

**ORGANIZATION AND ADMINISTRATION OF INTEGRATED RURAL DEVELOPMENT IN SEMI-ARID
AREAS: THE MACHAKOS INTEGRATED DEVELOPMENT PROGRAM**

**A Report Prepared for
The Office of Rural Development and Development Administration
Development Support Bureau
Agency for International Development**

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16. Abstract (Limit: 200 words) Despite substantial worldwide experience with integrated rural development (IRD) projects, knowledge of how such projects should be organized and administered is insufficient. This report examines the potential for IRD in semiarid lands based on a case study of the Machakos IRD project in Kenya. Part I describes the design, organization, and administration of the Machakos project. In light of the project's goals of decentralization, integration, and participation, as well as its various components, project experience is explored, emphasizing the success or failure of administrative and organizational mechanisms. The author highlights questions about dispersion versus concentration of project resources and the choice and sequence of project activities. He argues that IRD is best effected through the lower levels of the bureaucracy, assuming the presence within this group of minimal planning and implementation skills. Part II describes a micro-level, socioeconomic field study of 226 households in the project area. Against an overview of the agro-climatic, sociocultural, historical, and demographic context of semiarid areas, the survey's research design and field procedures are presented. Survey findings are provided regarding the general nature of the project area, crop production, land holdings, livestock assets, and sources of income as well as the target population's perception of the project, their soil conservation practices, and their gain from the project's credit program. The author concludes by identifying issues which policymakers interested in IRD in semiarid lands must consider - the economic importance of off-farm income; the risk and expense of credit programs; the potential gains in productivity from different farming techniques which are not tied to capital and income resources; the need for labor-saving technologies; and the importance of promoting soil conservation. Appended are a list of 81 references (1920-80); a description of the Machakos credit program; an overview of the project's approach to soil conservation; and an outline of major steps in the project's payment and budget processes.			
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DESCRIPTION OF THE CONTENTS OF THE REPORT

This report presents a case study of the Machakos Integrated Development program (MIDP), Machakos District, Kenya. The purpose is to document, and in turn learn from, experience gained from a project designed to use an "integrated rural development" approach to address the problems of a semi-arid/marginal area.

The report is divided into two parts. Part I contains an analysis of the design, organization and administration of MIDP. The project objectives and specific project components are first briefly described (Chapter II). Secondly, administrative and organizational procedures for project implementation are outlined (Chapter III). Topics addressed include: a) description of the project management structure which directs coordination of project components; b) procedures for decentralized project planning and implementation at the district level with respect to planning, budgeting and financial flows; c) mechanisms by which integration of project components is effected; d) examination of project attempts to build local level participation into project planning and implementation; e) description of monitoring and evaluation procedures employed; f) description of the nature of donor involvement in the project. Following this description of the basic organizational structure of the project, each of the above topics is analyzed in terms of MIDP experience (Chapter IV). Attention is given to the success and failure of MIDP efforts to utilize the administrative and organizational mechanisms previously outlined. Finally, general policy considerations which emerge from the analysis of MIDP are addressed (Chapter V). Issues examined concern the potential for and constraints on undertaking integrated rural development projects in semi-arid settings.

Part II of the report contains a description of a field study in which the socio-economic context in which MIDP operates is examined at the micro-level. Factors critical to understanding the general research context are first set forth (Chapter VII). These include: the agro-ecological context unique to semi-arid areas; salient aspects of the socio-cultural context of the area studied; a brief historical description of factors influencing current responses to Government programs with particular reference to resource conservation activities; and demographic pressures which affect land use and other resource conservation concerns.

The research design and field procedures for the field study are then briefly described and the results of the field survey of 226 households are presented (Chapter VIII). A profile of households surveyed is provided with respect to the following topics: general household characteristics (size, education levels, etc.); crop production; the nature and extent of land holdings; livestock assets; and a breakdown of various sources of household income.

Data from the survey are also presented on three additional topics. Respondent's views on their expectations of the MIDP program as well as the extent of their involvement in MIDP planning and implementation are examined. A description of soil conservation practices and factors affecting pre-disposition toward soil conservation activities is then provided. Thirdly, an examination is made of who benefits from MIDP activities through statistical analysis of factors affecting the distribution the MIDP credit program. Finally, several policy implications from the study are set forth (Chapter IX). Particular attention is given to the role of off-farm sources of income in semi-arid areas.

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Responsibility for any errors of fact or interpretation is, of course, solely that of the author.

ABBREVIATIONS

AIE	Authority to Incur Expenditure
ASAL	Arid and Semi-Arid Lands
DC	District Commissioner
DDC	District Development Committee
DDO	District Development Officer
DSC	District Steering Committee
EDF	European Development Fund
EEC	European Economic Community
GOK	Government of Kenya
IRD	Integrated Rural Development
MEPD	Ministry of Economic Planning and Development
MIDP	Machakos Integrated Development Program
MOA	Ministry of Agriculture
MOCOD	Ministry of Cooperative Development
MOWD	Ministry of Water Development
MPO	Machakos (MIDP) Program Officer
PCC	Planning and Coordinating Committee
PO	Planning Officer (MEPD)
PS	Permanent Secretary
SRDP	Special Rural Development Program
TA	Technical Assistant (expatriate technical adviser)

PART I: DESIGN, ORGANIZATION AND ADMINISTRATION OF MIDP

I. INTRODUCTION

The term integrated rural development (IRD) is now commonplace in the literature on rural development. Yet despite its wide currency, there is a lack of consensus on what the term implies both in general policy and in specific programmatic terms.¹ Two recent studies funded by USAID, which together constitute the most comprehensive comparative treatment of the subject of IRD to date, abstract from secondary literature and field experience propositions relevant to the organization, administration, and management of IRD projects (Cohen, 1979; Honadle, et al., 1980). One striking aspect of these two studies is the range and number of unresolved issues and sets of alternative choices the authors pose as requiring the consideration of policy-makers and practitioners involved in IRD efforts. In short, despite the extent of worldwide IRD project experience, the body of knowledge on how IRD projects should and can be most effectively organized and administered is undeniably still in its formative stages.

The report which follows examines the potential for IRD within a particular agro-ecological context, namely, semi-arid or "marginal" areas. It presents a case study of an IRD project, the Machakos Integrated Development Program (MIDP), situated in one district of Kenya. The report has a two-fold purpose. The first is to offer one addition to a growing set of descriptions of worldwide IRD projects with the intention of contributing insights from this project to the larger body of knowledge on the design, organization and administration of IRD

projects. A second objective is to examine the way in which the particular conditions and problems of semi-arid regions influence the process of IRD.

While the purpose of this report is to extract from a case study of MIDP insights of broader relevance to similar efforts elsewhere, the general approach is to present a "nuts-and-bolts" analysis of project experience. This results from a belief that the IRD literature suffers from insufficient examples of the testing of basic principles -- as inadequate or as seldom articulated as they may be -- against concrete, real-world project situations.

This report is written for two audiences. The first is policy-makers and practitioners interested generally in the topic of IRD and, especially, in its application to semi-arid areas. A second group will have greater interest in the details of the case study and in particular the Kenyan governmental/institutional setting within which it is located. For these latter readers, two provisions have been made. Footnotes supplement the text and either (1) relate issues under discussion to the wider IRD literature or (2) provide further elaboration of the specifics of the Kenya context. Secondly, several appendices are provided which describe in more detail project implementation procedures referred to in the text.

Finally, the report is organized into two sections. Part I offers an organizational analysis of MIDP as an example of an IRD project. Part II presents the results of a field study which examined selected socio-economic characteristics and attitudes toward MIDP on the part of a sample of the project target population.

Before proceeding, definition of several basic terms is required. Following the lead of other authors (Cohen, 1979; Leupolt, 1977) a definition of integrated rural development is borrowed from Ahmad which

...define[s] an integrated rural development programme as a series of mutually supporting (inter-related) agricultural and non-agricultural activities oriented toward a stated objective. It involves the progression of rural subsystems and their interaction leading to desired improvements in the rural system as a whole (1975:119).

A further point of clarification must be made on the organizational structure of IRD projects. As Cohen (1979:45) points out, the activities they involve are "administratively coordinated and/or controlled by one bureaucratic unit through a single project."

The terms semi-arid regions or marginal areas (used interchangeably) are used in this report to refer primarily to agro-ecological characteristics. These terms function as an "ideal type" to depict regions of marginal rainfall where agricultural potential is severely constrained by rainfall frequency and duration throughout the year.² Thus the threat of crop failure is an ever present fact of life with every cropping season. Indeed crop failures of the magnitude of three out of every ten years are common. While there may be some variation within such regions, the dominant mode of agricultural production is dryland mixed farming in which the primary means for meeting subsistence needs and, possibly, generation of surplus income is arable agriculture. Livestock are usually owned to supplement subsistence or cash resources, frequently serving as an emergency source of funds.³

II. OVERVIEW OF MIDP

A. Brief Description of the Project Context

The Government of Kenya, with substantial donor support, is making a major effort to address the problems of its arid and semi-arid lands (ASAL) through a series of area-specific integrated development programs (Republic of Kenya, 1979:14, 211).⁴ This report is concerned with the first of these, the Machakos Integrated Development Program (MIDP).

MIDP is a district-wide project serving Machakos District.⁵ This district, the second most populous in Kenya, has an area of over 14,000 square kilometers and a 1979 population of slightly more than a million people. An agricultural district, only about 10 percent of the land in Machakos is high potential land, the rest being medium (57 percent) or low (34 percent) potential.⁶

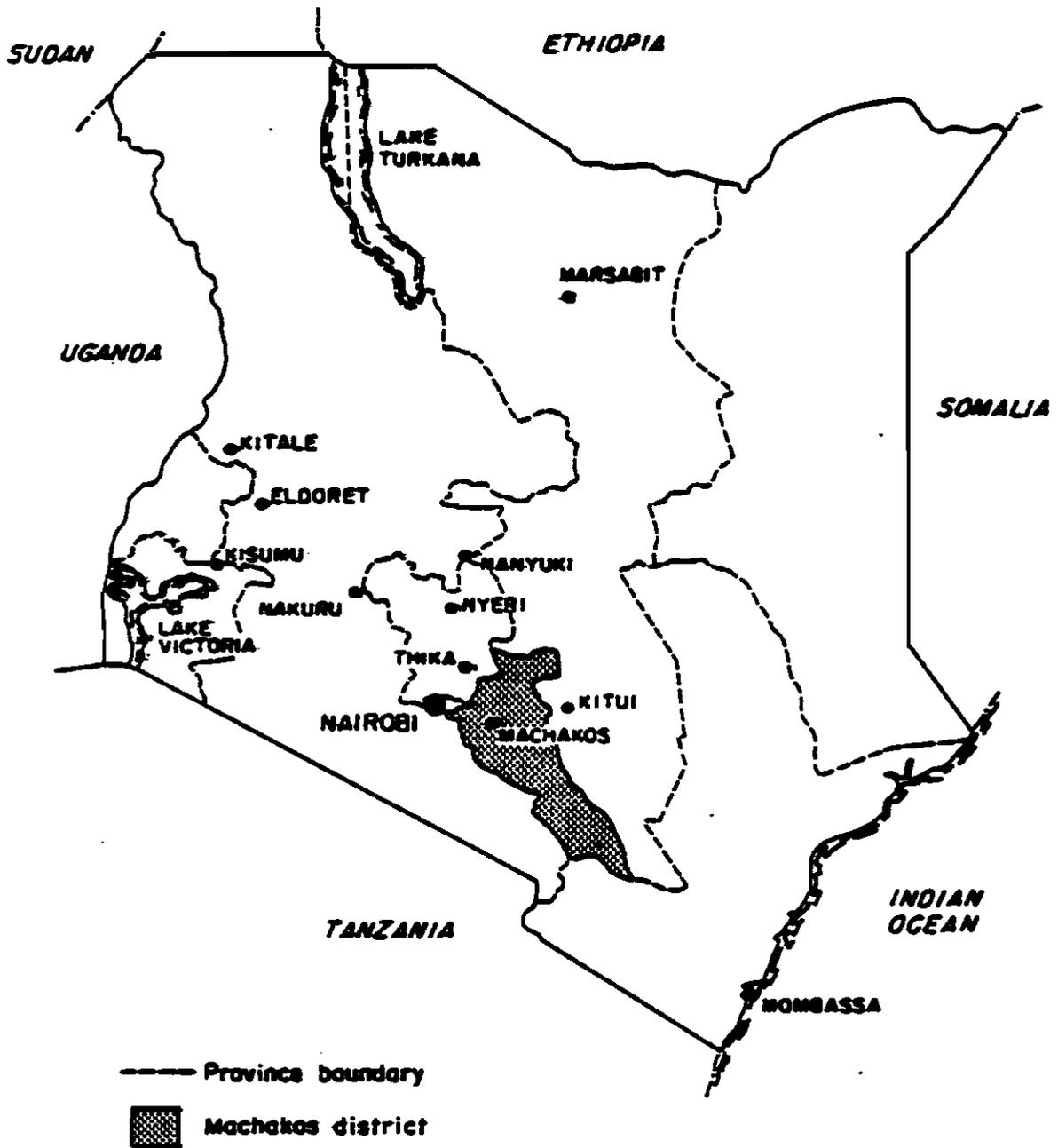
While operating throughout the entire district, MIDP has a mandate to concentrate on the dryer, less productive parts of the district.⁷ These are also areas less well served with physical infrastructure and social services.

B. Objectives

The overall objectives of the program are to:

...promote income distribution and employment generation, for the people of Machakos...[through] two major broad-based strategies. The first is to improve the resource base and to increase the productivity of the existing resources, namely, land and labor. The second is to provide increased social services for rural people (Republic of Kenya, 1977b:2-3 to 2-4).

MAP 2.1. KENYA: LOCATION OF MACHAKOS DISTRICT



Stated in more programmatic terms, MIDP aims at: (1) increasing the reliability and productivity of agriculture; (2) fostering more rational land use through soil and water conservation, grazing management and afforestation activities; (3) providing wider distribution of water sources; (4) constructing essential infrastructure; and (5) providing greater access to social services.⁸

C. Time Frame and Financing

Negotiations concerning MIDP were initiated between the Government of Kenya (GOK) and the European Economic Community (EEC) in 1975. Under the terms of the Lome Convention, the European Development Fund of the EEC began financing the Machakos Integrated Development Program in July 1978. The EEC agreed to provide a grant of 177 million shillings (approximately U.S. \$24 million) over a four year period (since extended to five as the first year was primarily taken up with planning for subsequent implementation). The GOK contribution stipulated in the financial agreement was 3.7 million shillings. While the initial financial agreement was for a four year period, there was an informal understanding that project funding would likely be extended to a total of 10-12 years (Discussions have been initiated concerning a second four-year phase).

D. Project Components

There are 11 project components in MIDP. Each of these components falls within the purview of an individual GOK ministry. That is, program implementation is carried out through existing district line

departments, strengthened to meet project needs.⁹ Each component is described below in terms of broad categories of activities:

1) Crop Development (14 percent)¹⁰

Training: training courses in crop husbandry for farmers joining the MIDP credit scheme; ¹¹ training for Ministry of Agriculture (MOA) field staff designed to upgrade their extension skills.

Demonstration: crop demonstrations designed to introduce farmers to a crop and inputs "package" and the use of an improved ox-drawn tillage implement.

Pre-extension trials: testing of drought-resistant crops and related husbandry techniques.

