, dividends are distributed among those who contribute cattle, it is not clear what recompense the mass of landowners will obtain. The situation is further confused if the collective land title is used to provide security for a loan for the purchase of cattle: for then the land-owners are indirectly also contributing cattle which, as just pointed out, will in **time be** merged with the initial herd. Moreover bought-in cattle are usually the most important portion commercially. Mwereni Ranch provides the most graphic illustration of this dilemma, since livestock owners constitute only a fraction of the total group ranch members and since the vast majority of members possess no cattle at all: hence the two groups are very distinct. If all group ranch members were livestock owners, and all contributed a similar number of livestock, of course, the problem would lose significance: but in fact since holdings of cattle will generally be unequal, and contributions variable, the problem is a quite general one merely presented here in an extreme form.

The proposal for Mwereni appears to be that "the non-livestock owners of the group would receive no direct financial benefits until such time as the cooperative brought in additional animals, profits from which would be available for general distribution."¹⁸ This appears to suggest either that profits will initially be distributed to the smaller group of cattle contributors, switching later to the larger group of ranch members, which would clearly be an awkward change; or that somehow the

¹⁸. Kwale Special Rural Development Area: Mwereni Ranch, Report of a Visit by D.J. Pratt, Ministry of Agriculture, August 1974.

contributed cattle and their descendants can be kept **distinct**, for accounting purposes at least, from subsequently acquired cattle. It also ignores an important practical point which could apply in many other ranches of this type: if dividends are shared among the larger group of resident members, each may obtain only a negligible amount. Thus it seems that the most optimistic figure for net proceeds, after the ranch is in full operation, would be Kf15,000 which, among 3,000 families would yield **only** KShs 100/- per family per year, or around KShs 20/- per head.

Apart from land and cattle, sound management (in the longer term applied, for instance, to improvement through breeding, but continuously involved in decisions to buy and sell and in the organisation of labour) is also a crucial input, and one to which the majority of non-livestock-owning members will contribute little or nothing. Again the problem is clearer here, where most members have no livestock at all; but there is a general problem of relating recompense to those who have contributed at least in some measure to ensuring that the enterprise is well run. This is related to another question or questions: what size of ranch, group or cooperative, is compatible with a satisfactory degree of participation by members, and what degree of participation is necessary to ensure **efficient** management of the enterprise? This we examine later.

The Pratt report says that "a better arrangement might be for the group at large to let the livestock owners have exclusive use for a specified term of one section of the group land, upon payment of a nominal rent or percentage of the profits". This would separate land ownership by the group (rewarded by a rent) from herd ownership (rewarded by profits accruing to the cooperative society): **and** would in fact be the cooperative ranch model. This is at least a clear arrangement, except of course for determining what the level of **rent** payable should be (to which we return presently). The report concludes however that it is too late to switch to this form of organisation: "if the people are already primed to accept one arrangement, it may not be easy to introduce changes at this stage". Since the institutional arrangements for the other model appear to us quite unworkable, however, there appears in fact no alternative to switching to the cooperative form.

In view of this conclusion, it may also be stated here that there are in any case two major difficulties **in** identifying the contribution of the land-owners, one specific to Mwereni and a general one. It is in the first place unclear how far it was necessary to

acknowledge ownership through a group title for what was formerly trust land to the entire population of Mwereni Location. The scheme is mainly for commercial beef production in the largely unutilised western part of the Location. The non-livestock-owning majority of members will not be sacrificing output or income in agreeing to the use of the range area required, which might be considered to have a zero opportunity cost as far as they are concerned. And the economic value of the scheme derives largely from investments in infrastructure and bought-in cattle. It should have been possible to negotiate the use of the relatively unused range area for participating stock owners, who would be using land away from the cultivated segments (which could have been adjudicated separately on an individual basis) in line with the standard cooperative model. Even now it should be possible in principle to negotiate with the group ranch members for use of land by the cooperative.

The general question is whether land is in fact an effective security against a loan, and therefore whether the tenuous form of land ownership here constitutes a genuine contribution. Clearly it would not be feasible in practice in the event of default to seize the land on which nearly 13,000 people depend for sustenance. In any case, as we shall see later in Mbere, a cooperative which does not own land itself, as is quite possible, has to use its commercial herd as security for loans. Although in this case the plan is to obtain a land-secured I.D.A. loan to purchase cattle, it is by no means clear whether creditors see the land or the herd as offering most security. Since the livestock owners carry the much **more** real liability of losing their cattle in the event of default, it is debatable how far the 'supply' of land as security should carry entitlement to proceeds.¹⁹

This question applies also, of course, to the fixing of appropriate rents for the use of land by a cooperative. The advantage of this model is more that it focusses on what should be determined, rather than how it should be determined. In any case since the payment per head would be so small, no matter how generous the rent figure agreed, it would seem better

19. Particularly if the land is in itself useless without considerable infrastructural investments to which the 'owners' of the land contribute nothing, which applies to a substantial segment here.

(and administratively convenient) to use the amount to finance social services (a share in water supply, to be used for their own domestic consumption, or medical services) rather than to pay a cash rental.

Although the arrangements have already been taken to an advanced stage, the practical and legal implications do not in fact appear completely clear even in the minds of those responsible for the project. Thus in late 1974 it was nevertheless said that "it will not be a practical proposition to absorb everybody in the marginal area proposed for the establishment of the ranch"; that "it will be for the people or families who are normally and traditionally resident near the area"; and finally that it is "not reasonable for the cattle owners to pay rent, grazing fees, etc., to people who are not contributing".²⁰ This shows awareness of the questions just discussed, but is in conflict with the legal status accorded already to the population of the location who as group ranch members now own the land which the livestock owners would like to use. Another apparently inconsistent suggestion in a major statement of the proposal in April 1974 is that stock-owners should continue to herd their own cattle within the central herd. There hardly seems to be an incentive for them to do this (or to contribute cattle in the first place) if the proceeds accrue in large part to non-livestock-owners.

An apparent reason for the lack of clarity regarding the unconstitutional arrangements is that the central herd is seen especially as the means whereby the infrastructure to be put in is financed. Despite the optimistic paper calculations, there did not appear to be high expectation that there would be net proceeds to distribute after such costs were covered. The rationale for the central herd thus becomes its effectiveness as a tax device, a means of raising money in a poor and non-monetised area to pay for social investments. Even so, it would still be necessary for the project to yield revenues (or social benefits) over and above costs: and hence necessary to be clear as to how such revenues would be distributed.

20. Correspondence between the Provincial Range Officer and the Area Coordinator, October 1974.

In summary, we may say that whatever the general validity of the arguments raised in relation to group and cooperative ranching, it would seem to have been a mistake to attempt to transplant the group ranch model from Maasailand to this particular area where only a minority of residents are livestock owners.

Income Distribution Issues in the Ranching Scheme: The investment proposed of Kf30,000 is substantial. Of this amount £8,000 has already been spent on water supplies, using SRDP funds, in 1973-4 and the estimates for 1974-5 included a further £10,000 for this purpose. Clearly it is important to know in advance who this is intended to benefit and whether this is justified. Is it intended as a loan to a specific cooperative group or a more general subsidy to residents of the area or for social infrastructure? Spread over 3,000 families, the £30,000 represents £10 per family; and over livestock owners alone £150 per family. If half the livestock belong to 30 families, and half the investment is in effect for their livestock, this would be £500 per family, who, owning on average 120 head of cattle, may not be the most deserving of assistance. Moreover a considerable number of livestock owners are 'absentee owners', not resident in the area, the size of whose holdings are not known.

The amounts invested are substantial, though not as great as in the case of many ranching schemes. And the amounts invested per family have to be compared with the amounts invested per family in settled agricultural areas in other parts of Kenya. Even between pastoral areas invidious comparisons might be made: for example, ten dams already exist in the area, but five new ones are proposed, with eight to be renovated, making a total of fifteen available for human and livestock consumption. The intention is to have a watering-point every three miles. Likewise dipping facilities are to be provided every 5 miles, while 32 bomas each capable of holding 500 head are to be built. This is an interesting contrast with the Kongelai ranch in West Pokot where no expenditure has yet taken place. The plans here appear to be for a luxury level of provision considering the fact that fully worked out institutional arrangements for the ranch do not exist, the central herd has not yet been set up or a commercial loan negotiated. Whatever the intention, the amounts invested so far must end up as subsidies; since no formal or legal agreement has been made for repayment, they do not have loan status.