Research: strengthening the facilities of the Katumani Research Station (which undertakes experimentation on potential dryland farming techniques).

2) Livestock Development (7 percent)

Tick control: provision of free acaricides for cattle dips during the first project year; training of Ministry of Livestock Development field personnel and dip attendants in dip management, disease control, etc.; improvement of dipping facilities.

Stock improvement: extension of existing artificial insemination (AI) runs; establishment of bull camps within grazing associations in areas not served by AI; establishment of demonstration units for improved breeds of sheep and goats suitable for drier areas of the district.

Dairy industry: provision of dairy cooling and collection equipment for existing dairy cooperatives to improve marketing capabilities.

Bee-keeping: establishment of demonstration units to encourage increased honey production in drier areas; provision of improved hives; establishment of a honey processing center in Machakos Town.

Fodder grass improvement: demonstration and distribution of improved grasses (in collaboration with soil and water conservation component).

3) Soil and Water Conservation (5 percent)

Comprehensive soil conservation measures: coordinated measures -- terracing, cut-off drains, gully rehabilitation, road drainage, afforestation, pasture rehabilitation -- undertaken on a dam catchment basis.¹²

Training: on-the-job training of persons who supervise catchment work; short courses for MOA extension personnel in soil conservation techniques; promotion of educational campaigns on soil conservation in schools and adult education centers.

Nursery support: support given to district nurseries, including establishment of new nurseries, to encourage propagation of fodder shrub and tree seedlings.

4) Water development (37 percent)

Dam construction: construction of both earth dams and sub-surface dams for domestic and livestock water supply.¹³

Large scale rural (piped) water supply scheme: construction of one of these to serve 17,000 people.

Low technology water schemes: construction of shallow wells, spring and rock catchments.

5) Forestry (6 percent)

Tree planting: support given to three ongoing GOK tree planting programs, namely the (1) Forest Plantation, (2) Protective Forest, and (3) Rural Afforestation Programs.

Tree nurseries: assistance given for the maintenance and extension of existing nurseries to supply seedlings to the above programs.

Research: establishment and maintenance of a forestry research station to conduct research on species suitable for arid conditions.

6) Cooperative development (4 percent)¹⁴

Credit supply: provision to farmers of a four acre (cash and subsistence crop) "package" loan or, alternatively, cotton insecticide credit.¹⁵

Stores: construction of (18) stores throughout the district for storage of inputs and produce by cooperative societies.

Training: recruitment and training of Machakos District Cooperative Union staff at the district and field level to upgrade administrative and managerial skills.

7) Rural Industry (2 percent)

Workshop clusters: construction and equipping workshop clusters designed to promote small-scale industrial development in rural areas. (This component functions under the GDK Kenya Industrial Estates program in which local entrepreneurs and craftsmen can rent machinery and/or space, receive training and technical support, participate in bulk buying schemes, and obtain loans.)

8) Social Services (2 percent)¹⁶

Training: support of ongoing Ministry of Cultural Affairs and Social Services leadership training of community leaders in group management techniques.

Materials and equipment: provision of materials and equipment to a range of social service efforts including self-help and women's groups, day care centers, a village polytechnic, a vocational rehabilitation center; provision of technical and marketing assistance to handicraft groups.

9) Physical infrastructure (2 percent)

Roads and bridges: construction of bridges and approach roads; support for a road improvement program for constructing drifts and widening roads.

10) Aerial photography (2 percent)

Production of aerial photographs of the entire district to allow detailed planning of project components, especially water development and soil conservation; an aerial survey for selected types of project monitoring.

11) Housing (1 percent)

Construction of ten senior staff houses in Machakos Town.

Additional Comments Concerning Project Components

Two further points apply to all but the latter two components. Firstly, the description of component activities excludes provision by MIDP in these sectors of: vehicles and/or transport maintenance and

operating costs; office and technical equipment; local staff -- drivers, clerical and secretarial staff, etc.; and in some sectors, field office buildings and/or staff housing.

Secondly, the expansion of many district ministerial programs by MIDP necessitated the hiring of a number of district level staff (exclusive of the above local staff), e.g., cooperative society secretary managers, soil conservation supervisors, etc. (As of April 1980, they totalled approximately 120 people plus 180 cattle dip attendants and 60 permanent forest nursery laborers.) Emoluments for these employees are borne by MIDP and will be progressively transferred to the GOK budget by the end of the fourth project year.

E. Technical Assistance

Technical assistance (i.e., technical adviser services) to MIDP is supplied through a GOK contract with a German consulting firm. There are twelve technical assistants (TAs) assigned to the project:¹⁷

- 1 Program Officer (project coordinator)
- 2 Design Engineers (water development) -- stationed at MOWD
Nairobi
- 3 Supervising Engineers (water development)
- 1 Geo-technical Engineer (water development)
- 1 Soil and Water Engineer
- 1 Farm Management Specialist
- 1 Crop Specialist
- 1 Cooperative Credit Specialist
- 1 Rural Industry Specialist

These expatriate advisers operate within their respective district level ministerial departments and are responsible to their ministry's district heads. (Figure 3.1, page 14, shows the location of these TAs within the overall MIDP organization.)

F. Planning Approach

The basic planning concept underlying MIDP is that of proceeding with planning and then implementation through a "catchment" approach. Machakos District can be roughly divided into eight major water catchment areas. Project activities are organized on the basis of a comprehensive, integrated plan of action for a given catchment, referred to as an "operational area". Generally speaking, implementation efforts concentrate on one operational area per financial year (though obviously some work in an operational area carries over into subsequent years after the primary focus shifts to the next operational area) -- see Map 2.2. The first operational area identified covered an area of approximately 1,050 sq. km. (primarily concentrated in two divisions/five locations) -- see Map 8.1, p. 83.

MAP 2.2. MIDP OPERATIONAL AREAS



III. ADMINISTRATIVE AND ORGANIZATIONAL STRUCTURES/PROCEDURES FOR PROJECT IMPLEMENTATION

Three organizational principles run through descriptions of MIDP found in project design documentation. These principles were (and continue) to guide efforts to achieve the project objectives cited above. They are, in fact, not only "means" but also to some extent implicit "ends" or organizational objectives in and of themselves. These principles are:

- 1) integration of sectoral components of the project
- 2) decentralization of project planning and implementation to the district level¹⁸
- 3) local participation in project planning and implementation.

This chapter describes specific organizational/administrative mechanisms utilized by MIDP to achieve project objectives. An analysis of the performance of these mechanisms follows in Chapter IV.

A. Project Management

Overall management of the project is under the direction of the Machakos Program Officer (MPO) "who acts with the authority of the District Commissioner in coordinating and directing the district departments in the implementation of the project." Figure 3.1 presents an organizational chart showing the various ministries (and their departments) involved in MIDP and their relationship to project management.

The chart indicates all ministries ("operating ministries") which carry out some portion of MIDP's total program. Program implementation of specific MIDP activities is directed by district heads of individual

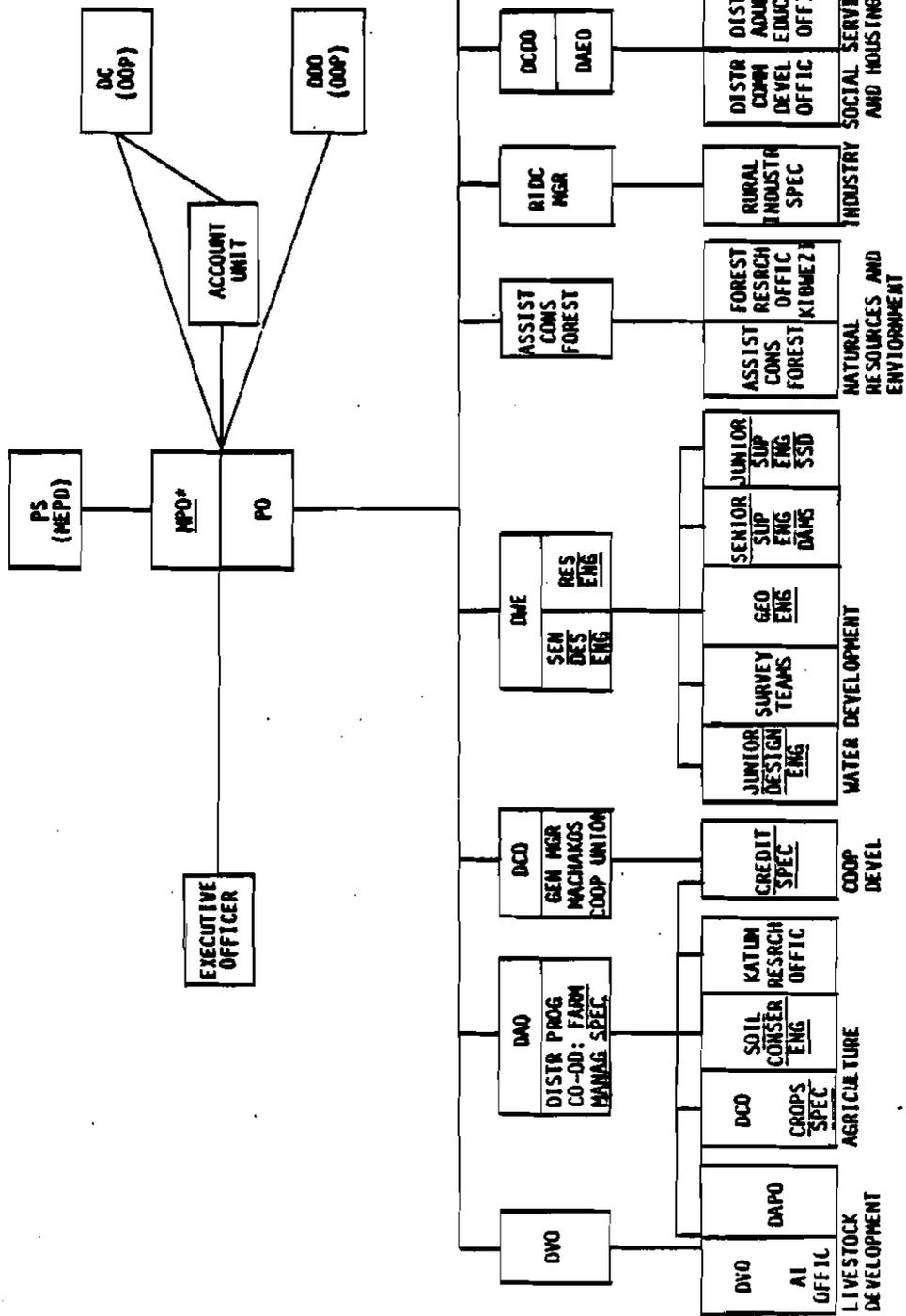


FIGURE 3.1. MIDP ORGANIZATIONAL CHART

*T.A. PERSONNEL underscored

Source: MIDP Program Officer

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ABBREVIATIONS USED IN FIGURE 3.1

AI	Artificial Insemination
ASSIST	Assistant
CO-OO	Coordinator
COM	Communications
COMM	Community
COOP	Cooperative
CONSER	Conservation
CONS	Conservator
DAEO	District Adult Education Officer
DAO	District Agricultural Officer
DAPO	District Animal Production Officer
DC	District Commissioner
DCO	(1) District Cooperative Officer (2) District Crops Officer
DCDO	District Community Development Officer
DDO	District Development Officer
DES	Design
DEVEL	Development
DISTR	District
DVO	District Veterinary Officer
DWE	District Water Engineer
EDUCAT	Education
ENG	Engineer
GEN	General
GEO	Geo-technical

KATUM	Katumaní
INDUSTR	Industrial
MANAG	Management
MGR	Manager
MEPD	Ministry of Economic Planning and Development
MOW	Ministry of Works
MPO	Machakos (MIDP) Program Officer
NBI	Nairobi
OOP	Office of the President
PO	Planning Officer
PROG	Program
PS	Permanent Secretary
RES	Resident
RESRCH	Research
RIDC	Rural Industrial Development Center
SEN	Senior
SPEC	Specialist
SSD	Subsurface dams
SUP	Supervising
TA*	Technical Assistant (expatriate technical adviser)

*Note -- each position underscored is filled by an expatriate technical adviser (TA)

ministries and is carried out by departmental officers ("implementing officers") within a given ministry (a district head can also be an implementing officer). In some cases the implementing officer is a TA.

Funding for an MIDP project component is made available (by the EEC via the Ministry of Finance to individual ministries) in the annual budget of a given ministry (see the following section). It is the responsibility of the district head to supervise execution of any MIDP activities for which money is budgeted.

Individual district heads and implementing officers are, however, responsible to their respective Nairobi headquarters via the routine channels of their ministry's administrative hierarchy. Their professional advancement, posting, etc. is controlled from Nairobi. However, in the case of MIDP activities, these district officers have been instructed by their ministries to cooperate with MIDP management in carrying out the MIDP program (under the supervision of the District Development Committee (DDC) -- chaired by the District Commissioner (see below)).

It is in this sense that the project is under the "direction" of the MPO "who acts with the authority of the District Commissioner." It is important to emphasize that the MPO has no real authority over district heads who are instead directly responsible only to their respective ministry's headquarters. Since project implementation is carried out through district line departments, the MPO's role is therefore one of a coordinator rather than an executive director.¹⁹ He is concerned with facilitating day-to-day execution of MIDP activities and

especially with fostering the necessary coordination between ministries in both planning and implementation.

It is also essential to emphasize that implementing officers almost all have divided responsibilities. In addition to MIDP-related duties, they have responsibility for their ministry's routine activities which go on outside areas where MIDP operates (e.g., "high potential" zones) or which are within MIDP's area of operation but not directly related to MIDP (e.g., the Ministry of Water Development's routine maintenance duties).

The MPO is assisted by a Kenyan counterpart, a Ministry of Economic Planning and Development (MEPD) Planning Officer (PO). Both are employees of MEPD and are responsible to its Permanent Secretary (PS). Additional administrative support is provided to the MPO's office in the form of a project accountant and an executive officer. Ideally, the MPO and PO work very closely with the District Development Officer (DDO) in the planning of the MIDP program and its integration with other district development programs.

At the national level project management is guided on policy matters by a Planning and Coordinating Committee (PCC) chaired by the Permanent Secretary of the Ministry of Economic Planning and Development. This committee has responsibility for coordination of MIDP activities at the ministerial headquarters level.²⁰ Its membership is composed of "linkmen" appointed by each ministry involved in MIDP. These linkmen, in addition to their participation in the PCC, are charged with assisting their respective ministry's district officers by facilitating removal of bottlenecks to program implementation which arise at

Figure 3.2 MIDP SUPERVISORY BODIES

Frequency of meetings*	Name	Composition
(no fixed schedule)	Interministerial Committee	Coordinator--PS, MEPD Membership--PSs of "key" ministries involved in MIDP
(quarterly)	Policy & Coordinating Committee (PCC)	Coordinator--PS, MEPD Membership**--MIDP linkmen and other operating ministry headquarters' planning or technical personnel as invited, MEPD Rural Planning Division personnel
(quarterly)	District Development Committee (DDC)	Coordinator--District Commissioner Membership**--all district and departmental heads, representatives from the Provincial Development Committee, other district representatives (see n.21).
(monthly)	District Steering Committee (DSC)	Coordinator--District Commissioner Membership**--district heads and departmental officers† plus their technical assistants

*This is the ideal schedule, not always adhered to.

**The MPO and PO are ex officio members.

†Only district heads and departmental officers whose departments are directly involved in MIDP activities attend.

headquarters. Additionally, an Assistant Secretary in the Ministry of Economic Planning and Development has been appointed to follow up on problems via linkmen or other headquarters' officers of any given ministry, and in general, to serve as a link between the district and Nairobi.

A further national level committee, the Interministerial Committee, is composed of the Permanent Secretaries of various ministries. It meets infrequently and is not concerned with operational problems of the program. Instead, it reviews overall progress, constraints, new directions, etc., in light of policy directives issued by the President's Cabinet.

At the district level, program planning and implementation is carried out under the guidance of the District Development Committee (DDC).²¹ A subcommittee of the DDC, the District Steering Committee (DSC), is composed of all district implementing officers and heads (and their technical assistants). This body, under the direction of the District Commissioner, is responsible for detailed coordination of project activities and linking these to other development programs in the district. A major activity of this group is preparation of individual project component work plans which are subsequently submitted to the DDC and then PCC for approval. It is also at this level that operational problems involved in coordination are addressed (e.g., sharing of transport) and monthly implementation progress is reviewed.

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B. Decentralization

The Government of Kenya has committed itself to a policy of decentralization in which "the district is seen as the basic unit for development planning and implementation" (Republic of Kenya, 1979a:15).²² Yet in practice many decisions are made centrally with varying degrees of input from the district level within individual ministries. MIDP represents a significant advance in GOK's commitment to decentralization in two major ways.

1. Planning and Budgeting

- a) Work plans. Project implementation is controlled by annual work plans for each project (ministerial) component. These work plans are formulated at the district level by implementing officers. The plans review past implementation experience, set forth objectives, outline strategies for achieving objectives and overcoming constraints, specify targets, activities, and geographical area(s) of operation, and indicate phasing of activities. In addition, ideally they also identify intersectoral issues essential for increasing the impact of individual project components.
- b) Budgets. At the heart of these work plans are budgetary estimates which break down proposed expenditures by major activities within individual ministries. These estimates provide the basis for budgetary items found in the Development Estimates (published annually by the Ministry of Finance) in which each Ministry's allocation for MIDP is

specifically identified (each ministry's component is shown as line items in that ministry's vote).

Work plans and budgets are formulated by functional subcommittees of the District Steering Committee which examine issues of intersectoral coordination which must be built into individual ministry plans and budgets. Moreover, the District Steering Committee examines each ministry's work plan to ensure that it "meshes" with other submissions before it approves each plan. Subsequently, work plans are then forwarded to the DDC and finally PCC for similar review and approval.

Budgets are then submitted to the relevant budget officers at individual ministerial headquarters where they are reviewed. Further meetings are held between MIDP staff and a ministry's headquarters if necessary if certain aspects require clarification and/or if funding levels proposed by MIDP are contested by the ministry's budget officers. (See Appendix III.)

This process represents a dramatic change from much of past practice where some ministries simply "sent down" annual budgetary allocation figures as givens with little chance for district input prior to budget formation and sometimes little opportunity for ex post facto comment. Instead district heads can now make a genuine contribution, in fact, can in large part set their own budgets. What is equally important is that as a result of this, planning by individual ministries can now better take into account the proposed activities of other ministries. Financial, and therefore implementation coordination, is possible in a way that was

previously not the case. For example, the soil conservation component of MIDP no longer simply receives word from MOA that it will be allocated a certain amount to spend within broad categories of activities, e.g., "cut-off drains." Instead it can carefully coordinate a detailed work program with the water development component because both the necessary planning and requisite financing involved have been previously discussed in detail at the district level and then approved by MOA headquarters (and, of course, subsequently by the economic planning and finance ministries).²³

2. Financial Procedures

Perhaps the most significant organizational innovation in MIDP lies in the way disbursement procedures have been devolved to the district.

The most important aspect of this process is that expenditures can be speedily authorized and paid out at the district level. The normal procedure in other districts is that payment for district ministerial expenditures must be first authorized by the provincial structure intermediate between the district and Nairobi. This process inevitably results in delays which are disruptive to district programs, e.g., delays in payment for labor or materials essential to a project's progress.

The MIDP system avoids such delays because the Authority to Incur Expenditure (AIE) is issued directly to implementing officers in Machakos District. After preparation by implementing officers, payment vouchers, once endorsed by the MPO, can be taken

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directly to the District Treasury for speedy payment. (The mechanics of this process are described in more detail in Appendix IV).²⁴ By by-passing the provincial network, the MIDP system gives ministries a greater degree of flexibility and responsiveness to local situations since they are not dependent on a sluggish payment approval mechanism.²⁵

C. Integration

Integration is the Holy Grail for which so many projects claim to search.²⁶ With regard to specific procedures to effect integration in MIDP (examined in greater detail in the next chapter), the most critical is the work plan exercise in which detailed intersectoral planning takes place. Additional mechanisms include the role of the DSC, DCC, and PCC in ensuring that at each level -- local area, district, national -- the potential for achieving intersectoral complementarities is examined.

There is nothing automatic about integration. Indeed, without incentives to the contrary, the natural tendency is for individual ministries to go their independent ways. Implementing officers are generally unaccustomed and resistant to the notion of consulting other ministries before carrying out their annual programs. MIDP leadership has therefore conducted a series of seminars for district officers in order to attempt to convince these officers of the potential benefits to be gained from coordination in a "learn by doing" approach using concrete examples from Machakos.

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D. Participation

MIDP project design documents make frequent reference to the importance of involving local people in project planning and implementation. There are four primary ways in which this occurs.

I. Operational Area Planning

Planning for a given operational area begins with meetings between MIDP staff and Government representatives from all locations and sublocations within the operational area -- chiefs, assistant chiefs, agricultural extension and community development staff. Discussions are first held to familiarize participants with the objectives of MIDP. These local level personnel are then asked to rank in order of priority projects they would like the program to initiate in cooperation with local people. At the location level leaders are asked to rank priorities by sublocations in terms of the need for water, soil conservation and afforestation activities.

This information is then used by MIDP staff to identify priority areas within the operational area, especially for water development activities.²⁷ Field meetings (barazas) follow where local leaders (Members of Parliament, local government councilors, traditional elders and other church and community leaders) and Government's representatives (chiefs, assistant chiefs, extension staff) meet to review and confirm the previous meeting's findings and set of priorities.

MIDP staff then evaluate possible water supply sites which appear to be suitable on the basis of aerial photo interpretation

Field investigations are next undertaken concerning the technical viability (soils, topography, etc.) of possible sites during which local leaders' on-the-ground input on siting is again solicited. This involves considerable interchange with local leaders since their preferred sites are not always technically feasible ones.

On the basis of this interchange, site identification is finalized by MIDP staff. Projects are then proposed to the DSC and DDC for review and approval.

2. Subcatchment Soil and Water Conservation

Soil and water conservation activities are organized on an earth dam ("sub" or "micro") catchment basis -- see Appendix II. A critical ingredient of this program is that farmers within a subcatchment must all agree to commit themselves to providing the necessary labor and completing all required individual and collective conservation activities. Without such commitment, the soil conservation component (and therefore dam construction) does not proceed.

3. Water Management Committees

Where earth dams and subsurface dams have been provided by MIDP, local committees have been organized to ensure hygienic use and maintenance of water off-take points.

4. Sublocation Credit Committees

Sublocation credit committees have been established in each of the sublocations where the MIDP credit program operates. Their membership is composed of local MOA and MOCD officials, assistant chiefs and other "non-official" representatives from the

sublocation populations. The responsibilities of these committees are to aid in the implementation of the credit program -- ensure an equitable geographical distribution of credit, process applications, assist with loan recovery, provide feedback on problems, etc. Their long-range potential is significant. Hopefully, they can become the basis for more general sublocation development efforts by helping to identify local requirements and mobilizing community initiatives and resources.

5. Local Self-Help Groups

Mention should also be made of MIDP assistance to strengthen self-help groups carrying out small-scale local activities -- afforestation roads, water projects, handicraft groups, etc.

E. Monitoring and Evaluation

Monthly meetings of the District Steering Committee and quarterly meetings of the District Development and Planning and Coordinating Committees provide a forum for periodic review of project implementation. More formal reporting systems are, however, a part of MIDP implementation procedures.

Standardized monthly activity reports are prepared by implementing officers. These reports offer brief descriptions of targets achieved during the preceding month, targets and activities for the upcoming month and comments on constraints encountered during the preceding month. Every third month they are replaced by a quarterly report which offers, in addition, a more detailed review of progress achieved during the quarter and in-depth analysis of persistent constraints.

Monitoring of program expenditures by project component is undertaken by the MPO. A running balance is calculated monthly comparing expenditure against amounts remaining in the budget of each operating ministry for a given financial year.

F. Donor Involvement

MIDP is a project in which there has been a significant degree of donor involvement in all stages. The donor, by invitation of the Permanent Secretary of the Ministry* of Finance and Planning, was given membership on the planning team concerned with initial design of the program. The donor had substantial input in terms of the type of project it sought to fund -- project objectives (e.g., focus on poorer, drier areas), organizational structure and planning mechanisms, project components, need for local participation, etc.²⁸ It has closely monitored the implementation process including providing comments on work plans and making periodic visits to the field, e.g., to attend some DDC meetings. It has also occasionally intervened in the implementation process by direct communication with individual ministerial headquarters in an effort to expedite removal of implementation obstacles. Finally, it has initiated innovative measures through which funding is made available to the project thus leading to substantial improvements in the speed with which implementation can take place (see Chapter IV.F; also Appendix IV).

*Now two separate ministries.

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IV. FROM PRESCRIPTION TO PRACTICE: HOW WELL DOES THE SYSTEM WORK?

The preceding two sections were devoted to providing a succinct description of the way MIDP is organized and operates. This section examines the experience of MIDP in utilizing the planning and administrative mechanisms heretofore described.

A. Project Management

The MPO, as previously indicated, has no real authority over implementing officers. Instead his role is one of a facilitator and coordinator in which his success is largely dependent on his powers of persuasion (in his own words, the only feasible management style lies in the preservation of a good working atmosphere). This situation is complicated by the fact that implementation officers (i.e., Kenyan district level officers) have divided responsibilities between MIDP activities and other "routine" non-MIDP activities, e.g., MDA's programs in high potential agro-ecological areas of the district.²⁹ Coordinated planning and implementation necessitate substantial inputs of time. There are therefore always competing demands for an officer's attention.³⁰ Moreover, the MPO does not have control over these officers' professional advancement so he cannot use this as an incentive to obtain cooperation.

There is a very real sense, however, in which the MPO's apparent weakness is also a strength. Since he has no real authority over them, the MPO is seen as bureaucratically less threatening by both district and headquarters line ministry staff. But, because the MPO speaks for the District Commissioner, and thus indirectly the DDC, implementing

officers do not wish to risk DSC or DDC public censure by totally ignoring the MPO's requests for cooperation in planning and implementation.³¹ There is much to be said for such an "ineffectual" management model.

The MPO's office is principally concerned with overall project management and planning matters, especially those relating to (1) soliciting local level input to the planning and implementation processes, and (2) promoting detailed coordination between project components. However a good deal of time is consumed by more routine administrative concerns. Typical examples include attending to TA personnel problems (housing, etc.), dealing with the mechanics of land acquisition and compensation where farmers will be displaced by an earth dam, traveling with an officer to Nairobi to discuss a problem with officials at the officer's ministerial headquarters, and escorting an increasing number of dignitaries who come to visit the project. Such tasks, coupled with the need to keep on top of project expenditure authorization and reporting systems, leave little time for more substantive planning efforts.

Part of the problem lies in lack of qualified administrative staff and, especially, an adequate accounting support unit in the MPO's office (all payment vouchers must cross the MPO's desk for signature). But it is also inevitable, given the "looseness" in the MIDP management structure -- i.e., no direct chain of command between either the MPO and implementing ministries or the MPO and ministerial headquarters -- that many administrative tasks will come to the MPO's office by

default. When lines of responsibility are somewhat vague, especially where they overlap due to "integration", someone has to attend to details which "fall between the cracks." When officers are unsure as to whom to turn to for administrative assistance, the logical candidate is the MPO. Stated another way, integrated projects are management intensive.³²

B. Decentralization

1. Planning and Budgeting

- a) The catchment approach. Catchment areas are now referred to as "operational areas." This change in terminology reflects an awareness which emerged almost at the outset of MIDP implementation that adherence to a rigid catchment boundaries approach would be counterproductive. Firstly, it became clear that with regard to available information on local needs and resources, the only practical starting point for planning purposes is use of the location and sublocation as the basic planning units, not an entire water catchment. The project has to utilize existing administrative boundaries in any event when gathering data from local officials and employing these officials in program implementation. Moreover, MIDP activities are implemented by many ministries using existing administrative division-based units. E.g., MOA has a divisional Technical Officer, a sublocation-based Technical Assistant; MOCD is organized on a location basis.

The boundaries of these administrative divisions, of course, do not always correspond to natural watershed lines.³³

Secondly, it was recognized that a number of project components could and ought to be undertaken concurrently in other areas outside the catchment area (in part in response to local political pressures that MIDP benefits were only going to benefit one area and ought to be more widely dispersed throughout the district). For example, the forest research station could be established to serve the needs of the entire district. Improvements in the cattle dipping program could be made throughout the district. Similarly, rural industry workshop clusters could be begun on sites where their industrial potential was most likely to be realized.

Parallel "non-catchment activities" could therefore be undertaken separately rather than restricting all activities to a given catchment (operational area). Nonetheless, a concerted effort was made to integrate project components as much as possible in a coordinated catchment (operational area) approach. At the center of this emphasis was a focus on certain core production, water development, soil and water conservation and afforestation activities.

The notion of a large catchment still has some utility, however, especially in delineating major drainage patterns which must be taken into account in siting water and soil conservation activities. But for practical planning and

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implementation purposes, the term operational area is a more accurate and useful one than catchment area.

- b) Work plans. Since successful implementation rests on the execution of sound work plans, the process of formulation and subsequent adherence to work plans is critical. Here again, the success of this exercise is largely dependent on the willingness of implementing officers to be cooperative. Moreover, some officers are better able than others to articulate coherent sectoral strategies. Some officers simply lack the planning tools to formulate good work plans and must receive considerable planning assistance from the MPO and PO. It must also be conceded that the DSC and PCC could play a more forceful role in monitoring whether work plans have the necessary direction and coherence, adequately address intersectoral issues, and are carried out in a timely manner.
- c) Budgets. Similar problems exist in budgeting. Some officers require assistance in formulating sound budgets. A typical tendency is to request more funds than can be realistically spent.

In general, however, a major achievement of MIDP lies in the institutionalization of the process of budget formulation at the district level. After several years of experience, a substantial degree of trust has been built up and MIDP budgetary submissions are rarely contested and receive almost routine approval by budgetary officers at

headquarters in a number of ministries (within, or course, the budgetary constraints imposed by the Kenyan economy which apply across all ministries in all districts).³⁴

2. Financial Procedures

The problems with the new financial procedures have been transitory ones of adjusting to a new system. Initially, some ministries were slow in sending the AIEs to their district officers. Also, whenever a transfer of the relevant financial officer at headquarters occurred, the incoming officer had to be reoriented to the new system. These difficulties led to substantial start up delays in the program.

Similarly, lack of fully qualified accounting staff in the MPO's office has been a problem. Given the volume of expenditure which must be processed, the importance of high quality accounting support for management in a project like MIDP cannot be minimized.