The Position of Livestock Outside the Central Herd: If the central herd is to be formed through contributions so as to comprise some 15 to 20 per cent of stock units in the area, the question arises of what happens to the remaining 80 to 85 per cent. Fencing seems to be impossible both because of the cost and because of spoiling by **elephants**, so that it is unclear how the mass of livestock could be kept separate from the central herd. This might also be difficult legally, since the group land belongs to all members. This raises a number of questions. First there is the matter of equity, if watering facilities are paid for from sales from the central herd, but all have equal access (including non-livestock owners, for human consumption). Secondly there is the question of whether stock outside the **central** herd will also follow the proposed rotation, without which the rotation might be ineffective. There is little or no discussion of this point. Finally there is the disease problem which arises if there is contact between the two groups of animals. This also affects the programme for upgrading the stock.

The problems would be solved if, as is sometimes suggested, the central herd were to use mainly the presently unused western part of the location. This however raises the question of why all **water** investments to date have been made in the populated eastern area, used by the other livestock, and none in the west. Such a proposal would also seem to affect the proposed rotation.

Issues Relating to Water Supply: The present location of water supplies is described as follows: "Most of the dams are in the more settled area of the location. To have an even distribution of grazing and utilization of the forage, the western part which has poor water distribution needs attention this time."²¹ A proposal for three new dams is then made. But apart from the points first raised, it makes a crucial difference to the desirable institutional arrangements (group ranch vs. cooperative ranch) where the central herd is to be located. Thus it could be that either the proper location for ranching activities has not been determined or that water supply investments already made are wrongly located. A second issue already mentioned is whether such investments should have been made ahead of a **clear commitment by members**

21. District Range Officer, August 1974.

to form a central herd, and how this affects the objective of a self-financed enterprise. Finally there is the crucial issue of what the returns are from investment in water alone without the certainty of the central herd being established, the rotation being implemented, and most important of all, tse-tse being eradicated or substantially reduced.

A Crucial Issue, the Rate of Return on the Investment: The April 1974 statement referred to puts anticipated revenue at K£7,500 initially, increasing to £26,000 at 'full capacity' and recurrent costs at £5,000 initially, going up to £15,000. Thus net proceeds are expected to start at £2,500 and increase to £11,000 which would recoup an investment of £30,000 in perhaps 5 years. This is an extremely good return, which would compare very favourably, for instance, with any investment in manufacturing enterprise in Western Europe. It is, unfortunately, based on the same very hypothetical calculation as that in West Pokot, representing more **what** the District Range Officer thinks "it should be possible to achieve"; probable actual achievement under cooperative organisation is better indicated by experience in Machakos District, which is examined in I.D.S. Working Paper No. 220.

Realisable rates of return depend in the first place on the quality of management. Interest in the scheme does not appear to have been very high, despite demonstration of Government intent in the form of water supplies (in contrast with Pokot). Less than 200 animals have so far been pledged out of the 800 or more needed for the initial herd (though for reasons indicated, this is not altogether irrational). Self-help effort in the building and maintenance of dips has been very poor. Interest in forming the group ranch appears to have been fostered rather than spontaneous. It is stated, for instance, that "many barazas have been held in the area and now it seems that the majority of the local people have accepted the idea of starting a group ranch".²² Arrangements for providing the actual managerial input are not **far** advanced, and if it is the intention that initially (for how long it is not stated, but some quite long period appears to be envisaged) individual owners will graze their own animals **within** the central herd, it is not obvious whether the strict control necessary to achieve

22. SRDP Progress Report, 1973.

the objectives envisaged by the District Range Officer will be possible.

This includes the required rate of offtake, calculated by the D.R.O. as 25 per cent per annum. A rough estimate by the P.R.O. of offtake for the hinterland ranch lands of Kwale District as a whole, based on auction sales, is 6,000 per annum out of around 100,000 animals. This gives a figure of 6 per cent in 1974, yielding a total estimated figure of 12 per cent including consumption (estimated primarily from data on sales of hides). There is therefore a question as to whether the figure of 6 per cent can be raised to 25 per cent to yield the revenue figures anticipated for the scheme.²³

There is something inherently suspicious about the high rate of return posited. One may ask, if such a high rate of return in ranching is obtainable, why have the relatively poor people in the area not been able to obtain at least a much higher income than they have? Alternatively if these revenues are attainable only as a result of infrastructural investments by Government, and with the managerial input provided especially by a Government range assistant (advised by the D.R.O. and other officials) - considerable responsibility appears to be attached to the range assistant in this case as in others - why not establish the ranch as a state enterprise, organised by a ranching corporation? This would at least reduce the lengthy planning period for the project, for which delays in obtaining local support and finalising institutional arrangements are partly responsible. Where the land is unused trust land or state land, as is partially the case here, this seems to be a possibility.

Economies and Diseconomies of Scale in Ranching: The Range Management Division appears to be strongly predisposed towards the establishment of very large ranches, in this case 113,000 acres, based on the implicit or explicit

23. Since the cattle are still owned individually, it is not obvious that there is any new willingness to raise the rate of offtake. While there may be a willingness in respect of contributed cattle, there may be an offsetting decrease in offtake in residual cattle, leaving the overall offtake for commercial purposes at 6 per cent or at least yielding a net rate of commercial offtake below the central herd rate.

assumption that substantial economies of scale exist in ranching. Economies of scale depend on the existence of indivisibilities, i.e. the impossibility of reproducing the enterprise on a reduced scale without loss of efficiency. How real these economies are in ranching, however, needs investigation rather than assumption.

In this case technical indivisibilities in infrastructural provision do not obviously exist if 15 dams are to be provided, offering watering points at every 3 miles, together with dipping facilities every 5 miles and 25 bomas. The need to rotate grazing might constitute such an indivisibility, of course. The proposal involves 9 paddocks as follows:

<u>Paddock</u>	<u>Period of Use</u>
3 - 4	April 15 - June 30, rainy season
1 - 2	July 1 - September 30, between rains
8 - 9	During short rainy season
5 - 6 - 7	January 1 - April 14, dry season

This rotation will be altered annually. It is not obvious that this could not be divided into three groups of paddocks, or two groups, each to form the basis of a cooperative ranch. Each group would need to include a combination of the drier and wetter land, which would not appear to be difficult.

There is, however, one major economy of scale. The location of grazing, and to a lesser extent water supply, follows the most recent incidence of rain over the total land area, particularly here where rainfall and water supply are so uncertain. The larger the ranch, the lower the risk that at any time grazing will be unavailable anywhere within the ranch boundaries. Thus the more people involved, geographically, in the enterprise, the greater the possibilities of 'sharing around' the currently available grazing and water. This economy of scale is in fact that which has always been appreciated by pastoral peoples in Africa whose nomadic existence has depended on free movement to areas where grass and water are available at the moment. Where water rather than grazing is critical, this point is reduced in importance if fairly reliable water supplies are provided as a result of investment in dams or boreholes. The scale economies will vary according to the local rainfall position and according to the effectiveness of the introduced water supply in relation to potential grazing areas, and need investigation in each

individual case. In some areas even the largest acreages allocated for group ranching may be too small.

The second element which needs investigation is the extent of diseconomies of scale arising out of the difficulties of managing such a large enterprise, spread over such a large geographical area and involving theoretically about 3,000 household heads. The technical and financial problems in managing a vast enterprise of the kind described above are considerable. For this reason smaller cooperative groups may succeed where larger ones will fail. The Range Management Division appears to have given little thought to the feasible or most effective size of unit. In this particular case where the majority of group ranch members are non-livestock owners and livestock owners are presumably located in different parts of the extensive ranch area, the case for smaller more cohesive groups is very strong. The argument is not limited to this case, however, and in fact constitutes a general advantage of the cooperative over group ranch form of organisation.

Milk versus Beef Production: One question which needs investigation and decision is what the importance of milk production, as opposed to beef, should be. It is stated that at present "the orientation of the Mwereni herds is clearly towards the sale of milk to the Mariakani milk scheme", and that "most of the livestock is kept along the Lungalunga - Mariakani milk route". At the same time it is said that "more emphasis is needed on beef, to stop the spread of the milk economy into the drier areas", while in the central herd "no milking will be allowed whatsoever".

While clearly the central herd must be considered a beef enterprise - the economics of the scheme depend upon this - attention should be given to the profitability of milk production outside this herd as a supplementary benefit of the scheme, particularly as the livestock infrastructure established will in practice be utilised by other cattle, and because the SRDP road investments may also have helped to increase the viability of commercial milk production in the area.