Finally, there was also the need to have district implementing ministry officers learn that only MIDP-related expenses would be underwritten by the program. In the words of the former PO, they had to realize that integration did not "mean sending all the bills to MIDP."

C. Integration

There is a substantial literature on the desirability of integrating sectoral components of rural development projects. Less common are examples of how this objective can be effected in specific project

settings and in concrete administrative/management terms.³⁵ MIDP achievements represent one contribution to this limited body of experience.

In both the design and early implementation stages of MIDP, there was considerable pressure to maximize integration of as many project components as possible within an operational area (much of this emanating from the donor). Translating this general mandate into specific implementable programs proved anything but easy. For example, an initial conception that promotion of production activities should await completion of resource conservation activities (e.g., no credit delivery until all soil conservation work was completed) had to be partly abandoned as unrealistic if serious delays in implementation were not to be encountered.³⁶ Also, it was realized early on in project life that it was simply unrealistic to speak in terms of widespread (i.e., geographical) and/or complete functional integration of MIDP activities throughout an entire operational area.³⁷ Instead physical integration of an operational area currently has meaning only at the subcatchment level.³⁸ Here clearly defined procedures are utilized to integrate soil conservation and afforestation activities around a dam (see Appendix II for a description of this subcatchment strategy).

What has now emerged is seemingly a more reasonable approach. First, there is the recognition that some activities bear little functional relationship to other project activities. Thus, it makes no sense to force coordinated planning of these disparate activities, e.g., between handicraft activities and production activities.³⁹ Instead, a basic principle now adhered to is that project components

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should only be integrated when there are clear technical complementarities, that is, where the impact of one activity is clearly strengthened by its detailed coordination with one or more other activities. Where such linkages exist, planning and implementation between the relevant ministries must be coordinated.⁴⁰

A second conception useful for planning purposes is that of "leader" and "follower" activities. The obvious example is the siting of a dam with soil conservation and afforestation acting as complementary "follower" activities. As this example indicates, "follower" is used in a functional rather than chronological sense. This notion is most useful in the planning process in that the "leader" activity determines the site or areas of operation after which "follower" activities formulate their programs. If constraints on providing complementary activities exist, these need to be addressed before the "leader" activity is undertaken.

As mentioned earlier, MIDP has organized workshops for implementing officers as part of an ongoing education effort for officers who in the past have often operated independently of one another. Specific examples of noteworthy MIDP project component linkages discussed in these workshops include:

- 1) Farmer training courses and ox-drawn implement promotion are an integral part of the credit supply scheme.
- 2) Production by workshop clusters will focus on improved farm tools for crop demonstration units, furniture for social service programs, etc.

- 3) Subsurface dams designed by MOWD can be built by a construction unit which exists within MOA.
- 4) Training of local leaders carried out by the Department of Social Services should aim at providing training which can support key project activities in water development, soil conservation, credit use, cattle dip management, etc.

The above examples may appear to the outsider to be simple and painfully obvious. Nonetheless in the Kenyan context, they represent a significant achievement.⁴¹ MIDP soil conservation officers sit down with water development officers and go through the timetable for dam tendering so that the soil conservation and forestry components can schedule their programs accordingly. Social services officers come to the MPO to plan their local leadership training courses on the basis of the MIDP timetable of expansion to new areas. This represents a degree of coordination likely unmatched anywhere else in the country.⁴²

At the risk of overstating the obvious, integration as used here has two quite specific implications. First, it refers to planning such that the funding requirements necessary for interministerial coordination are provided for in annual budgets. Secondly, it has an operational meaning in terms of day-to-day coordination in the delivery of services, including the important element of time sequence of activities.

By way of summary, there is an emerging consensus in MIDP that any attempt at integration "overkill" is counterproductive.⁴³ However, where clear complementarities can be achieved, they should be taken advantage of.

Progress is slow and not without its difficulties.⁴⁴ This does not detract from the fact, however, that functioning organizational mechanisms exist which make possible detailed program coordination and therefore more broad based project impact.

D. Participation

While there is some local level input to planning for implementation of certain project activities (especially subcatchment activities), there is undoubtedly room for progress with regard to other forms of participation. With the exception of subcatchment activities, water management committees and certain "self-help" social service activities, local people generally are not required to commit their own resources to project activities. They are instead primarily recipients of project benefits.⁴⁵ (The issue of attitudes of local people toward participation in the project and its benefits is addressed in Part II, Chapter VIII.C). This raises the question to what extent MIDP is engendering a commitment on the part of the local people to project activities which will be sustainable after project resources are withdrawn.⁴⁶

Two further comments are necessary. While local level input is solicited through public meetings (barazas), the primary vehicle for obtaining information on local needs, priorities, willingness to contribute resources, etc., is through local officials, especially chiefs and assistant chiefs at the sublocation level. Whether these officials represent a broad spectrum of local opinion or in fact speak for a narrower interest group(s) has not been fully examined.

A second comment concerns the logistics of obtaining local input. It must be noted that the sheer organizational effort involved in getting widespread "lower level" input across a large operational area would be substantial. To the extent that it occurs, it tends to be based on localized activities -- e.g., subcatchment water development. Moreover, the urgency of achieving project objectives militates against efforts to obtain intensive, widespread local input. Prolonged, iterative interaction is necessary if local input is to be fully integrated into program planning and implementation. The pressure to produce results (often itself emanating from local representatives -- politicians) and the demands of the implementation process mean the participation process is the part of the program which usually suffers.⁴⁷

E. Monitoring and Evaluation

Chapter III described the existing reporting systems MIDP uses to monitor progress in various project components. The MPO has had considerable difficulty in eliciting reports, however, from some implementing officers. This is largely a matter of incentive. Busy officers feel they do not have time to produce reports they regard to be of use only to project management and the donor. More importantly, completing such reports earns them few returns either from MIDP or their ministerial headquarters.⁴⁸

GOK (MEPD) and the donor, on the other hand, argue that they need reporting systems to ascertain whether project targets and objectives are being met. The result is a standoff with neither party able to offer a satisfactory solution.

Efforts are currently underway to design a formal "in-house" monitoring and evaluation framework for MIDP. This will focus on performance indicators (i.e., physical targets achieved) for project components. To date, no attention has been given to "impact analysis", examining the income and welfare implications of MIDP. The slow progress in both these areas is due not to a conscious administrative decision but instead to the fact that more pressing implementation tasks leave little time for such efforts.⁴⁹

F. Donor Involvement

Earlier it was indicated that the donor has had substantial involvement in all stages of MIDP. This led at least initially to a certain amount of disgruntlement on the part of both district and headquarters level ministerial staff who felt donor "interference" complicated their work. Examples of issues where this surfaced include:

- 1) The formats for budgets of GOK and the donor differ necessitating the submission of two separate budgets and therefore extra work.
- 2) Reimbursement procedures required documentation of all expenditures involving, in the earlier stages of the project, a great deal of paperwork and administrative expense.
- 3) The requirements initially specified by the donor for acceptable work plans and for monitoring and evaluation reporting were very detailed and extensive (and thus were in large part subsequently ignored).

- 4) Complicated international versus local tendering procedures mandated by the donor-GOK financial agreement were felt by ministries to be confusing, cumbersome, and to result in program delays.
- 5) Lastly, direct communication by the donor to ministerial headquarters concerning implementation obstacles was believed to be an inappropriate action for donors since it by-passed established government channels donors ought to utilize.

These initial problems have been resolved or ameliorated. Indeed, it should be stressed that these were normal "growing pains" of a project of this nature. Moreover, the donor's contributions to improved project efficiency should be recognized. The EEC budget, while more detailed than that of GOK, is useful for monitoring project progress. Reimbursement procedures have been streamlined making MIDP's current system likely the fastest in Kenya. After annual budget approval, the donor provides a 25 percent advance of the EEC component of MIDP's budget which serves as working capital for Government. All of these actions enhance project effectiveness.

It would be inaccurate and unfair to affix all blame for any of the problems cited above on the donor. The purpose of this discussion is instead to emphasize that the organizational difficulties inherent in complex IRD programs are not solely the product of poor host country administrative performance. Donor sensitivity to the organizational context within which projects operate and understanding of the potential problems donor requirements can represent is critical to successful achievement of program objectives.

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G. Miscellaneous Issues

The previous section has reviewed major procedural constraints to successful implementation of MIDP. There are several additional matters which deserve mention.

1. Technical Assistant-Counterpart Relations

Difficulties in maintaining good TA-counterpart relations are by no means unique to IRD projects. However, in MIDP one potential source of friction lies in the fact that Kenyan officers have non-MIDP responsibilities whereas TAs focus entirely on MIDP work. Indeed, for the most part, MIDP duties are only a small part of these officers' overall activities.

In point of fact most TAs do not really have full-time counterparts due to a shortage of available trained Kenyan personnel. Instead, though they work in close cooperation with senior district officers (getting district head's authorization for activities, occasionally working together with them in the field, etc.), the latter are for the most part of necessity busy carrying out their other non-MIDP duties. Thus, the TA for all intents is an ordinary implementing officer organizing the delivery of MIDP services by working through junior level ministerial staff. E.g., the farm management specialist organizes MOA personnel involved in the credit training courses. The credit specialist supervises MOCD staff in the produce buying efforts. This situation is unfortunate as it is not leading to the degree of TA-counterpart interchange that was envisioned in project design.

Another dimension of this process has to do with the fact that senior Kenyan officers sometimes resent TAs suggesting to them "better" ways to administer the program. These officers feel that administration is their responsibility and that TAs should stick to providing "technical" advice. (The situation is not helped when, in field visits, officers have to act as translators for TAs who are not fluent in the local language, making officers appear to be subordinates.) Yet it is often precisely organizational skills TAs feel officers lack -- anticipating problems, seeing that vehicles are maintained and repaired before breakdowns, etc.⁵⁰

At the heart of this problem is, of course, a general national shortage of trained Kenyan staff. If more existed, TAs would not be required in the first place or there would at least be sufficient senior staff to work more directly with TAs. Instead Kenyan officers are sometimes asked to perform roles for which they have not been given the requisite training. And TAs are often insensitive to the pressures which constrain officers from carrying out their work in the way the TA feels it "must" be done. In such a situation the patience and good will of both parties is tested.

In all of this, the MPO is again caught in the middle. TAs naturally turn to him with their problems because of their cultural affinity with him.

2) Vehicles

MIDP initially provided several vehicles to implementing ministries. These were quickly assigned to non-MIDP functions by implementing officers who were short of transport for their "regular" duties. In fact, when the first MIDP TAs arrived, they were unable to gain access to these vehicles. Eventually all MIDP supplied vehicles were brought into a pool under MIDP control. MIDP staff attempt to share these vehicles with their district colleagues whenever they are not in use for MIDP tasks. Nonetheless, this is a potentially divisive issue.

3) Political Pressures

Local civil servants and leaders are aware of the general magnitude of funding MIDP involves. Moreover, the significant number of new expatriate faces and MIDP vehicles in the district is obvious even to the casual observer. This results in substantial perhaps naive but inescapable public pressures for rapid results.⁵¹ Such pressures cannot be easily dismissed as inconsequential. Careful coordination of project activities and incorporation of local participation entails deliberate, time-consuming procedures. Pressures for instant results work against this.

V. IRD IN SEMI-ARID AREAS: SOME GENERAL POLICY CONSIDERATIONS

This section addresses a series of broad policy matters pertinent to IRD projects in semi-arid regions. These concerns emerge from the foregoing discussion of MIDP but have wider applicability. The purpose is to call attention to a number of issues which policy-makers have to consider when addressing the special problems of semi-arid areas.

A. Critical Decisions Concerning Delivery of Project Services

The starting point for this discussion is the primacy of the ecological context which largely conditions what are the appropriate organizational approaches to development in semi-arid areas. Semi-arid areas are typically characterized by a marginally productive resource base, rapidly deteriorating soils, and limited water supply points and other infrastructure. In addition, they also usually have relatively low population densities. Thus, high per capita costs are intrinsic to development programs in these areas.

These conditions give rise to a series of interrelated issues which must be considered in designing IRD projects:

- 1) One central issue concerns finding an appropriate balance between dispersion versus concentration of project resources.

The dilemma is whether to attempt maximum coverage by spreading project benefits over a large area. Given usual project financial and manpower constraints, this strategy often results in minimal overall impact. An alternative is to accept less coverage but achieve more substantial impact within a smaller

area. Yet another solution, that adopted by MIDP, is to attempt to find a judicious mix of these two approaches in which some project components are area specific while others are more widely distributed (thus water development and soil conservation activities are quite localized while credit distribution is more widespread).

The approach taken will, of course, depend on the individual situation. However, several factors can be identified which enter into the decision process: 1) local political pressures can influence the extent to which project benefits can be concentrated (see IV.B.1 regarding the MIDP operational area strategy); 2) typically concentration results in cost savings (e.g., building five dams close together rather than far apart); 3) technical considerations sometimes dictate where certain project benefits must be located thus setting limits on the project's ability to spread benefits more widely and/or equitably (see III.D.1 concerning siting of MIDP dams); 4) the strategy for achieving maximum impact for certain project components may require concentration (see Appendix II on the MIDP rationale for a subcatchment soil conservation focus versus a more dispersed approach).

The important point to make in this discussion is that such considerations must be brought in at the design stage, to the degree possible. While it is true the implications of these issues cannot always be fully anticipated (e.g., MIDP had to revise its soil conservation strategy as a result of the

failure to foresee the limitations of the original approach -- see Appendix II), to the extent that they are, the more likely project personnel can be effective in implementation without having to rethink, in effect redesign, basic strategies. A second point concerns local level participation. Whether project benefits are dispersed or concentrated has a significant effect on the potential for achieving local level input in planning and implementation -- see section E. in this chapter.

- 2) A second issue concerns what project activities should be given primary emphasis. Whereas in higher potential areas agricultural production activities are almost always given priority, in semi-arid regions water development and soil and water conservation activities assume equal if not greater importance.

This is the case for several reasons. One, in semi-arid regions production increases achieved through new technologies are frequently less dramatic than in higher potential areas. For example, the new dryland variety of maize introduced in Kenya underyields the traditional variety in seasons of good rainfall. More importantly, however, production innovations are beset by greater risk because of rainfall variability. These factors mean that major reliance on production as the "engine" of IRD often has less promise than elsewhere. Nonetheless, an emphasis on production increases is essential if only on the basis of equity considerations. Many households depend primarily on crop production to meet subsistence needs

and must rely on government famine relief in times of crop failure.

Secondly, increased access to water supplies is a typical first priority for local people.⁵² Finally, promotion of production activities without attention to resource conservation efforts runs the risk of exacerbating an often already severe soil erosion situation in which the existing resource base will be even further diminished.

A problem with this general three-pronged approach lies in the fact that local farmers do not always recognize soil erosion as a significant problem which projects should address. Also, in the context of an already high risk production environment, farmers are resistant to efforts at resource conservation which might divert resources, especially labor, from crop production. For the farmer, an adequate crop -- and therefore adequate food supplies -- is the primary concern in every season; others are secondary.

Therefore a fundamental principle with regard to finding a balance between a project's emphasis on soil and water conservation activities and production is that conservation activities must be seen by farmers as complementary to, not detracting from, their basic production activities. This typically involves close attention to the seasonality of the farmer's annual production cycle so that resource conservation activities are undertaken when labor requirements for production activities are at their lowest.

The thrust of this analysis is that water development, soil and water conservation, and production activities all deserve major attention. Although it is primarily through increases in production that local people will achieve higher incomes and welfare levels,⁵³ the consequences of ignoring resource conservation concerns are significant. The question is not one of giving less emphasis to soil conservation but instead of devising methods for appropriate coordination of conservation efforts with other project activities.

A brief word about infrastructure and social services is necessary. The vast distances and low population densities of semi-arid regions mean provision of infrastructure and social services entails high per capita costs. It is probably inevitable, given the pressing need to raise existing low income levels in these areas, that such activities will be secondary to the three cited above.⁵⁴

- 3) The question of project emphasis cannot be divorced from that of timing or sequence in project implementation. If in project design, resource conservation is established as a major objective, this has implications in terms of the phasing of various activities. As previously indicated, MIDP uses water development partially as an incentive for getting people to undertake soil and water conservation efforts prior to dam construction.

This is but one example of the need for project planners in semi-arid areas to give special consideration to the question of how to organize the sequence of project components.

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Because of the particular environmental characteristics of semi-arid regions, technical, cost, and equity considerations are often strongly competing factors when decisions are made on where to site project activities. The weight given each of these factors in turn influences the phasing of different project components. For example, a dam may be sited in a remote dry area which serves few people but people of greater need than elsewhere. This may, however, necessitate that extensive long-term erosion prevention activities be completed prior to the dam's construction or that educational campaigns aimed at altering grazing practices be initiated first.

Thus a peculiar constellation of social and ecological variables in semi-arid regions significantly affects phasing and sequence in the delivery of project services. While the specific choices involved are unique to each situation, personnel concerned with planning for project design and implementation in semi-arid areas need to give more detailed consideration than is often the case to these questions of phasing. Too often project documentation indicates only that a project will do x, y and z with insufficient attention to why some activities must precede others.⁵⁵

- 4) A final question concerns how to best attack the problems of an entire project area from the perspective of logistics. MIDP uses a strategy in which it proceeds by dividing the district up into operational areas. Within a given year, most MIDP resources are concentrated in one operational area. This

serves the function of breaking the district into administratively "manageable" pieces.⁵⁶ There is much to be said for such an approach which allows for eventual comprehensive coverage yet proceeds in an orderly, administratively feasible manner.

8. Integration

MIDP is by design an integrated program. However, it is important to question whether a formal integrated approach such as that of MIDP is necessary to address the major development problems of semi-arid regions. An analysis of these problems suggests that they are quite interrelated as the following examples illustrate. The effectiveness of surface water development activities is often severely diminished by problems of siltation due to erosion and deforestation processes. Increases in crop production are dependent upon soil moisture retention methods as well as preservation of soil cover through proper soil conservation and grazing techniques. Incentives from increased production which prompt farmers to bring more of their land into cultivation (farming further up steep hillsides, closer to road drainage channels, etc.) without concomitant conservation work can lead to increased erosion.

Integration is therefore not solely a matter of academic choice. Since many of the major problems of semi-arid areas are interdependent, efforts to alleviate them must be at a minimum multi-sectoral if these interdependent problems are to be adequately addressed.

There are two sets of questions which follow from this conclusion:

- 1) Firstly, which activities must, at a minimum, be included in a multi-sectoral approach. As was argued in the previous section, there are three core sets of activities, namely, agricultural production, water development, and soil and water conservation (including pasture management, fodder crop production and afforestation), which in most situations will be essential components of a semi-arid development program. Efforts which focus on any one of these in isolation of the remaining two underestimates their interdependent nature.⁵⁷

Specification of these core components by no means implies that IRD programs should not include other components. The point is that these three components represent minimum ingredients for most semi-arid IRD programs. However, additional components may well have value in providing much needed benefits to the project target population either through or in the absence of strong integration links to the core components.⁵⁸

- 2) A second question concerns whether this multi-sectoral approach to semi-arid region problems must be effected through a formal integrated organizational structure or through routine sectoral channels which operate independently of one another. In theory, it ought to be possible to pursue the latter strategy so long as the goals of each sector reflect the objective of addressing interrelated problems. However, the operational difficulties involved argue strongly for some sort of

organizational mechanism which facilitates day-to-day coordination of various sectoral components. It is virtually an axiom of organizational theory that different bureaucratic organizations (in this case ministries) at any level of the administrative hierarchy are inherently competitive and do not "naturally" engage in cooperative effort.

The advantages of an integrated organizational structure are two-fold. Firstly, it facilitates continuous coordination and attention to intersectoral complementarities both in the design of the program activities and in their execution. A second advantage lies in certain economies which are achieved. Often staff activities and other project resources can be coordinated so as to avoid the wastage which occurs when sectors operating independently perform similar functions and thus forfeit opportunities for sharing scarce resources.⁵⁹ One example from MIDP includes sharing of transport when two ministries are operating in the same general area in the field.

Despite the apparent advantages of an integrated approach, it is nonetheless necessary to question whether it is in fact organizationally feasible. Some skeptics argue, often on the basis of field experience, that its advantages notwithstanding integration is administratively very difficult to effect in practical field situations. Three responses are possible concerning what conditions make integration "success" more probable. They are offered as propositions, not as statements of fact, for which nonetheless considerable supporting evidence exists:

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- 1) First, the further down the government administrative hierarchy the project management/implementation structure charged with achieving integration objectives is located, the easier it is to effect meaningful integration. This is because from this vantage point it is much easier to grasp and act upon concrete possibilities for coordination and integration in specific planning and implementation terms. Efforts at integration which are organized and carried out from the center are less likely to succeed since they are further removed from the problems and the mechanisms necessary to solve them. They tend to be particularly insensitive to day-to-day obstacles to implementation.

This argument assumes, of course, a headquarters support structure at the center which is able and willing to provide resources to each ministry's lower level line personnel involved in the project.⁶⁰ It should be noted, however, that without such support the effectiveness of any programs, integrated or not, would be undermined.⁶¹

- 2) Subnational administrative units such as the district (or its equivalent -- thana, municipio) are a natural locus for IRD project management. They are "close" enough to facilitate realistic assessment of problems, possibilities, and feasible implementation strategies. Also, they often are the lowest administrative level where most line ministries have staff.⁶² Therefore it is possible to base project implementation in an

existing ongoing institutional setting which can in turn be strengthened by project activities.⁶³

- 3) Two qualifications must be made to this argument for an integrated, subnational-level approach to semi-arid region development. One, IRD efforts organized at the subnational level can only be effective if certain minimal planning and implementation skills (especially the former) are held by a critical core of district (or its equivalent) line ministry personnel. The litmus test of an IRD project's potential for success is whether sound planning and implementation techniques are being utilized, or are at least being learned, by district level operating ministry personnel. In MIDP it is the ability to formulate and execute sound work plans which constitutes such a litmus test.⁶⁴

Secondly, one of the unavoidable costs of an IRD approach is an initial management intensive organizational structure. Intensive should not be read to necessarily imply possession of bureaucratic authority. Indeed, management may be relatively powerless. Nonetheless frequent and substantial management inputs are essential both in terms of providing conceptual guidance to the project as well as attending to the many routine administrative tasks an IRD project inevitably entails. (See Section IV.A on this issue.)

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C. Technical Assistance

The question of the appropriate number and type of expatriate technical assistants is one which besets all large rural development projects. This issue is particularly problematic in semi-arid regions, however, since these are sometimes viewed by line ministries as back-water areas to which their less qualified or poorly performing staff can be posted (and sometimes even as undesirable places to which staff should be sent as a disciplinary measure).

Technical assistance is therefore likely to play a significant role in supporting and upgrading local personnel skills. Moreover, the fact that IRD projects typically involve a number of sectors means a substantial technical adviser presence is also probable.⁶⁵

The desirability of this situation is yet another difficult issue. MIDP, with its substantial TA component, is a prime example of this dilemma. Indeed, one criticism leveled against MIDP is that the expatriates involved actually constitute a parallel administrative structure to the ongoing "normal" district apparatus and that with the disappearance of these expatriates the MIDP structure will revert to the "normal" pre-MIDP "nonintegrated" district operation. This accusation cannot be dismissed as facile since it is undeniable that in every activity critical to MIDP success -- work plan formation, removal of major implementation obstacles, etc. -- the contributions of technical assistants are significant.⁶⁶

Two criteria can be utilized to assess the ability of TAs to make a genuine, long-term impact which endures well after their departure from projects. The first necessary but not sufficient one is simply an

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efficiency measure. Does the presence of TAs generate, in a relatively cost effective manner, project "products" in the form of benefits to project participants -- dams, increased crop yields, etc. A second is more difficult to evaluate. This concerns the ability of TAs to impart to counterparts what for want of a better term can be referred to as "administrative resourcefulness" skills. Where TAs succeed in achieving project implementation objectives, they do so partly out of an ability to "beat the system" -- to extract things from and not be undone by a sluggish and often unresponsive bureaucracy. Their resourcefulness lies in an intangible capacity to try different options and generally maintain forward movement in organizing activities despite frequent setbacks within a sometimes capricious bureaucratic environment. It is in this type of resourcefulness that TAs must "train" counterparts. There are at least two important elements in this effort. One is enabling local staff to internalize the organizational rationale which underlies "integration" efforts. Another is imparting a particular set of elementary administration/organization skills -- anticipating delays or other contingencies, avoiding bureaucratic pitfalls which bring project activities to a standstill, etc.

Often donor rhetoric on "enabling local personnel to take over" refers solely to upgrading technical skills. Counterparts are usually up to the task of absorbing technical input necessary to carry on after advisers leave. What inevitably undermines their success and determination is dealing with bureaucratic forces which do not facilitate, indeed often work against, successful performance of their project "technical" tasks.⁶⁷

It is essential that donors give more thought to how they can enable TAs to impart this kind of ability to counterparts. In the long run, the extent to which projects do this is a major test of the efficacy of IRD programs.

D. Social Organization Concerns

1. Local Organizations

The problems of semi-arid regions are such that cooperative efforts are often a fundamental element of their social organization. Self-help groups and exchange labor groups are frequently employed by farmers to pool resources and accomplish tasks which appear daunting when undertaken by individuals, e.g., construction of rural public works, etc.

These local organizations represent important vehicles for fostering local participation in project planning and implementation. Project managers ought to give particular attention to their incorporation in project activities (e.g., the use of methya groups in MIDP soil conservation work -- see Appendix II).⁶⁸

2. Rural Stratification

Semi-arid areas are typically characterized by severe aggregate poverty levels. There is therefore a tendency for project personnel to assume that the target population is comprised exclusively of rural poor. Such assumptions often mask the existence of significant discrepancies in incomes and social organization

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mechanisms which bias the distribution of project benefits against the already more disadvantaged.

IRD projects are particularly troublesome in this regard since the sheer task of dealing with the complexities of IRD implementation often pre-empts giving adequate attention to this problem. It is also the case that existing field staff, who are usually incorporated into a new IRD project organization, sometimes require reorientation so that their attention and activities can be directed to serve more disadvantaged sectors of the project population.⁶⁹

E. Local Level Participation

MIDP achievements in fostering local input in the design, planning and implementation processes have been limited (see III.D; IV.D; n. 45; and Part II, VIII.C.1). This is due largely to competition from more pressing implementation concerns. Attempts are being made, however, to redress this situation.

The scale of the MIDP program as well as its widespread geographical coverage is one dimension of this problem. However, where project activities are site specific, it is easier to organize local level involvement and build on existing local level organizations. Local input can be mobilized around area specific objectives.

Many IRD projects are similarly large scale with wide geographical coverage. Two factors are therefore important with respect to local participation in such projects. One, efforts must be made to identify local organizations or other vehicles for fostering participation which

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local area specific project components can build upon. Secondly, and perhaps more importantly, explicit attention must be given at the design stage to specifying project mechanisms which will be utilized to foster this participation. It must be clearly indicated by whom and in what manner this will be organized. It is not enough to indicate in project design documentation that "local level leaders and local peoples' input will be sought at every stage," even though these documents may identify and describe the nature of local organizations to be used. If the lessons of MIDP are at all generalizable, despite the best of intentions, participation concerns tend to get short shrift unless clear project mechanisms exist which can address this issue. This entails, at a minimum, available personnel who have been given a mandate, and the requisite time, to devote their energies to promoting participation objectives.

PART II: MIDP AND THE TARGET POPULATION: A FIELD STUDY

VI. INTRODUCTION

An analysis of MIDP would be incomplete if restricted to examination of the administrative dynamics of design and implementation. It is equally important to examine the impact of the project on its intended beneficiaries, the smallholder households of Machakos District. Therefore a field study was carried out, using a survey questionnaire, in four sublocations where the project is operating. This part of the report presents the results of this field research.

VII. BACKGROUND TO THE STUDY: THE GENERAL RESEARCH SETTING

The unit of analysis for the study described in succeeding chapters is individual households within four semi-arid administrative divisions --sublocations-- in Machakos District. The research findings reflect not only the actions of households, however, but also the influence of bio-physical, socio-cultural and historical contexts within which they are situated. It is essential, therefore, to locate the research within this more general setting.

A. The Agro-ecological Context

The term "semi-arid" or "marginal" area is variously used in the literature. Inevitably rainfall is the primary criterion for determining what is semi-arid. Thus Baker indicates "the 30 inch (762 mm.) isohyet provides a minimum delineation of the vast extent of semi-arid and arid areas" (1974:170). Within Kenya itself, there is also variation in usage (Ominde, 1971) with frequent reference found also to areas of "medium potential." For example, the Central Bureau of Statistics uses this term to refer to areas in Eastern Province with an annual rainfall of 612.5-857.5 mm (Republic of Kenya, 1978:102). Pratt and Gwynne employ a moisture index derived from monthly rainfall and evaporation, with the estimate of evaporation based on measures of radiation, temperature, saturation deficit and wind speed and weighted for altitude and latitude (1977:41). They define the semi-arid or Zone IV eco-climatic zone as a zone of marginal agricultural potential with a moisture index of -30 to -42 (1977:42). Their system is employed by

the official Kenya Atlas to delineate six major ecological zones (Republic of Kenya, 1970). (This system is currently under revision and a more elaborate and refined system of classification will likely emerge (Government of Kenya, n.d.a:12)). More recent definitions of semi-arid areas specify a mean annual rainfall range of 500 to 800 mm (Government of Kenya, n.d.a), 400-800 mm (Porter, 1979) and 500-850 mm (Mariri, 1978).

The terms medium potential, marginal or semi-arid also have a land use connotation since:

...Delimiting the area by reference to average rainfall figures or extremes is of little use on the whole owing to the variations in the figures put forward. [Broadly speaking, however,] ... Precipitation is generally sufficient both to allow the development of pastures more prolific than in the 'desert' and to allow what is called 'dry-land' or 'rain-fed' agriculture because it is possible without irrigation (Dresch, 1975:1).

Ambrose also defines medium potential areas in Kenya in terms of arable agriculture potential:

Those areas where the production of annual field crops is limited severely by lack of available moisture but where the use of out of the ordinary conservation methods and specially adapted crop varieties would make crop production sufficiently reliable for increased population to be carried (1972).

Machakos District is predominantly a semi-arid district with a bi-modal rainfall pattern. The "long rains" last from March through May and the "short rains" from late October to late December. What is most critical concerning these rains is their length and timing. "It is clear the marginality of the rainfall in the Machakos area is not due to the total amount of rain falling during the season, but it is

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more influenced by the length of the rainy seasons and the predictability of the rainfall" (Nadar and Rodewal, 1978:1). Moreover, inadequate rainfall levels are only one dimension of the bio-physical problems inherent to marginal areas:

...a combination of high rainfall intensity, shallow soils (60-200 cm.), steep slopes and unstable surface soil structure makes the task of water conservation for crop production a delicate matter. The problem ... is further complicated by high evaporative demands (Stewart and Wang'ati, 1978:1).