The History of the Range Management Project: Considering the uncertainty which still exists regarding so many aspects of the scheme, it comes as a surprise to find that the project has such a long history. The project was actually prepared first in 1968 by a Mr. Travis Voelkel, a Provincial Range Advisor. It had thus been discussed for some time before financing became available under SRDP in 1970, at which time a more definite start

was made as surveys were carried out and a budget prepared (for £14,000). The Annual Implementation Review of 1971-2 noted that eight dams had been sited and surveyed by an official team from Nairobi during the year. Barazas had also indicated a degree of local interest, the decision made for group ownership of the land, and a committee of elders selected to work together with officials. K£8,000 was spent on dams in 1973-4 and an additional £10,000 estimated for 1974-5.

Yet it was six years after the initial formulation of the project before anything like a close examination of the tse-tse situation was made, this to apparently reveal that the project is ruled out. The institutional arrangements and membership were still not clear and were problematic. In late 1974 it was still stated that "a policy decision has to be made as between the Masai model or the Central Herd model" (a detailed paper was said to be coming), and that "it is hoped that the families or individuals who participate in the project will be physically identified during the enumeration exercise". The investment required was still uncertain, the District Range Officer being asked "to calculate the cost of water development, firebreaks or roads, bush clearing, fattening steers, breeding stock, and working capital". At the same time "information was needed on the extent of present cultivation", as well as "data on the milk output of Mwereni". About the same time the Area Coordinator wrote that "the scheme is incomplete in detail as no mention is made of the tse-tse fly problem or the economic viability and only scanty reference is made to management". Just previously, in June of 1974, a meeting of the District Development Committee decided on a formal request to the **Ministries** of Finance and Planning and of Agriculture for a **reappraisal** and economic feasibility study to be carried out. Subsequently, further investment was frozen pending a full-scale survey by a Range Management Planning Team, assisted by U.S.A.I.D. To make matters worse, in addition to what could be called a tactical error in installing water supplies ahead of other arrangements, the construction of the dams was poorly executed with disastrous results.

This provides therefore another case study in the apparent timelessness of ranch project planning and execution. There is a clear danger in this of loss of interest by the potential participants and of officialdom ceasing to be taken seriously. As it is stated in this case "... the follow-up of the agreement has been very slow on the part of the field staff... These long delays on the part of the agricultural staffs

may force the local people to change their mind again..."²⁴

The time taken has much to do with the piecemeal approach to the project design adopted, and there may be a general point to be made here. The most important experimental element in the SRDP concerns development administration: it is aimed at finding out if a more 'development oriented' form of administration and organisation is possible than the conventional one operating through the vertical hierarchy of Ministry, Provincial and District administrative officers, organised from top to bottom on separate ministerial lines. One of the features of this system appears to be that administrative procedures for bringing a project to fruition and implementation operate through spasmodic and periodic correspondence, spread over a long period, between officers up and down the hierarchy. Clearly in the course of this the 'thread' of the argument underlying a proposal can easily be lost, or the rationale and detailed form never spelled out. Connected with this is the tendency to attempt to do by correspondence what needs to be done by visits - and not visits of one or two days as seemed to be the case here - to the sites. Only in 1974 did experts from Nairobi begin to get to grips with the project as a result of direct visits. If Mwereni can be considered as a case study in agricultural planning, the lesson must be that the Agricultural Planning Division in Nairobi must be capable of operating in the field and should be able to send project teams combining a cross-section of relevant expertise, on whose findings the necessary decisions would be based.

Related to this, there would seem to be a need for **what** one could call a more 'academic' approach (not academic in the derogatory sense of impractical) in which a systematic account or report of the proposal is initially produced and maintained up-to-date through the incorporation of any agreed changes. Such a document would throw up gaps in information which need to be filled and pinpoint issues which need to be resolved, and it would be more readily available for discussion and criticism. It seems unlikely that a project such as the Mwereni one could be dragged out over a period of seven years (so far) with such minimal progress towards project implementation were this to be a standard procedure.

24. South Africa SRDP Progress Report, January - March 1973.

Indeed the insistence on the preparation of proper and comprehensive project documents could be more valuable (and less time-consuming) than adherence to the complicated P.I.M. system of SRDP which, however useful, does not itself guarantee that the proposed actions are soundly based or fully discussed, but only that they are carried out according to schedule.

Mwereni in the Context of Kwale Ranching Development: Mwereni is located within extensive ranchlands which stretch northwards in a belt parallel to the coast covering about two-thirds of Kwale District. These ranchlands were estimated in 1970 to hold about 112,000 cattle, in addition to sheep and goats. It is not possible here to review all ranch developments within this belt, but it is possible to give some indication of whether the experience of Mwereni and the issues we have raised in relation to it have wider application.

It is worth going back to a description of the ranchlands made in late 1970, which points out that water is a "big problem, with no permanent streams except the Uмба River". There were at that time 21 dams, mainly silted and in need of renovation, and 9 boreholes, at which the machinery "was often rusty". Most of the livestock were kept (as now in Mwereni) along the Lungalunga -Mariakani milk routes in a belt five to twenty miles wide, in which there tended to be overgrazing, with cattle losses due to starvation. The plan then was to shift grazing over to the west by providing water in the empty areas of trust land and state land, easing pressure in the stocked area. Ten ranching units were to be formed for this purpose.

The nature of the investment in ranching here can thus be seen quite clearly. Ranching, laid out in its most simple terms, consists of two basic and complementary inputs (leaving aside the disease problem), grass and water, yielding an output of livestock. The provision of water supplies more than in proportion to the available grass in an area will be a misinvestment: while it may in the short run keep more cattle alive in a drought, this will only contribute to overgrazing in the long term, and problems of grass loss and soil erosion. At the same time grasslands without water availability are of no value whatsoever. There is within the Ministry of Agriculture a tendency to classify any lands which are not cultivable as 'ranchlands': they become ranchlands by default. The assumption then becomes that the Range Management Division should attempt to develop the areas for commercial ranching. In fact grasslands

(or scrublands) do not become ranchlands except through the addition of water supplies, where these do not already exist. Whether they should be developed as ranchlands or not depends in the first place on the cost of the required water investments (and on how these can be distributed to increase the available grazing, the complementary input). The R.M.D. approach should therefore be, as a first stage in ranch development planning, to assess the value of grazing created as a result of a basic investment in water supplies, and to set this against the cost of these supplies. A comprehensive approach is needed to determine the optimum location for such investment within an area of potential ranchlands. It is not evident that this was the approach followed in relation to the ranching potential of Kwale District (or in other parts of Kenya, such as Mbere, as we shall see).

A progress report in March 1973 listed the following ranch developments with acreages.

Table 2. Ranching Development in Kwale District, 1973.

1. South Samburu Group Ranch	125,000	7. Salalom Group Ranch	68,000
2. Mwereni Group Ranch	114,000	8. Kunange Ranch	57,000
3. Mwavumbe/Kilibele Group Ranch	99,000	9. Taru Ranchers Ltd.	52,000
4. Taru Group Ranch	93,000	10. Chenze Cooperative Ranch	46,000
5. Ndavaya Ranch	74,000	11. Mackenzie Road Ranching	28,000
6. Puma Ranch	68,000	12. Balakweni Group Ranch	13,000

Source: Ministry of Agriculture, Kwale, Progress Report, March 1973.

Most of the acreages are vast. The acreage required will be greater the lower the productivity of the area in terms of grass available, as in the case of South Samburu, and it is just these ranches where economies of scale will exist in terms of ensuring water supply from year to year. From this point of view the ranches may even be too small. At the same time it would be worth investigating the importance of diseconomies of scale arising out of the attempt to organise ranching on this **scale**.

This is related to the degree of interest in ranching, since it may be easier to stimulate interest in more modest, manageable enterprises where this is not inconsistent with scale economies. Two of the ranches were actually registered as cooperative societies as long ago as 1968, the same year Mwereni was first proposed. Chenze was reported in mid-1971 as having remained virtually dormant since its formation. The undesirability of the 'timeless' planning of such projects has already been mentioned. Efforts to have the members increase their shares have met with little success: only 41 cattle had been contributed by the end of 1972, when the society had 60 members. Drought is a major problem. Another was apparently that settlements existed within the ranch boundaries in which people owned considerable numbers of livestock. This seems to be a general **hazard**, as in the case of Mwereni, associated with delimiting vast acreages as group or cooperative ranches. The position might be even more unbalanced at Chenze if there are only 60 members within the cooperative and large numbers outside.

Little development took place in Busho Ranching Society until late 1969 when it was re-registered as Tara Ranchers Ltd., a private limited company. Settlement problems brought a halt to boundary demarcation in the original scheme. Where non-members are not actually regarded as a nuisance, there seems to be some lack of realism towards them. Thus in late 1970 it was suggested that "the approach should be to encourage every local person in the district to become a member of one or several ranches, although some will have to contribute cash (not having livestock of their own)". The problem of management and of finding cohesive manageable units is given little attention.