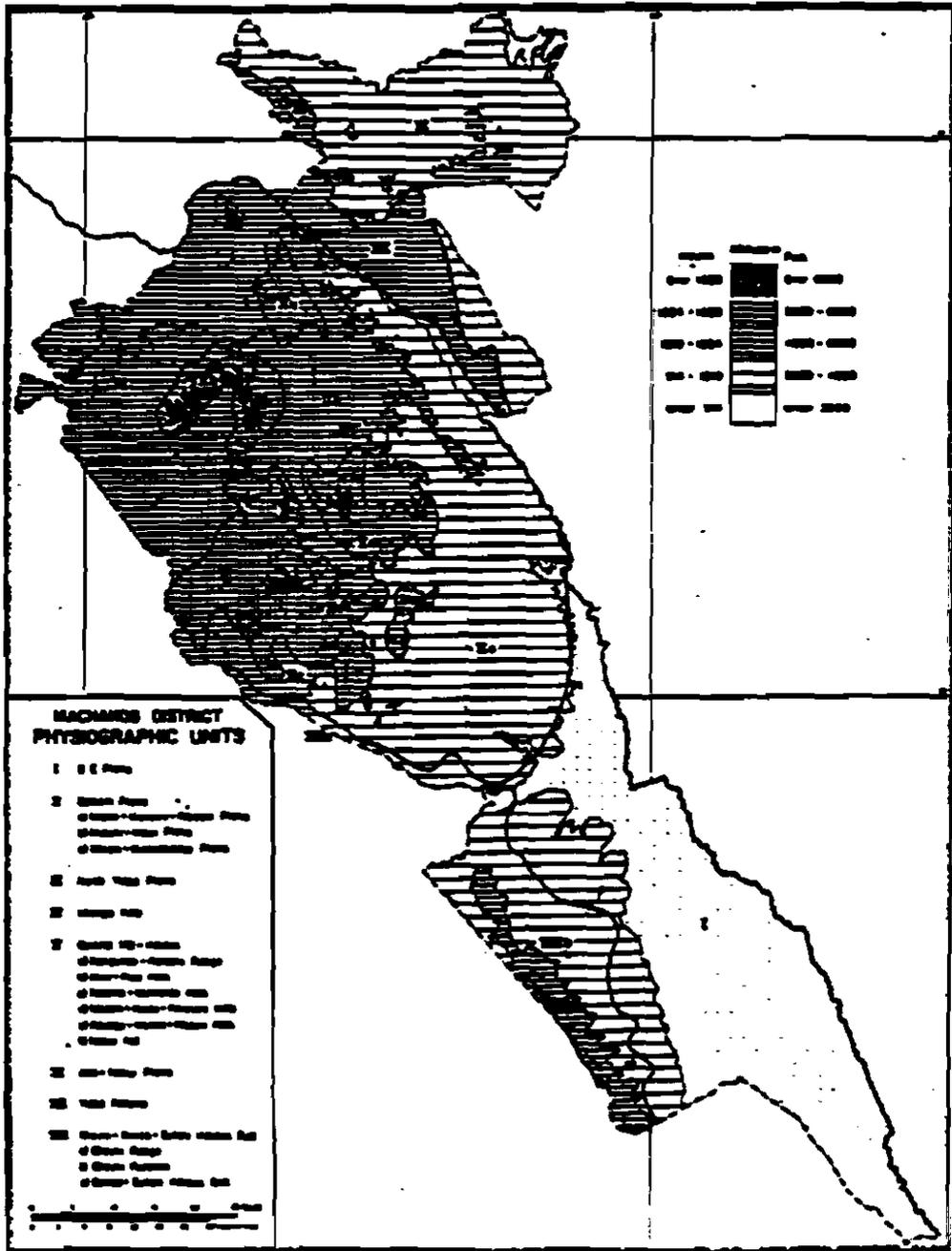
The climatic features of the district are obviously closely related to its physical features. The dominant feature is the central hill masses, the area of highest agricultural potential, lying at an altitude of between 1,500 to 2,100 meters. (See Map 7.1).

These are ... a series of massifs running on a roughly north-south axis for a distance of some sixty miles ... They consist in the most part of a series of relatively narrow ridges with very steep sides rising about 2000 feet above the countryside ... Scattered among the massifs are a number of smaller hills, equally high and precipitous ... (Munro, 1975:10).

These central hills give way to the Athi-Kapiti Plains to the west (1,585-1,645 m.) To the east are the undulating Eastern Plains (915-1,460 m.), dropping down to the Athi River and rising again to the Yatta Plateau (609-1,280 m.). The southernmost portion of the district consists of the lowlying Kikumbulyu Plains (440-915 m.) flanked on the west by the composite volcanoes of the Chyulu Range (1,097-2,072 m.) (Owako, 1971:1;1969). These latter areas are of very low agricultural potential suitable only for extensive grazing use and/or wildlife preservation areas.

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FIGURE 7.1. PHYSICAL FEATURES OF MACHAKOS DISTRICT



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Typically Machakos District is divided into three zones on the basis of rainfall --low, medium and high-- which constitute, respectively, 9, 57 and 34 percent of the total usable land (Republic of Kenya, 1978:102). However, these divisions, particularly within the medium potential zone, mask considerable diversity. Variations in altitude and topography generate micro-climatic conditions which in conjunction with variation in evaporation, drainage and soil types, result in significant agro-ecological differences, sometimes between areas of close proximity. This is especially true in the transition zones at the edges of the central hill masses.

This makes problematic any efforts to make generalizations about agro-ecological potential, even within the same agro-ecological zone. Such considerations must be built into research designs intended to produce generalizations. They must also be borne in mind when evaluating research findings which emerge from studies set in a district of such physical diversity as Machakos. Thus, statistical measures such as those reflecting carrying capacity which are computed through aggregation by administrative divisions are often of limited value since the boundaries of the latter rarely have a one-to-one correspondence with general agro-ecological boundaries.

B. The Socio-cultural Context

The following brief overview of some salient aspects of Akamba society highlights several issues relevant to the research to be described later. While a great deal of ethnographic material on the Akamba exists, much of this is badly in need of updating. Thus, many

current treatments of Akamba life make reference to ethnographic source materials applicable in the 1930s and 1940s (or even earlier) but of dubious accuracy for the present day (Most often cited are the works of Lindblom (1920), Hobley (1971), Middleton and Kershaw (1965), Penrill (1951), and Lambert (1947)). More recent treatments by Ndeti (1972) and Muthiani (1973) are valuable statements of central themes which underlie Akamba life but do not provide detailed description of many current topics of interest, e.g., changing patterns of land inheritance.

Since much of traditional Akamba social organization is now radically altered or in a state of flux, there are fewer "ideal types" which can be clearly delineated without qualification than the ethnographic literature appears to indicate. Clan and territorial ties are less binding than in the past and are regarded with varying degree of seriousness depending on the educational and social background of the individuals concerned. This process has not been seriously researched and reported in a scholarly manner to date.

This review, therefore, focuses only on a few basic elements of Akamba culture useful for understanding the general research setting. The most important of these is the clan system. All Akamba are members of one of 25 totemic patrilineal clans (mbai) scattered throughout Ukambani (Machakos and Kitui Districts). The basic kinship unit is the msyĩ (pl. msiyĩ) or homestead composed of a nuclear family or extended family living together within one compound. The extended family is called a muvia, sometimes covering three or four generations, and is comprised of the head of household, his sons and grandsons and their

wives and families (The Akamba are patrilocal). This group in some cases also includes married brothers of the head of household and their families. However, the modal pattern appears to be an eldest male, his spouses and a generation of offspring (Jackson, 1976b). Authority within the musyi is patriarchal and rests with the head of the household. Generally, it is

...assumed in Akamba society that the household is the same as the extended family; and generally this is a correct assumption. Thus the physical homestead, the extended family, and the household are co-terminous units and ... these terms can be employed interchangeably (Jackson, 1976b).

The territorial unit within which each musyi is located is the utui (pl. mutui), a type of village community of individual dispersed misyi. This utui forms the basis for community life around which social and administrative functions are organized. Mutui are not based on lineage or clan ties but consist of misyi representing different clans united by territorial proximity. This phenomenon is explained by the fact that in earlier times individuals or groups of individuals would leave more crowded areas to settle in unoccupied territory (wau). Other unrelated individuals would eventually immigrate to the same area and there was a natural tendency in such situations to group together for mutual assistance and defence. These different individuals were not necessarily of similar parent clans. Out of this arose the utui system of residence based on territorial propinquity, not on common kinship (Lambert, 1947:142). In fact, "the scattering of most parent clans was so complete that a kinship group in any one contiguous

area is usually an extended family of a few generations only (Lambert, 1947:133).

Mention should also be made of one additional theme which permeates the literature on the Akamba. This concerns the fact that the Akamba never developed anything in the nature of a central authority. Lambert attributes this to the unique way in which mutui developed in newly settled areas. In these areas, the utui replaced the kinship group. For example, for the immediate practical concerns of life, a man could find a wife within the utui since non-clan females were present. It was in fact a tribe in miniature, self-supporting and socially and economically complete (1947:134). Therefore there was no need to develop any overall authority.

Numerous scholars have taken note of the Akamba "disinclination to invest any one or any group with extraordinary power. They rather emphasize the worth of the individual" (Jacobs, 1962:113). "It is a philosophy of life based on a long tradition rather than a justification for a political power or a bureaucratic hierarchy..." (Ndeti, 1972:109).

Across the whole of its history ... no overarching agencies of political control or authority were generated. Many commentators ... alien observers and insiders alike, have suggested that this lengthy history of decentralization has resulted in a fluid, mutable character in Akamba customary norms and institutional performance (Jackson, 1976b:196).

Oliver (1965) makes a great deal of this "amorphous quality" or "looseness of structural orientation" and argues this characteristic explains the willingness of the Akamba to adapt and readily accept

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change (see also Kimambo, 1970). Whether this is a facile interpretation is not clear. What is obvious is that this characteristic quality in Akamba culture is unique enough, whatever its explanation or origin, to have captured the attention of observers since the beginning of the colonial period.

Finally, a few comments are necessary concerning contemporary patterns of land tenure. As early as the late 1930s, virtually all communal unoccupied land (we) had disappeared from the northern part of the district (Munro, 1975). Any remaining traces of the traditional practice of a musyi having exclusive grazing rights (kisesi) to an area of land (free of residential sites and lengthy cultivation) on which it has a cattlepost (kyengo) have also disappeared from the northern and north-central portion of the district. Instead grazing in this region is now done solely on various contiguous or separate parcels of a household's cultivated land (ng'undu) allocated to pasture. In short, the traditional recourse of settlement and/or grazing in communal areas is virtually a thing of the past since all available land is now subject to private claim.

The Government of Kenya is involved in a countrywide program of land adjudication, consolidation and registration (Okoth-Ogendo, 1976). However, in the case of Machakos District, the tendency toward privatization of land holdings was encouraged as early as 1938 when the colonial Soil Conservation Resolution required demarcation of individual holdings by sisal hedges (see part C below). The process from the onset of land adjudication to receipt of title is a lengthy one, six to seven years, and in only a quarter of the district have all stages been

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completed. (In none of the research site sublocations of this study has this process reached completion (Thom, 1978).)

The interim period between traditional land holding patterns and the emerging modern freehold system is obviously one of transition. Prior to an area being adjudicated, customary law still obtains where land disputes occur, e.g., when brothers dispute the equity of the allocation of their fathers land between them upon his (and his wife's/wives') death. However, some types of traditional jurisdiction have gone by the boards. For example, Lambert (1947) indicates that in the past when a Mkamba wished to sell land he had first to offer to sell it to his relatives before making it available to outsiders. Moreover, utui elders could exercise a form of indirect veto on the sale of this land by refusing right of residence in the utui to the buyer. Currently such practices are in abeyance and a fairly vigorous land market exists based on completely individual power of disposal.

C. A Brief Historical Footnote

While a full-blown treatment of pre- and post-colonial Akamba history is not essential background to this research, certain aspects of this history provide useful insights for understanding the current situation. Despite some disagreements concerning when and by what route they arrived (Jackson, 1976a:180-193), most sources have the Akamba settled in the Machakos area by the mid-seventeenth century. These new immigrants first located on the fringes of the Mbooni massif:

From this first area of settlement, the Kamba spread slowly into the rest of Machakos district, into Kitui, and from Kitui south into Kikumbuliu.

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Territorial expansion was a continuing process, taking place not in any series of sharply defined stages but rather in a slow, protracted advance. The main dynamic was a slow growth in population, and a relative abundance of land matched the needs of the growing population for land to cultivate, for grazing for livestock, and for trees on which to hang beehives. Plentiful land permitted the abandonment of the unit of agriculture (ng'undu) when the soil had been exhausted, and also influenced the custom whereby elder sons left home to set up their own homesteads (misyi, sing. musyi). A high degree of individual mobility and a continually expanding frontier of settlement resulted. Individual pioneers moved into the bush or wasteland (weu) to establish their own misyi and were joined by members of other clans who settled nearby (Munro, 1975:12).

The arrival of the first representative of the British colonial expansion in 1889, a trading post of the Imperial East Africa Company, marked the onset of the eventual demise of this earlier period of free-wheeling settlement in unpopulated areas of Ukambani. The colonial administration shortly thereafter began a process of successive alienation of the better land for the exclusive use of the white settlers (Simiyu, 1974:105-112). A combination of accelerated population growth and contraction of the boundaries of Ukambani by the colonial administration significantly reduced the ability of individuals to migrate to new areas when a given location became crowded or infertile. Of particular annoyance to the Akamba was the colonial power's vacillation and eventual restriction on use of the Yatta Plateau, an area of traditional resort for common grazing (Munro, 1975:195-99).

With the break-down of the traditional cycle of land use and regeneration, a shorter-fallow system emerged. Clearing of bush,

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felling of timber, and the general denuding of previously only moderately exploited territory proceeded apace as Akamba farmers increasingly began to transform temporary rights of usage into permanent rights by continual occupation (Munro, 1975:205-206). The appearance of a small educated elite coupled with some commercialization of Akamba agriculture served only to reinforce these trends. With less and less new land available, increasingly fragmentation of holdings occurred upon inheritance. By the 1930s, moreover, there were growing pressures from the emerging elite to transform the joint individual-lineage system of land ownership into one of individual tenure (Munro, 1975; Gupta, 1973). A substantial tenant class emerged. In general, "the Kamba social system was losing its colonizing egalitarianism" (Munro, 1975:204).

The culmination of these historical forces was a soil erosion problem which, at least in the eyes of the colonial administration, had reached alarming proportions by the mid-1930s (Maher, 1937; Pole-Evans, 1939). At the heart of this problem, it argued, was the Akamba practice of gross overstocking, a thesis which received strong support from the white settler community which had a vested interest in curbing Akamba expansion. Thus, a poorly conceived and hastily executed campaign of destocking was mounted in 1938. The ensuing strong and quite unanticipated Akamba reaction in the form of a 2000 plus march and month long encampment in Nairobi of Akamba men, women and children has been widely reported (Tignor, 1976; Newman 1974; Munro, 1975; Rosberg and Nottingham, 1966; Myrick, 1975). In the face of this opposition, the administration rescinded its program of forced

destocking in favor of voluntary sales. However, animosity toward Government initiated soil conservation efforts had been irrevocably cemented in the social history of the Akamba.