In our discussion of Mwereni we stressed the importance of determining who will gain from the investments made with public funds. We have noted above that the entire value of the grazing may be created by investment in water. If we examine some proposed investments in other ranching developments in Kwale, we can see that this fact ought to be given serious consideration. Despite the low level of interest apparent within Chenze Cooperative Society, a statement of June 1973 refers to a proposal to invest Kf14,000 in development capital during the Plan period and an allocation of another Kf63,000 for 'working' capital covering the purchase of stock and recurrent cost (presumably a loan). Out of this, only some Kf14,400 was to be the ranch contribution in cash and kind. Yet the membership (at the start of 1973) was only 60, implying public investment (whether

on a loan basis or not) of more than K£1,000 per member: and the local contribution at the time was only 41 cattle!

The Samburu South Group Ranch involves some 300 families. Here it was stated that the total money required during the Plan would be £31,000, an investment of £100 per family (this was to include 3 new dams costing £7,500, reticulation of water costing £16,000, firebreaks £2,500, and the purchase of bulls (£5,000).

Company Ranches and Directed Agricultural Companies

The question of equity in the use of public funds applies even more to private company ranches. Tara Ranchers Ltd, adjoining Chenze and formed in the area previously covered by the defunct Busho Cooperative Ranch, has an allocation of 52,000 acres of land, but only about 20 members (at the end of 1972). The relation between the 20 members and residents of settlements within the ranch boundaries would be worth investigating. An expenditure of £80,000 was planned during the Plan period, of which £15,640 was to be contributed by the company itself in cash and kind. Thus more than double the level of public expenditure was planned for this company of 20 members than for Mwereni ranch, where it was intended that 13,000 members would benefit.

Another company ranch, Kwale Ranches, is referred to at the end of 1972. This was to have 10 directors, of whom "five would be Kenya citizens and five wananchi" (an interesting distinction). Here it was stated that "dips would have to be built" (implying public funds might be used) and that "the envisaged investment put by us (Range Management) will be in the region of Shs one hundred thousand which by itself will be insufficient but as explained, due assistance will be given by your (Range Management) department". No reference is made to this being a loan.

Some awareness of the problem is shown when it is stated in one place that "we do not want to dish chunks of ranching land out to individuals. This is undesirable socially and the Range Management Division discourages it..."Accordingly a preference is indicated for directed agricultural companies. These differ from the private company, which has a maximum membership of 50, and come between this and a cooperative society. While it has directors, the number of members can exceed 50. Unlike a private company, it has shares, though these are not open for purchase by the public. The sale

of shares is more or less restricted to local people, who might be recruited through barazas, and members have the right to refuse to accept particular people's subscriptions. What advantages a directed agricultural company has over a straightforward cooperative is uncertain. An example in Kwale District was Kurabeja Ranching Directed Agricultural Company, which was registered in 1972 with some 100,000 acres of state land. No reference is made to it in a 1973 progress report on the District.

GROUP RANCHING IN MBERE

Plans for the development of ranching in the Mberere area started a few years before being brought under the Mberere SRDP in 1970. Since that time the provision of water supply and the development of ranching have been perhaps the focal points of the SRDP for the area. During the 1970-74 Plan period 24,000 acres were to be brought under development, with an emphasis on group ranching.

Some Early Schemes

From the beginning, local people in Embu District appear to have shown very great **resistance** to any form of cooperative or group ranching, despite the persistent efforts of the Range **Management** Division in this direction. Two of the earliest schemes were in Evurori Location, in the north-east of the District. Discussion of the Karuruno Ranching Scheme started at the beginning of 1966 or before. Here **many** people held individual land title deeds, and the proposal was to transfer these titles to a cooperative society in order to form a ranch which "should not be less than 10,000 acres". Efforts to organise this seem to have lasted not more than a year. The fact that individual holdings ranged from 200 acres down to 2.5 acres would have something to do with this, apart from a general reluctance to relinquish land titles, since an individual could scarcely be expected to contribute his small subsistence holding to such a venture. Plans for a ranching scheme at Kieniri proposed by Embu County Council at the end of 1967 lasted only a few months, when it was found that, apart from feeling that they had not been properly consulted by the Council, people "were not interested in changing their mode of life".

The Fate of the SRDP Group Ranching Programme

Two ranch projects which were started in Embu District before 1970 have endured during the whole period: the Ngaru-Mihirige Cooperative Ranch in Mbeti location in the centre-west of the District, which we discuss later, and the Embu-Mwea ranch project in Mwea location in the south-west which is outside the SRDP area. Musonoke Group Ranch was a long-standing proposal and with the launching of SRDP in 1970, 13 new group ranches were proposed. The form of the **projects** sometimes changed subsequently and the revised projects for a particular place were given new titles. What happened to these various projects is summarised in Table 3. Land adjudication providing individual land titles was already going on in the District before 1970 but, to the consternation of the Range Management Division, this accelerated after that year until about 1973.

Table 3. Time-sequence for ranching proposals in Mbere.

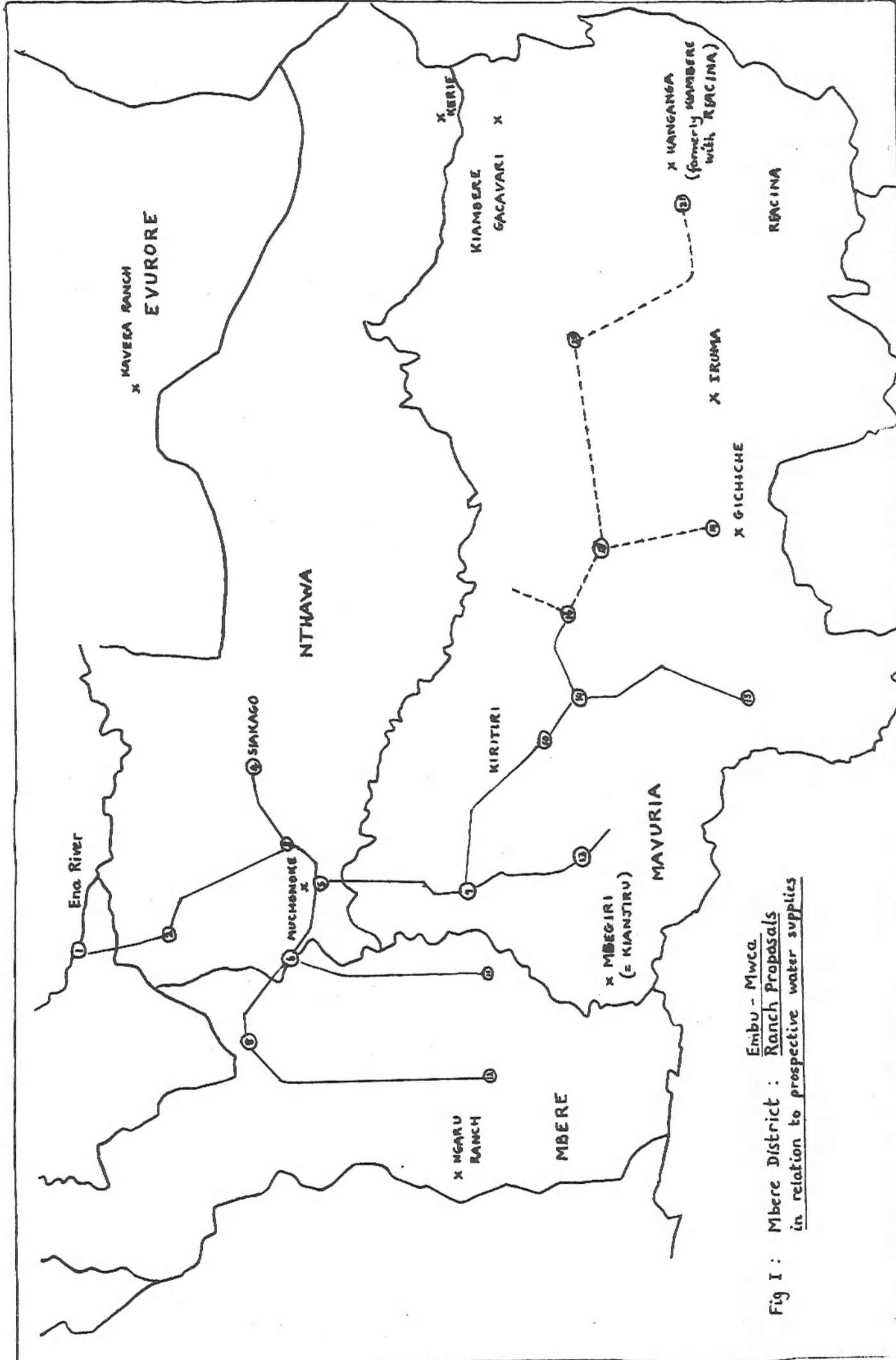
Active ranching schemes before 1970	Schemes proposed soon after start of SRDP	Schemes subsequently started or re-cast	Active ranch schemes in early 1975	Schemes given as priority under Phase II of Livestock Development Programme in 1974
1. Ngaru-Mihirige	—————→		I Ngaru-Mihirige	
2. Embu/Mwea	—————→		II Embu/Mwea	
3. Kiambere				
4. Kiangungi	→Gacavari	III Gacavari	→I Gacavari	
5. Riagina	→Kanganga	IV Kanganga		
6. Kilununa				
7. Gichiche	—————→	V Gichiche	→II Gichiche	
8. Kianjiru/ Rugongwe	→Mbegiri	→VI Mbegiri		
9. Muchonoke				
10. Machanga				
11. Rivitia		Schemes affected by land adjudication		
12. Siakago				
13. Riandu				
14. Gachuriri				
15. Thira				
16. Mbita				
		17. Kerie	→VII Kerie	
		18. Iruma (goats)	→VIII Iruma	→III Iruma
		19. Iriatune/ Kathera	→IX Iriatune/Kathera	

Immediately an area was issued with individual land titles the interest of the Range Management Division in the area ceased, but even where titles had not been issued, the prospect of obtaining these was sufficient to persuade the local residents to hold off as regards group land titles and make it impossible for R.M.D. to make progress. While it is possible to criticise the lack of cooperation which occurred between two groups of Government officials, particularly within an SRDP area in which the agreed thrust of development was to be group ranching, it cannot be doubted that the Land Adjudication Department met with a very good and enthusiastic response which they would have found difficult to ignore. Even Range Management officials admit that the Wabere have a "Kikuyu mentality" in the extent of their interest in individual ownership.

The effects on the programme, however, can be seen in Table 3. Seven proposals did not come off the ground at all, and the land adjudication factor was important in the slow death of the Muchonoke Ranch project which we describe more fully in a moment. The schemes which survived, apart from Ngaru Mihirige (already in the south) are located along the dry south-to-south-west perimeter of Mbere, mostly in Mavuria location. This is illustrated in Fig. 1, which shows a line of ranch proposals east of Ngaru comprising Mbegiri, Gichiche, Iruma, Kanganga and Kerie. These are all away from the grassier and more populated central part of Mbere towards Embu Town. As we shall see, these are dry areas of bush and scrub more suitable for goats than for cattle. They are heavily tse-tse fly infested. There is a problem of predators and wild animals and there are areas in which the Game Department was (and possibly still is) interested. Also they lack water supplies. The considerable investment in expanding water supplies in Mbere, which was in part intended to support the major ranching developments planned, reaches just short of the 'new' ranching areas and it will not be economic, it seems, to extend these supplies. It is likely that these residual ranching developments will concentrate on goats, so that the focus of the Range Management Division has shifted within a few years from cattle to goat ranching.

The Muchonoke Group Ranch Project

Early interest in ranching in Mbere District focussed on the Muchonoke Group Ranch, located some ten miles south-east of Embu. Muchonoke was to be the prototype ranching scheme for the area under SRDP, on which others might be modelled. Muchonoke Ranch provides another example of a ranching scheme which has gone through a lengthy period of preliminary



Embu - Mwca.
 Fig I : Mbere District : Ranch Proposals
 in relation to prospective water supplies

planning and discussion: first surveyed as a potential group ranch at the beginning of 1966, efforts to launch the scheme continued until the early part of 1973, when it was finally given up after a period of seven years. Already in August 1966, seven clans had agreed to participate (out of nine) and had offered cattle as follows:-

Clan	No. of participants	No. of cattle offered
Ikandi	9	36
Mbanji	12	38
Kare	43	224
Mboya	26	62
Kiragua	5	5
Mururi	4	5
Nditi	3	11
Total	102	381

A major explanation of the slow progress made in the first two years was that this proposal for a group ranch came up some two and a half years before the Group Representatives Act was passed. Both sides, members and promoters, had therefore to mark time. Despite this, a baraza in August 1969 showed there was still 'real interest' in group ranching, just as in 1966. In February 1969 eight clans had elected office-bearers for the ranch, and external boundaries were marked out during the year. Three years later this interest appeared to have evaporated, and in April 1972 it was reported that "progress is almost nil to date because of lack of initiative by members and leaders. It seems as if we are trying to force them to start the ranch."

A major factor was undoubtedly the fact that land in the area was rapidly being adjudicated on an individual basis, as discussed above. The people alleged that in 1968 when they expressed interest in group ranching they had not known about land registration. The preference for individual titles, in fact, had lain behind the reluctance of two of the nine clans to participate in the first place. Efforts in May 1972 to persuade the clans to sacrifice their individual titles and to combine their plots failed, turnout at a baraza for this purpose being very low. Subsequent efforts through "futile and wasteful barazas" came to nothing, and early in 1973, when it was found also that some individuals had actually sold their plots to people from outside the area, it was finally recognised

that the scheme had to be abandoned.

But while land adjudication activities did have decisive effect on the establishment of Muchonoke Ranch, this was by no means the only factor. A major element is the sociological one: the existence of a large number of small but strong clans in the area. Already in 1966 some parts of the proposed ranch were under severe dispute among the different clans, and there had been a number of court cases. There were in fact nine separate clan lands. As we shall see this clannishness has been an important element in other attempts to form ranching groups in Mbere, and this was only a preview of subsequent experience. Had this been recognised from the beginning, an appropriate form of ranch development for the area accommodating this factor might have been worked out. A modification that was proposed was that there should be nine paddocks within the ranch, each corresponding to the territorial claims of one clan; but the implications of this do not appear to have been worked through.

A second factor was the way in which the water question was handled. An investigation of water in late 1966 appears to have indicated only that water "is likely to be expensive", whereas at the end of 1968 it was stated that there is "unavailability of water anywhere in the scheme". Rivers in the area were only seasonal. In January 1969, it was decided that the Provincial Range Officer should approach the Water Development Department again, once the management details were finalised. Whether this was done, or brought results, is not clear. However, an official progress report on group ranching states four years later in April 1973 that "water is a major problem" and that, in the absence of permanent rivers, water from the Ena River should be piped to the area or a survey made of possible boreholes. As mentioned already, water was eventually piped through the area, financed under the SRDP water project; but even before April, when the progress report was issued, the Muchonoke ranch was to all intents and purposes a dead project.

Given the crucial importance of water to the project, this uncertainty throughout the entire period from the birth to the death of the project was obviously unfortunate. It meant in effect that the project to which the potential participants were being asked to subscribe could not be defined, and **also** that to the extent that public investment was envisaged, social as well as private returns could not be determined. Indeed the prevarication by potential members, about which

range management staff have complained here and elsewhere in Mbere, probably stems in some part from the desire by them to know precisely what the Government is offering before making a final commitment.

The third problem, related to this, is the failure to spell out the technical and economic content of the project which will yield the benefits sought. What new elements in the situation will create improved economic opportunities? The introduction of water is just one; the sharing of new infrastructural facilities is another (which as we suggest later need not necessarily require the formation of either a group ranch or a cooperative society); the setting up of a central or cooperative herd with improved husbandry and commercial offtake may be the main element. In this case there appears to have been very little discussion of the economic package being proposed, of how the contributed cattle were to be deployed, of how the 350 to 400 cattle offered compared to what was needed, of whether the viability of the enterprise depended on the use of the group land title to obtain loan finance for buying additional cattle or of how the group ranching activities would relate to present farm activities, particularly cultivation. Only in mid-1971 is it mentioned that the general poverty in the area (as well as non-livestock farm activities) would not permit farmers to transfer more than a few cattle each to the project, so that a loan for the purchase of fattening stock would be necessary. Moreover, though the area is suitable for cattle, a considerable amount of cultivation for subsistence takes place: it does not appear **ever** to have been discussed how this agricultural production was to fit into the ranching scheme. Subsistence cultivation was probably a major factor in the preference clearly expressed for holding individual land titles. At a baraza held in June 1972, it is **reported** that a good proportion of participants expressed a preference for individual plots and "for settling for cultivation purposes rather than rearing cattle". A large proportion of plots bought up in the west by outsiders, mainly from Kirinyaga and Kiambu, appear to have been for purposes of cultivation.