A second component of the colonial soil conservation "reconditioning program" was an emphasis on enclosure of individual homesteads by sisal hedges followed by title registration. This program was premised on the belief that private ownership would encourage individual responsibility in land use particularly if the traditional recourse of settling new areas could be eliminated. Once again resistance was mobilized against what was regarded by the Akamba as yet another disguised attempt to wrest their lands from them for delivery to Europeans as well as an effort to generate more cheap labor for the white settlers. However, the disruptions brought on by the second World War led to a curtailment of this program by default. Once again, however, Akamba sensitivities to Government led soil conservation efforts had been seriously offended.

The era immediately preceding World War II saw a general worsening of the agricultural situation in Machakos with famine relief becoming a regular feature of Government assistance to the district. Clearly, the administration needed to take strong action. Thus the African Land Development Board (ALDEV) was formed in 1945 for the primary purpose of coordinating Government departments responsible for land use and development of African areas (Colony and Protectorate of Kenya, 1962). It began its work on the assumption that "the only way to achieve lasting results in developing the African sector was to start with the land problem" (Cone and Lipscomb, 1972:91). Indeed the ALDEV Board's

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biases are clearly reflected in its list of "red herrings" with which it had to cope, "in addition to ... genuine problems" (e.g., "Conservatism and non-cooperation of the population"), one of which was "The obsession with over-population and imagined need for more land" (emphasis added) (Colony and Protectorate of Kenya, 1962:5). Initial efforts in Machakos District focused on removal of families living in the hill areas to a resettlement scheme in Makueni Division. However, this approach proved prohibitively expensive and attention shifted to soil and water conservation measures within existing areas of settlement (Odingo, 1971). This emphasis was received with somewhat greater enthusiasm by the Akamba when it was coupled with the programs of the Swynnerton Plan which focused on fostering genuine increases in production by African farmers (Swynnerton, 1955; Smith, 1976) and was not exclusively oriented toward conservation. Nonetheless, a certain amount of forced work on terraces and other conservation projects did occur under ALDEV and Akamba suspicions were once again raised as to the motives underlying these soil erosion programs (de Wilde, 1967; Clayton, 1964; Mutiso, 1975). In spite of some Akamba resistance and considerable resentment over compulsory measures employed to obtain compliance (van Zwanenberg and King, 1975; Ruthenberg, 1966), by the late 1950s substantial erosion control work had been effected, complemented by afforestation and provision of water supplies, and agricultural production had risen to the point where the district had become a net exporter of maize (Colony and Protectorate of Kenya, 1962).

Lynam (1978) points out that this situation was to be short lived for several reasons. One, insufficient time had elapsed in the final years of the colonial era in which an improved set of cultivation practices adapted to the soil and rainfall conditions of Machakos, especially the medium potential areas, could have evolved. Secondly, the British did not succeed in integrating the cropping and livestock components of the farming system. The livestock component in particular continued to suffer from lack of technical attention. Lynam argues further that the post-Independence government, short on manpower and resources, of necessity initially concentrated on high potential areas and gave little attention to the specialized needs of the less productive zones. Thus, it was inevitable that by the late 1970s the semi-arid areas would begin once again to command the attention of Government. A rapidly growing population was resulting in substantial migration into the more marginal semi-arid areas (Mbithi and Barnes, 1975) and neither the agricultural technologies nor infrastructure existed to support this influx (Westley, 1977). The costs to Government of drought-induced famine relief were becoming substantial (Mbithi and Wisner, 1972; Wisner and Mbithi, n.d.). Moreover, in more settled marginal areas population pressures and subsequent soil erosion problems were once again beginning to constitute a genuine resource preservation dilemma; thus, the present Government focus on the future of arid and semi-arid land development was initiated (Government of Kenya, n.d.a).

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D. The Demographic Context

Kenya currently leads the world in population growth. Its four percent natural increase is the highest ever recorded for a single country. Its total fertility rate of 8.1 is the world's highest. If this rate of population growth continues, Kenya's mid-1990 population of close to 16 million will double in about 17 years (Mott and Mott, 1980; Republic of Kenya, 1979b).

An obvious consequence of this accelerated rate of growth is greater pressure for land acquisition in the marginal agricultural areas of the country as land in the high potential areas becomes increasingly scarce. As indicated in the previous sections, this process is by no means new to Machakos District. Indeed, Owako begins his description of the district as follows:

For long Machakos District has been known as a 'Problem District' in Kenya. The earliest problems to attract the attention of the Government were those of overstocking, soil erosion and later overpopulation ... While post-Second World War government efforts have achieved much in arresting these problems, population pressure is still one of the major problems of the district (1971:1)

Much of Akamba history, especially twentieth century history, has been the story of dispersion out from the high potential hill areas into the medium and low potential zones (Wisner, 1977; Mbithi and Barnes, 1975; Owako, 1971). Moreover, attempts to apply the agricultural techniques brought from the moist hill country to lower potential areas have complicated the problem of increased population pressure in these less productive zones of more recent settlement (Wisner and Mbithi, n.d.)

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In addition to the above intra-district pattern, Akamba males have a history of out-migration in search of employment (de Wilde, 1967). Thus Ominde (1968), using 1962 census data, finds a marked male deficiency in the 20-44 year age group category. The police and army have been a traditional source of such employment for Akamba men (Easterbrook, 1975) though currently they are employed in all aspects of the private and public sectors.

The most recent Government of Kenya census indicated Machakos District had a 1979 population of 1,022,522. This represents an average growth rate of 4.5 percent per annum during the previous decade. Since this rate of growth is well above the current national rate of natural increase, it seems likely that this is due to migration into the district during this period.

Table 7.1 presents 1979 census data for the district and the four sublocations surveyed in this study.⁷⁰ Table 7.2 disaggregates the information from Table 7.1 by age category and sex. What is most striking about Table 7.2 is the clear deficit of males in the 15-49 age category. This is reflected in the sex ratios (number of males to 100 females) for this group (total population sex ratios are in parentheses): Utaati .70 (.88); Muumandu .73 (.88); Iiani .80 (.90); Kakusi .73 (.87); and Machakos District .85 (.93). These sublocations are clearly ones where significant numbers of adult males are absent, almost certainly in employment (or searching for employment) elsewhere (see Chapter VIII.B).

Machakos District is therefore an area of both substantial in- and out-migration. While there is migration into the district in search of

Table 7.1. 1979 population data for Machakos District and four sublocations surveyed.

Location/ sublocation	Male	Female	Total	Area (sq. km.)	Density per sq. km.
<u>Okia</u> Utaati	1,776	2,013	3,789	28	133
<u>Kalama</u> Muumandu	2,926	3,327	6,253	34	179
<u>Mbooni</u> Ifani	2,155	2,388	4,543	21	207
<u>Kiteta</u> Kakuswi	1,722	1,942	3,644	19	192
<u>Machakos</u> District	492,937	529,585	1,022,522	14,178	72

Source: Preliminary census information. Personal communication from Central Bureau of Statistics, Ministry of Economic Planning and Development. September, 1981.

Table 7.2. 1979 population data by age category and sex, for Machakos District and four sublocations surveyed.

Sublocation	0-4	5-9	10-14	15-49	50+	Not Stated	Total
Utaati							
Male	317	330	294	575	258	2	1,776
Female	310	322	271	819	290	1	2,013
Total	627	652	565	1,394	548	3	3,789
Muumandu							
Male	594	550	477	978	316	11	2,926
Female	563	590	471	1,337	358	8	3,327
Total	1,157	1,140	948	2,315	674	19	6,253
Ifani							
Male	417	422	355	734	227	0	2,155
Female	413	404	348	917	305	1	2,388
Total	830	826	703	1,651	532	1	4,543
Kakuswi							
Male	365	330	290	562	175	0	1,722
Female	348	331	271	773	219	0	1,942
Total	713	661	561	1,335	394	0	3,664
<hr/>							
Machakos District							
Male	94,664	89,330	73,931	186,233	47,460	1,319	492,937
Female	93,939	88,746	72,741	218,324	54,628	1,207	529,585
Total	188,603	178,076	146,672	404,557	102,088	2,526	1,022,522

Source: Preliminary census information. Personal communication from Central Bureau of Statistics, Ministry of Economic Planning and Development. September, 1981.

land (in the drier areas), there is also considerable movement out of the district in search of employment.

E. Conclusion

The above review has served to illustrate that a conjuncture of interrelated bio-physical, socio-cultural, historical and demographic forces have culminated in the current precarious existence of the average Machakos household. The situation is complicated by a legacy of antipathy toward Government initiated resource conservation efforts. Yet preservation of these resources is vital to the economic prosperity of the district.

Beset by land shortage (at least in terms of traditional land use), demographic pressures, a deteriorating physical resource base and the vagaries of an erratic climate, Akamba households must endeavor to survive and even to prosper against considerable odds. This is inevitably a high risk process. It is to an investigation of certain socio-economic dimensions of this process that the discussion now turns.

VIII. DESCRIPTION AND FINDINGS OF THE FIELD SURVEY

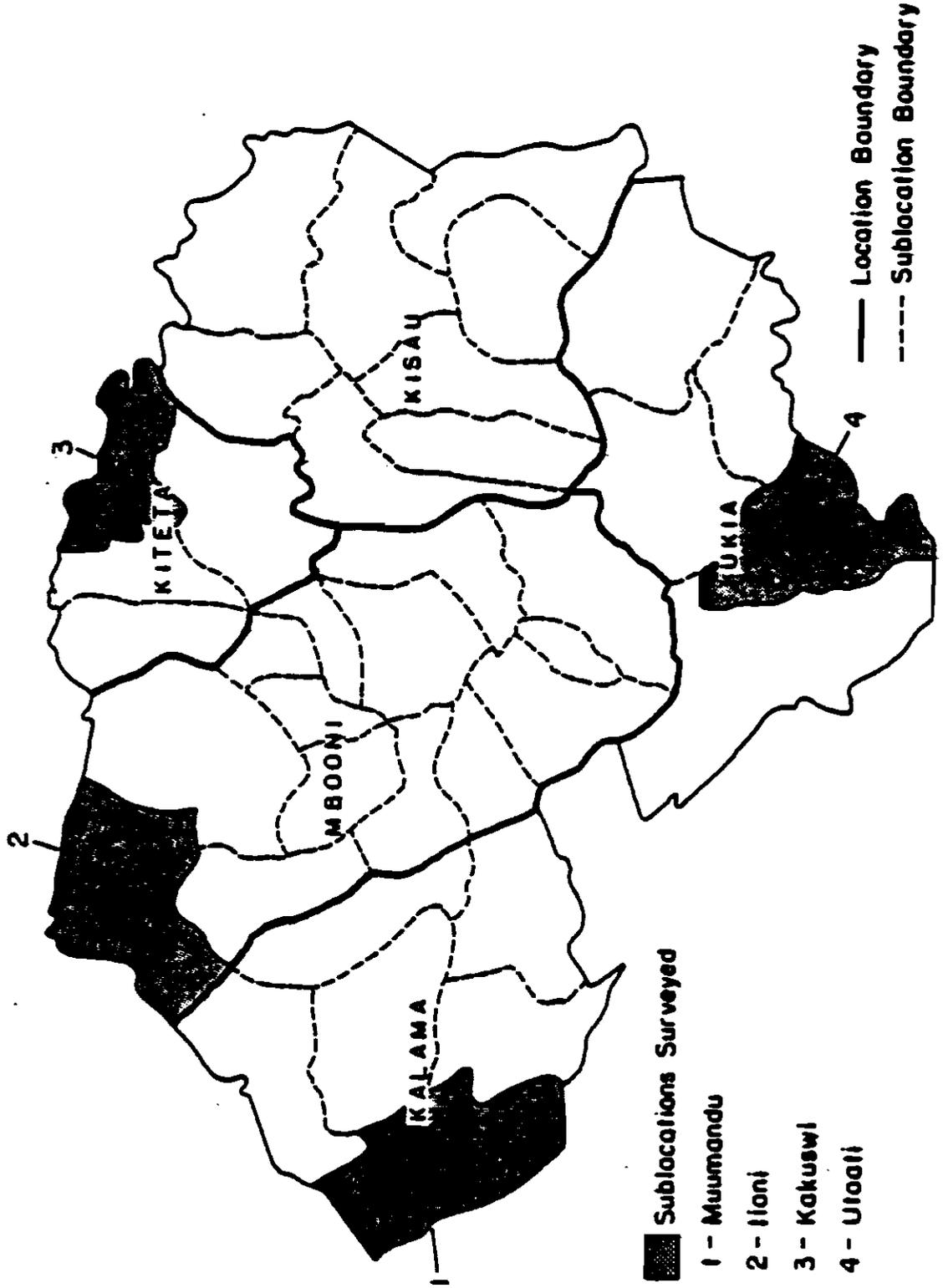
A. Research Design and Field Procedures

The obstacles which confront the survey researcher in East Africa are multitudinous (Kearl, 1976; O'Barr et al., 1973). Primary among these is the problem of devising an effective sampling strategy, especially drawing up a complete sampling frame. The research design described below represents an attempt to achieve a judicious compromise between the canons of sample survey methodology and the problems of a logistically complex field situation.