It seems likely that if full discussions with the potential participants had taken place earlier, their particular needs could have been taken into account: in contrast, the inclination of the R.M.D. appears to have been to attempt to 'sell' a particular predetermined ranching model, which had to be accepted or rejected only in that form. **In** spite of the need for discussion, the District Range Officer in the area in 1973 admitted to not having made any field visits for an entire six-month

period, though this may have been somewhat unusual.

Ranching Proposals In the Perimeter Areas

During 1973, when hopes were abandoned of developing Muchonoke and the higher areas for group ranching, attention shifted towards the perimeter areas in the south of Mbere, and was focussed on a number of proposals already made there. Various proposals had been discussed for the area extending beyond Kiambere. A meeting of 300 people at Kiambere in July 1973 declared itself interested in group ranching, and elected a chairman. Later (in September) it was decided to form a single cooperative society, to be called the Kiambere Cooperative Ranches, to cover three sites at Kiambere, Reacina and Gacavari. These would have covered a total acreage of 50,000. The participants were told subsequently to clear boundaries and have the land adjudicated before any financial allocation could be made. Almost immediately, however, in October it was found that a single committee was unworkable (no doubt for geographical reasons as well as that of getting proper and agreed representation from all the areas), and separate committees were established. Schemes emerged from this at Gichiche, Kanganga (covering an area close to Kiambere and Reacina) and Gacavari. The acreages involved in the proposal were drastically reduced, Gichiche going down from 7,000 acres to around 3,000 or 4,000, and Gacavari to 8,640 acres, as demarcated in January 1974, and still further later on. At the same time the groups engaged in each scheme were more cohesive, each involving a small number of clans.

The main problems affecting these schemes arise from the physical environment. They lie between the edge of the populated area in the belt sloping down towards the Tana River. Access is difficult in the case of Gacavari, and a tortuous Land Rover ride can take the visitor only as far as a vantage point from which the proposed ranch site can be indicated in the middle distance some four or five miles away through the scrub. An F.A.O. bush control expert reporting in April 1969, described the area as "uniformly dense thorn bush with a few open glades". Heavy tse-tse infestation would make the area unsuitable for cattle without extensive bush clearing: "if at a later stage the area can be freed of tse-tse, and it is decided to introduce cattle, further consideration may have to be given to the eradication of bush". Hence the only option initially is to introduce goats, and even here intensive utilisation is considered necessary, requiring a start to be made in a relatively small area only. An F.A.O. sheep and goat specialist pointed simultaneously to the problem of predators, suggesting

that a start be made at the edge of the settled areas, working progressively downwards (unfortunately this appears inconsistent with such proposals as exist for water provision) and operating within cut lines 75 yards apart (which would be expensive if these were to be four or five miles long.) As mentioned earlier, the Game Department has been interested in these areas: at Gichiche it was said that "there has been overgrazing by wildlife, especially buffaloes".

The water supply position in all the proposed ranches is problematic. At Gacavari there is a dam at the site, but the main water supply would need to be pumped 2.5 miles up from the Tana River. However the costs of this have yet to be worked out, let alone how these would compare with the revenue from an initially small-scale goat ranch. The group of clans involved already own many more goats than cattle and would be interested, certainly in an initial phase, in farming goats.

The present Kanganga scheme covers some of the area of the former proposed Kiambere Goat Scheme. As far back as May 1968 clans in the area had decided to go ahead in establishing a goat ranch on an area of about 10,000 acres. In 1969 there were 43 potential participants offering about 300 goats and 50 sheep. From 1970 onwards there does not appear to have been much active discussion until the present proposal, which is for cattle. The area, however, is one of dense thorn bush much more suitable for goats, particularly as the water supply position is dubious. The idea that goats could be used to reduce the scrub, thus preparing the way for cattle to **be** introduced, may be feasible technically but, given the delay implied in obtaining returns from cattle, does not recommend itself in discounted cash flow terms.

The proposal for a ranch at Kerie is not yet far advanced. A meeting of 500 people in June 1973 expressed a strong interest in either a group or cooperative ranch. **It lies** to the north of Gacavari, and its location is similar.

The area proposed for Gichiche is mostly bush, suitable for goats. Thirty-three people from eleven families are waiting to be registered. The farmers in the area and those directly concerned are relatively poor, cultivating for subsistence, with a little cotton

and not many stock.²⁵ Animals offered at the moment are about 100 goats and 100 cattle; but in any case the plan would be to start with goats for at least three years. As in the case of the other schemes in the perimeter, members would continue to reside and cultivate in the higher areas, with a cooperative society herd maintained as a completely supplementary activity on separate and unpopulated group-owned land some distance away. What needs to be stressed, therefore, is that Gichiche and the other schemes are, in commercial terms and compared to group and cooperative ranches elsewhere in the country, comparatively small-scale schemes. As at Gacavari, the question at Gichiche is whether the proceeds obtaining would suffice to offset the cost of water investments, since at Gichiche there is an even greater water problem. There is no water at present, except for the Tana River, which would offer grazing only in a limited strip parallel to and within reach of the Tana. Even this is in doubt because of the proposed hydroelectric scheme which may redirect the river; in this case four kilometres of piping would be needed to bring water down from the Gitaru Dam.

Similarly, two other schemes which were started from the beginning as goat ranches are quite small-scale. Iruma Goat Ranch is fully demarcated and roughly estimated at 1,000 acres. Five members of the same Iruma clan are involved. The proposal for the Iriatune/Kathera Goat Ranching Scheme was made early in 1974, when a committee was established. The acreage proposed is not yet known.

The rapid abandonment of group ranching plans in the populated segment of Mbere, associated with land adjudication, no doubt saved the R.M.D. from having to deal with what would undoubtedly have been an important factor affecting group ranching schemes: the strength of the clan system in Mbere. Even in these perimeter schemes, where the cooperative herds are to utilise unused and inhospitable lands, the clans have been involved. At Gacavari five clans, Ngai A, Ngai B (two different groups of Ngai) Ndhara, Kamuvea and Ngugi are involved. The last two were not participants until after the names of prospective ranchland-owners were issued in November 1974, when they claimed ownership of land right inside the proposed ranch. Such claims to unused land are based on fairly tenuous ancestral links, the legality of which must be uncertain. The three first clans do not recognise these claims, which are to be adjudicated.

25. An inventory of holdings owned by an earlier group of 70 potential members in April 1974 showed average holdings of nine to ten cattle, eleven goats and four sheep.

The Kamuvea clan also had an interest in the Kiambare/Reacina (now Kanganga) proposal, together with the Nyonga, Mwita and Nditi, the last of which were not recognised by the others as having property rights in the area. Land adjudication became necessary. In the present Kanganga scheme the first three are again potential participants together with the Ciina clan, but there are problems of defining a suitable ranch lay-out consistent with the distribution of clan holdings which can give all access to water at the river. At Gichiche-Ruthari there seems to be harmony between the two clans involved, Ngui and Ikandi, claims from the Mugue clan having apparently been disposed of.

The original Kianjiru/Rugogwe scheme further to the west failed because of land disputes, which are apparently endemic in the area. In the present Mbegeri scheme seventeen clans are involved. The aim, in addition to the ranching activity, is to take over an Indian-owned sisal plantation.

What must be stressed, therefore, is that any cooperative development within Mbere must take realistic account of this very strong clan structure.

Water Supply Issues

As has already been pointed out, it is unfortunate that the major water development scheme for the area (Ena/Ishiara Water Scheme) will not reach these new ranching areas, partly as a result of economies in the scheme caused by shortage of funds. However water plans appear never to have been closely coordinated - or perhaps coordinated at all - with livestock development schemes. Thus the Muchonoke Ranch proposal, which was the focal ranching scheme for the first three years of SRDP and predated SRDP in any case, did not include specification of water investments, although water was a major problem. In the perimeter ranches there has not yet been systematic or conclusive discussion of the water position in relation to the schemes; specifically for example, the cost of pumping water from the Tana River at Gacavari or Kerie. There has been some cost estimation for boreholes.

In our discussion of Kwale we made the point that grassland or scrub does not become ranchland until a complementary input of water is provided and that water investments should await a credible management

system and organisation. A ranch project must in these circumstances be viewed first as balancing additional grazing created against the cost of water investments made (including investments in distributing water). In contrast, actual practice seems to be to delay involvement of the Water Development Department until everything else except water has been cleared - local participation, boundary demarcation, land titles and so on. As pointed out already, however, local participation is likely to depend on the economic package, including water, being offered.

It is difficult to see why this procedure should be followed. Rough estimates of alternative costs by the Water Development Department would not be very difficult to make. Against this, endless forays are made over the years by Range Management and senior administrative officials, false hopes are raised among potential participants, and confidence in the soundness of Government advice reduced as schemes are stretched over seven years or more before **being** abandoned. Secondly, it would seem to be a better approach to first of all determine the viability of creating grazing in an area and then to consider the best way of utilising this: which may or may not be a cooperative ranch. In remote areas it might be a state ranch or a ranching company; in populated areas it may be individual ownership with communal use of water. Thus in these perimeter areas it may be less appropriate to provide new water down on the Tana Plains than to improve water supply in the higher populated areas, where cattle are already kept in significant numbers, using simple intermediate technology methods such as weirs (apparently used in Machakos and Kitui) to retain and draw out water from 'dry' river basins. Planning procedures for livestock schemes therefore need to be reversed, with water issues coming first rather than last.

The Possibility of Intermediate Ranching Models

The effect of land adjudication was to move the field of operations of the R.M.D. to the perimeter areas. The possibility of some kind of intermediate solution within the populated areas of Mberere does not appear to have been considered. In fact it is not certain that land adjudication should preclude any form of cooperative development: a minimum degree of cooperation is involved for instance when individual farmers share communal water or dipping facilities.

A possibility which might be investigated is the formation of small or medium-sized cooperative herds for which grazing rights could be rented on plots owned by **individuals or clans**. Where there had previously been interest in group ranch formation such as at Muchonoke, a group of clans or individuals could nevertheless agree to form a cooperative society to operate a cooperative herd. Here the society would be renting grazing rights from its own members, so that actual cash transfers might be minimised, each member offering certain grazing rights on his own plot as his member's contribution. At a lower level of cooperation, this could be simply a group or communal herd, with livestock only grazed communally for the sake of obtaining the advantages of rotational grazing. Rather than considering only the standard group ranch or cooperative ranch models, the approach should be to consider which are the most important economies of scale attainable in particular circumstances.

The suggestion above is not unlike **the original proposal for Muchonoke**, which recognised the existence of clans by providing for nine paddocks, each corresponding to clan lands but contributed to an agreed scheme for rotational grazing. The aim would be to incorporate contiguous plots into the agreement, but at the same time to retain the flexibility to permit individual plot owners to opt out (since it would in most cases be possible for the cooperative herd to by-pass such plots) and to allow for the renting of grazing rights on plots owned by absentee landlords. The agreement could be flexible enough to allow an owner to continue shifting cultivation on his own plot and to keep his cattle for subsistence purposes (an owner would not have an incentive under group herding to graze cattle on his own land rather than on somebody else's).

This arrangement could be built around infrastructural investments already made in dips and water supply. And the advantages claimed by officials for the group ranching solution, which often boil down to more effective extension, disease control and livestock improvement, could also be obtained. In addition, important economies of marketing, particularly in finding regular outlets at better prices both locally and (especially with a more development-oriented purchasing policy by the K.M.C.) outside the area, might be obtained.

Elsewhere we have mentioned the need to take into account diseconomies of scale in ranching, arising out of the problems of organising huge units. These are important in Mbere, given the strength of the clan system. The advantage of the suggestion made here is that it might be possible to build up from smaller units to larger ones, on both the production and marketing side. Thus groups could in time be affiliated to a medium-sized cooperative union for the sale of cattle. On the production side, groups could be brought together to extend rotational arrangements, or within groups favourable experience might persuade members eventually to merge their individual land titles in favour of a communal one for the sake of obtaining a development loan. The obtaining of loans may be the one economy of scale not obtainable short of a group land title; at the same time loans should be obtainable on the basis of the cooperative herd (if not, institutional arrangements should be modified to facilitate this).

This new focus would bring attention back to areas where plentiful grazing exists, where investment has already taken place in a major network of water supply, where a comprehensive system of cattle dips has been established and where the population is resident. Attention would also revert from goats to cattle.

It could be said that Mbere was not suited to the compartmentalised approach of the R.M.D., which requires that an area be either mixed farming land (where it has no interest) or ranchland, where either the group ranch or cooperative ranch model may be applied, both requiring the absence of individual land tenure. In fact Mbere is an intermediate area, basically suitable for livestock but capable of supporting some subsistence cultivation of foodcrops. In this situation (unlike Pokot, where a much greater proportion of subsistence is based on livestock) it is understandable that residents would be reluctant to sacrifice their customary plots in favour of a collective land title.

This need not mean, of course, that they are thereby not interested in cooperation in livestock activities, as R.M.D. officials concluded. Thus when the District Range Officer of the area referred in 1973 to the fact that people might be prepared to surrender their individual land titles as they were still "eager to start group ranches", the reply was that he was expected:-

to know the procedures to be followed when organizing group ranches... If you have clearly explained to the people how group ranches are formed, and they have chosen to have their land adjudicated on an individual basis, this means that they are not interested in group ranches, and therefore your statement that the local people are 'eager to start group ranches' is contradictory.

This statement in October 1973 effectively marked the termination of efforts to foster group ranching within the populated areas.

Further evidence of compartmentalised thinking in terms of the two models occurs for instance when it was said in 1970 in relation to the R.M.D. Eastern Province Development Plan for 1970-1974 that "since cooperative ranch development has received a negative response, group enterprise will be the main objective". In fact, if people are reluctant to accept cooperative ranching, the same is likely to hold in respect of group ranching, if the latter is to be organised in a commercial fashion with a central herd, organised management and a commercial rate of offtake. Without this element, there would still be advantages in pooling communal facilities, such as water supply, but how such facilities would be financed is questionable. The 'tremendous welcome' which group ranching was said to have received was due to the fact that livestock are owned individually under this system; but this implies a preference for a limited degree of cooperation. Rather than switching directly to the alternative model, discussion might have started right away on the socio-economics of a system which could bring tangible benefits without assuming more than a realisable form of cooperation. Another example of the same thing occurred in respect of the Kianjiru/Rugogwe Ranch (later called Mbegeri). When members themselves took the initiative in June 1972 to approach the R.M.D. with a proposal for the formation of a stock farming cooperative society, they were advised to form a group ranch "as appropriate for their area". However, this merely represented the official policy for the area at one point in time, emanating from what was considered earlier to have been a lack of local interest in cooperative societies. Yet the present perimeter area proposals for goat ranching are all for cooperative ranches.

The Ngaru Mihiriga Ranching Cooperative Society

The only active cooperative cattle ranching enterprise within the Mbere SRDP area at the present time is the Ngaru Mihiriga **Ranch**. Since it has been in operation since 1969, it is worth examining its

experience as an indication of possible success elsewhere.

The decision to launch a cooperative ranch appears to have been taken as early as 1966, although the cooperative society was formally registered in August 1969, with 91 members in an area of 5,315 acres. Agreement regarding the use of land has been informal, and the title deeds are still awaited. The length of time this has taken is in marked contrast with the speed of land adjudication elsewhere in Mbere.

Five clans have property rights in the ranch area, but a significant proportion of society members do not belong to these clans. Out of about 150 possible clan members in the **society**, only 38 joined in 1969 and bought shares (at Shs 500 each). Members had therefore to be brought in from outside the clans to render the scheme viable. Even clan members, however, also own plots outside the ranch. The treasurer and some other committee members are in fact from outside the clans.

Particularly since a question has been raised regarding the activities of the treasurer, there is pressure to close the society except to clan members. At the same time there is a proposal that when the title deeds to the land are obtained, this should be leased by the clans to the society. There is considerable uncertainty regarding cohesiveness of the enterprise in the future, even apart from the financial problem.

A major advantage of the ranch has been the availability of water. The ranch lies between the river, 1.5 miles from the **grazing** areas, and a stream on the other side, while investment in a system of two tanks (one already working) and two troughs will supply water to the centre of all four rotational paddocks. There appears to be a major tse-tse problem, however, as measured by the 205 animals treated during 1974 and an expenditure on drugs of Sh 10,960, one of the major cost items during the year. This is very pertinent to the prospects for introducing cattle ranching in the lower areas of Mbere.

The main ranch activity is the fattening of bought-in steers for resale. For this purpose, loans were obtained of **Shs 50,000** from the Agricultural Finance Corporation and **Shs 30,000** from the **Government** of Kenya. However, the carrying capacity of the ranch, estimated as 530 stock units, was only about 50 per cent utilised in January 1975 when there were 262 stock units on the ranch. **Absence** of a land title deed may have handicapped the society in obtaining loans, for its repayment

record is good so far.

Goats are not kept at present, but a goat breeding programme was proposed during 1974. This would be launched by the purchase of 100 Boran goats, at a cost of around Shs 10,000; calculations of revenue potential put this at Shs 20,000 over the four years 1976-1979.

Despite the numerous difficulties, a progressive attitude has been taken towards animal husbandry. Improvement of water supply, application of a rotation system and dipping and treatment against disease have all been carried out. Attempts at systematic upgrading of animals are presently going on, with two separate herds of about 100 cows each, one served by two bulls, and the other by artificial insemination, using Sahiwal bull semen. No special efforts have been made yet on the marketing side, and stock are merely sold locally to traders visiting the site.

Unfortunately a rough calculation of average net proceeds, over the five years 1970 to 1974, does not leave room for too much optimism. Running costs are probably around Shs 40,000 in a normal year.²⁶ Revenue from cattle sales during 1970 to 1974 were about Shs 180,000, against purchasing costs of Shs 154,000, yielding average annual net proceeds from cattle of about Shs 25,000, well below recurrent running costs. Not surprisingly, no dividends have been paid to members since 1970-71 when Shs 13,800 were paid out, averaging Shs 150 per member, equivalent to only Shs 30 each per year. This is, moreover, despite considerable official assistance, apart from managerial assistance, for instance in respect of pumping installations and firebreaks.

26. In 1974, Shs 17,500 were spent on staff wages, Shs. 2,800 on acaracides, Shs 700 on fuel, Shs 11,000 on drugs and about Shs 2,500 on transport. Adding in other items such as interest charges would raise the total to around Shs 40,000.

From the beginning there have been managerial problems; the first two managers resigned. More seriously, doubts have recently arisen regarding the state of the account, as the treasurer has been unable to account for one item of Shs 27,000. A figure for administrative expenditures of Shs 8,000 in 1974 ought also to be scrutinised. This is, of course, an occupational hazard of cooperative societies, which may well in this case lead to the break-up of the enterprise. The main lesson from the experience of the Ngaru Mihiriga Ranch, which certainly has positive elements, seems to be that the managerial and organisational problems of cooperatives must not be underestimated in the ranching field as elsewhere.

SOME GENERAL OBSERVATIONS ON GROUP AND COOPERATIVE RANCHING

Our review of ranching schemes in three different SRDP areas reveals a considerable diversity of conditions and experience and throws up a host of economic, sociological, legal and administrative issues. At the same time some general problems emerge facing the development of the ranchlands and semi-arid areas of Kenya.

The Management and Husbandry of Range Resources

The fundamental task of ranching is that of managing, preserving and appropriately utilising the grazing resources of a particular area. Such management requires the appropriate restriction of the numbers of livestock at any given time, so that the productivity of the grazing resources is maximised over time. The fragility of the dry range areas in the face of overstocking is now well understood. Overstocking results in the eating out of the more desirable species of grasses and the destruction of the soil cover. The end result of the cycle is soil erosion and degradation, and the artificial stimulation of the least desirable and least palatable species of bush and scrub. The productivity and the carrying capacity of land that has been subjected to overstocking is greatly impaired and, without a determined regeneration effort, this impairment can be permanent. The result is that land that could have been the source of very considerable livestock production and wealth is instead the site of increasing poverty, misery and degradation.

Our case study of the Kongelai indicates that social factors partly underlie the extent of overstocking and are still very strong despite their shortsightedness and irrationality in achieving the social

objectives involved. At the same time, where land is owned communally and cattle and other livestock are owned individually, there is a strong economic motivation for the individual operator to maximise **the** number of livestock units he personally owns. In this way the individual can transform as much of the grazing into personal wealth as possible. If an individual restricts the numbers of his livestock, the only consequence is that some other livestock owner will use the grazing, and the individual who restricted his stock ends up relatively worse off. There is no individual incentive whatsoever in this system for the husbanding and management of the grazing resources. Without some form of control of numbers, investments in water supplies and disease measures may only result in higher concentrations **of** livestock on the land in the short run, and acceleration of the deterioration of grazing resources in the longer term.

Group Ranching

The group ranch movement has largely been an attempt to solve the basic problem of the absence of a focus responsibility for the preservation of the land by giving land rights to a group. It is clearly in the group's interests to husband their land for the sake of future years. The problem of the group ranch is basically one of how to impose the group's interest on the individual livestock owners. This is an unresolved problem so long as maximisation of stock numbers is clearly in the individual stock-owner's interest. In a group that might consist of several hundred members who jointly own the land, the battle for the individual family's wealth and survival is still the battle to maximise its personal herds. Under these circumstances, the individual's 'cultural' resistance to destocking is likely to persist.

In this regard it is worth pointing out that, in contrast to cooperative society ranching, the **essential element** of group ranching is individual ownership of livestock, and it is promoted in areas where the more advanced form of cooperation is not deemed feasible. Accordingly there is an inherent problem in group ranching, as compared to cooperative ranching, of reconciling individual and group interests.

Given the rather gloomy outlook for group ranching development, if the Kongelai situation is a general one, an alternative approach, the suitability of which in particular areas merits further investigation, is the classic solution to the 'common property' problem, that of enclosure.

Once a livestock owner knows that he is dependent upon a piece of land, and can exclude from it all livestock other than his own, his economic incentives change radically. He is then motivated to husband and improve his grazing and restrict his livestock holding to that number that will maximise farm output over the long period. The experience with enclosure in South Baringo referred to by Von Kaufman is intriguing:-

...There has been remarkable development of individual ranching operations. Individual plots of 30 to 50 hectares have been planned with good access ways left to common facilities such as water, dips and markets. When these plots were demarcated, all were composed of poor land, some absolutely bare eroded earth. Many of these plots have been reseeded with improved or indigenous grasses. Cattle numbers have been reduced.....Grass poaching on neighbouring plots, and failure to practice regular dipping, have been stopped by successful prosecutions. In drought, farmers have apparently learned to sell, or at least remove their stock in time and re-stock after the drought. Assistance has been limited to some excellent Range Management Division re-seeding trials, a few small-scale loans for pasture development and the purchase of quality cattle, and normal routine extension services.²⁷

This appears clearly to be an important development which needs to be examined more closely, with a view to possible replication in other suitable areas, and as part of a more flexible approach to ranch promotion.

It also raises a question regarding the extent to which huge ranches are necessitated by the existence of economies of scale. The above small scale ranch system with common access to water and dips appears very suitable for the situation in Mbere District described above. In any case, as has already been mentioned, because of uneven rainfall patterns in the pastoral areas even the very largest of group ranches can, in some years, have virtually no grazing on them. Under these circumstances it is essential for the livestock owners to move their cattle completely off their group ranch and seek other grazing. This is the basis for the cultural institution of reciprocity, whereby cattle from one area are permitted access to grazing in another area, in the knowledge that

27. Ralph von Kaufman, "The Development of the Range Land Areas", in J. Heyer et al, ed., Agricultural Development in Kenya, Nairobi, Oxford University Press, 1976.

in a subsequent year permission may have to be sought in the other direction.²⁸ In the somewhat extreme case of West Pokot, the group ranch boundaries appear to separate off the most arid area from other areas that are ecologically complementary to it. Thus on the one hand group ranches are no guarantee that advantage can be taken of all important economies of scale, and on the other the tendency by **the R.M.D.** to establish the largest possible size of group or cooperative ranch may not be justified by economies of scale and may involve important diseconomies of scale on the managerial and organisational side.

As the example of Mwereni ranch shows, far too little attention has been given to the internal structure and working of group ranch ~~organisation~~. In this case the problem is to find a structure which will solve the problem of conflict between individual and group interests. The managerial problems of cooperative ranching are different in kind, but if group ranching is intended either immediately or eventually to represent a commercialised ranching system, then the experience of cooperative ranching societies in Kenya is very relevant to an assessment of the potential for group ranching. In Mbere District, as we have shown, group ranching proposals have been transformed over time into proposals for cooperative ranches. We have also suggested, on the basis of the Mbere experience, the need for some 'intermediate' ranching models. Since the main cooperative ranching developments in Kenya do not lie within the SRDP areas, we shall not discuss these in detail here. Developments in Machakos District are examined fully in the separate I.D.S. Working Paper mentioned.²⁹

Within the ranchland areas for which group ranching is **proposed**, **overstocking** is not invariably a problem, as for instance in Kwale and Mbere. However extensive areas within Kenya are similar to the situation in West Pokot, with serious overgrazing. Here the fundamental problem of managing the range resource remains that of achieving and maintaining

28. See J.M. Halderman, An Analysis of Continue: Semi-Nomadism on the Kaputiei Maasai Group Ranches, Discussion Paper No. 152, Institute for Development Studies, University of Nairobi, 1972.

29. I. Livingstone, op. cit.