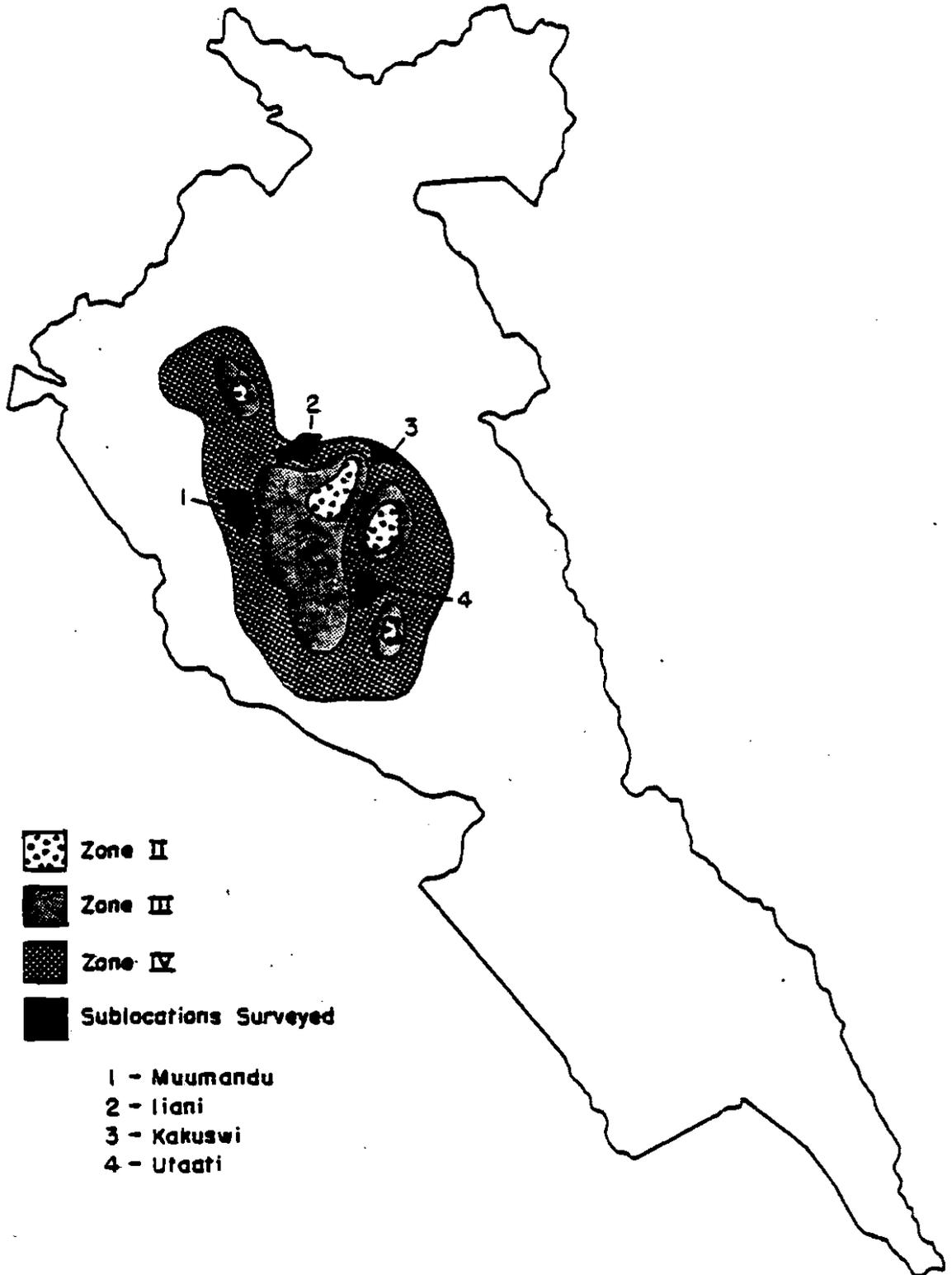
The geographical area within which the survey was conducted was the first "operational area" of MIDP (see Map 2.2). Within this area sublocations are the lowest level government administrative units which can be used to delimit the population. Four sublocations were selected for sampling (see Map 8.1). These sublocations were ones which fell within the Zone IV (semi-arid) eco-climatic zone (see Map 8.2). Two populations, credit and non-credit, were sampled within each sublocation.

Sublocations are divided into traditional units called motui (sing. utui) which can be roughly defined as "neighborhoods." Assistant chiefs in charge of each sublocation, in cooperation with utui elders, were asked to generate a list of all households (misyi--sing. musyi) within 3 to 4 randomly selected motui in each sublocation.⁷¹ From these lists, a systematic sample was drawn in which forty non-credit recipients were randomly selected on a 1 in k basis within each sublocation (n= 160). This approach, rather than a

MAP 8.I. MIDP OPERATIONAL AREA I



MAP 8.2. ECO-CLIMATIC ZONES COVERING MIDP OPERATIONAL AREA No. 1



simple random sample, was used to minimize selection by chance of related households living in close proximity since the sampling list was produced by proceeding from one end of the utui to the other.

The second population sampled was all MIDP credit program loan recipients (less ten households included in a previous pre-test survey) within all four sublocations (n=66). A list of these households was obtained from Ministry of Cooperative Development officials in each location.

A questionnaire was devised by the researcher and then was translated into Kikamba by Akamba staff of MIDP and the Ministry of Agriculture familiar with the social and agricultural practices of the area. The questionnaire was pre-tested in January 1980 on a total of thirty-one households (ten credit and twenty-one non-credit) throughout the four sublocations. The questionnaire was subsequently revised and the actual survey undertaken from June through October 1980.

Interviews were conducted in Kikamba by a trained research assistant, accompanied by the researcher.

A second research assistant measured the size of the main shamba (farm) of each household using a prismatic compass and measuring wheel, the method employed in field surveys undertaken by the Kenya Central Bureau of Statistics. Where shambas consisted of additional separate parcels, the latter were not measured but instead their size was estimated by the interviewee relative to that of the main shamba actually measured (e.g., half as large, twice as large, etc.). Total hectareage was then computed on the basis of the area measured plus these estimates for parcels.

B. Research Findings --A Profile of Households in the Survey

It is not possible in a brief discussion of this type to report all findings of the research.⁷² Instead they are summarized as follows. The first section provides a profile of certain key household characteristics. The second section relates analysis of survey data to several substantive areas of interest for semi-arid areas in general.

1. General Characteristics

Eighty-two percent of the non-credit households (NC) and 92 percent of the credit (CR) households are headed by males.* The average age of heads of households is 52 (51.5) years of age. Their mean total years of education is 2.3 (3.5) with a median of .35 (1.7).

Fifty-four (56.1) percent of heads of households list farming as their sole occupation. An additional 7.5 (4.5) percent have a second part-time source of income in addition to farming. Ten (13.6) percent earn their living through some form of rural employment. Eighteen (12.1) percent are employed in urban areas.

*Since the survey contains two samples, one (credit) an almost total universe (87%) sample and the second, the non-credit sample, only a small proportion of the total non-credit population, to report results for the two samples combined would disproportionately weight the findings in favor of the credit sample (at least in terms of minimizing sampling error since the latter presumably is more representative). Therefore the results are reported separately. The non-credit (NC) sample results are in every case reported first with the credit (CR) group results enclosed in parentheses. Where both results are enclosed in parentheses separated by a slash --as is the case at the top of the next page for those employed as teachers-- the number to the left always refers to the non-credit sample. Medians are also reported in cases where there is a substantial difference between mean and median values due to skewed distributions.

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These employment figures exclude those heads of households in the sample who are teachers (3.1/4.5 %) in either rural or urban areas, primarily the latter.

The mean household (musyi) size is 8.3 (9.8) persons.⁷³ This represents on average 4.0 (5.1) males and 4.3 (4.7) females, 4.0 (5.0) adults, 4.0 (4.4) dependents of less than sixteen years of age, and .42 (.32) individuals greater than sixty-four years of age. Six and two-tenths (12.1) percent of the households are polygamous and 31.9 (33.3) percent are comprised of two or more subunits (e.g., a separate nuclear family in addition to that of the head of household's such as a son's or brother's family or a second (or more) wife and her children).⁷⁴

As indicated in Chapter VII, residents of Machakos District frequently seek employment away from home. Twenty-nine percent (22.7) of the heads of households permanently reside away from the household and of these 65.2 (80.0) percent have been away for ten years or more. It is not only the heads of households who are absent. Seventy-one (63.6) percent of all households have one or more members living away from the musyi with a mean number of 1.4 (1.3) away. The primary reason for their absence is employment. Fifty-nine (50.0) percent of all households have one or more members away in paid employment.

An important determinant of ability to secure employment is education. The mean number of individuals within households with some post-primary school education is .81 (1.7) with a median value of .37 (1.3). Forty-three (81.8) percent of all households

contain one or more persons with more than standard seven level education.

2. Crop Production

Table 8.1 summarizes information on crop production for the two growing seasons covered in the survey. Only the major crops grown are reported.

An important constraint to crop production in semi-arid areas of Machakos District is labor shortage at periods of peak demand (Heyer, 1972; Hash and Mbatha, 1978). Thirty-three (47.0) percent of the households hired some labor for crop production and of these 30.2 (35.5) percent hired one or more permanent laborers. The most important activity for which labor is hired, in terms of person-days utilized, is weeding followed by plowing (harvesting in the case of the credit sample).

Exchange of labor between households is another means by which households overcome labor shortages. Forty-six (71.2) percent of all households exchanged labor in 1979 for the purpose of growing crops (Note this excludes soil conservation activities). Weeding is by far the most important activity for which labor is exchanged.

3. Land Holdings

Eighty-six (93.9) percent of all heads of households are sole owners of their land. An additional 1.9 (3.0) percent have usufruct rights to part of their father's/mother's land. Ten (3.0) percent are using a portion of land shared in common with other relatives (e.g., three brothers among whom the land is

Table 8.1. Percentage of all non-credit (n=160) and credit (n=66) households growing and selling crops.

	NC		CR	
	Grown	Sold**	Grown	Sold**
LONG RAINS				
Maize				
Traditional	65.0	14.4	25.8	11.8
Katumani	27.5	2.3	74.2	10.2
Mixed	13.7	22.7	12.1	25.0
Beans	78.1	4.8	81.8	7.4
Pigeon Peas	85.6	23.4	81.8	13.0
Cowpeas	40.0	0.0	36.4	0.0
Cassava	42.5	4.4	50.0	9.1
Sunflower	5.6	55.6	34.8	87.0
SHORT RAINS**				
Maize				
Traditional	62.5	17.0	27.3	11.1
Katumani	25.6	22.0	66.7	22.7
Mixed	12.5	10.0	9.1	66.7
Beans	78.1	10.4	80.3	24.5
Pigeon Peas	78.7	7.1	83.3	7.3
Cowpeas	42.5	4.4	36.4	4.2
Sweet Potatoes	51.2	4.9	68.2	8.9
Cassava	45.0	1.4	50.0	3.0
Sunflower	3.1	80.0	12.1	75.0
Cotton***	5.6	100.0	51.5	100.0
TREE CROPS				
Mango	64.4	25.2	81.8	24.1
Pawpaw	26.2	0.0	50.0	0.0
Banana	62.5	10.0	86.4	22.8
Citrus	43.8	10.0	80.3	26.4

*Indicates that some portion of the crop was sold. The percentage shown is the percentage of those households which actually grew the crop, not the percentage of total households in the sample.

**Crops harvested in early 1979 from the previous short rains season.

***Though a short rains crop, harvested after the long rains.

informally divided). Two female heads of households are without any land and one male is a squatter. Fifty-three (43.9) percent of the households feel they have insufficient land with which to adequately provide for their families.

The mean size of main shambas measured is 2.7 (4.1) hectares -- median 2.1 (3.0). Thirty-seven (53.0) percent of the households have an additional parcel(s) (range = 0-6 (7)). The mean number of parcels for only those with parcels in addition to the main shamba is 2.35 (2.31). When the hectareage of the main shamba is combined with that from parcels plus any additional land owned for grazing or other purposes, the average total hectareage owned is 3.9 (6.2) -- median 2.6 (3.7). Forty-one (13.6) percent own less than two hectares. Sixty-nine (50.0) percent own less than four hectares.

Twenty-one (45.5) percent of the households had purchased land in the last five years and 15.0 (19.7) had sold land. In the latter category, 79.1 (76.9) percent of these households sold land in order to cover routine household expenses.

4. Livestock Assets

Sixty-eight (87.9) percent of all households own some cattle with a mean number owned of 4.7 (4.5) for all households-- median 3.8 (3.7). Forty (77.2) percent own one or more oxen. Fifty-nine (83.3) percent own goats with an average number owned of 5.4 (5.2) --median 3.5 (3.5). Thirty-nine (71.2) percent own sheep. The average number of sheep owned for all households is 1.6 (2.7) --median .32 (2.2).

A significant trade in livestock exists. Eleven (22.7) percent of all households bought cattle and 22.5 (37.9) percent sold cattle in 1979. Twelve (12.1) percent bought goats and 31.9 (45.5) percent sold them. Ten (19.7) percent bought and 14.3 (15.1) sold sheep.

5. Sources of Income⁷⁵

Households in the survey earn their living in a number of ways. Average total household cash income in 1979 was 4494 (6406) K. shs. with a median income of 2583 (4615) shs. and a range of 119 (610) to 43,382 (32,692) shs.⁷⁶ Sixty-eight (42.4) percent had an income of less than 4000 shs., 38.7 (13.6) percent less than 2000 shs. Somewhat surprisingly, farm income, particularly cash income from the sale of crops, is a relatively minor source of income.⁷⁷ Forty-five (15.2) percent of all households reported that they earned no income from the sale of crops in 1979. The mean income from total crop sales was 398 (1149) shs.--median 21 (566).⁷⁸ Crop income represents on average eight (23.3) percent of total cash income earned -- median 0.6 (11.5).

Income from the sale of cattle, sheep and goats constitutes 10.9 (12.9) percent of total income earned -- median .001 (3.8) percent. Fifty-two (35) percent did not sell any of these animals in 1979. Half (63.6) the households also sold chickens earning an average amount of 81.5 (76.0) shs. -- median 40.5 (59.7).

Another important source of income is non-farm income -- handicrafts, petty trade, etc., including rural based employment (i.e., these employed individuals are permanently resident in the

musyi). Eighty-four (89.4) percent of all households have one or more members engaged in such activities --mean 1.7 (2.0) persons. The average income earned from non-farm sources is 1933 (2206) shs. --median 531 (895). This represents a 1979 mean of 39 (33.8) percent of total income earned -- median 28 (25.3). The three most common sources of off-farm income are receipt of funds from participation in traditional resource pooling groups (ilelo), sale of "Kamba" string woven from sisal, and employment as casual labor.

A further source of income is remittances sent to the household by members employed (and resident) elsewhere. Fifty-seven (45.5) percent of all households receive income in this way. The mean income received by all households in 1979 (i.e., including those receiving none) was 1356 (1646) shs. -- median 600 (8) shs. The mean amount for only those who received remittances (i.e., greater than zero) was 2438 (3622). Remittances (zeroes included) represented an average of 33.5 (23.3) --median 18.7 (.06) percent of total income earned. For only those who received remittances (zeroes excluded), remittances represented 60.3 (51.4) percent of total income.

C. MIDP and the Target Population

1. Perceptions of MIDP

Part I indicated that MIDP was designed to be a highly participatory project. This section examines evidence from the survey on how intended beneficiaries of MIDP view the program.

A significant finding is that 73.1 (37.9) percent of those interviewed claimed not to have heard of MIDP. In any event, they could not distinguish it by name from other Government programs. This is the case despite widespread public gatherings (barazas) held by MIDP personnel and officials prior to initiation of project activities in an area. Those who had heard of the program learned of it primarily from either barazas or relatives and friends.

Local people have a strong sense of the major difficulties which confront them and the kinds of project assistance they prefer. When asked to indicate the main problem keeping them from increasing their income, the three most often-mentioned were: 1) inadequate labor on the shamba (23.1/27.3 %); 2) insufficient rain (16.2/16.7 %); and 3) insufficient land (13.7 %/ CR --insufficient money (13.6 %)). When asked what benefits they would like MIDP to provide their households, provision of water (through some type of dam) was by far the most important followed by provision of improved seeds.

This first priority is significant because it is simply not possible for MIDP to provide water supply points on the scale desired by local residents of a given operational area. The difficult task of reconciling what local people want and what the project can realistically provide is a particularly problematic issue in semi-arid areas (see also related comments on the problem of siting dams in Part I, III.D.1). It raises the question whether efforts to get local people aware of and involved in

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planning for project benefits in a project of the scale of MIDP does not also inspire expectations which cannot be met. This can reinforce the already widespread belief held by local people that development is a whimsical force which descends on the fortunate or the well-connected but has little to do with their own efforts or initiatives.

Most of those interviewed did not view themselves as active participants in MIDP in the sense of constituting a force which could affect the way in which MIDP is carried out.⁷⁹ When asked in what way they felt they might make suggestions and influence MIDP so as to benefit their household more, 81 (67) percent of the respondents indicated they had no ideas to offer. While it is possible the problem lay in the translation of the question (it was checked and rechecked a number of times), a more likely explanation is that this simply represented a notion foreign to people who are used to having their wants articulated to Government by local officials.

2. Soil Conservation

At the heart of MIDP is an effort to marry promotion of resource conservation activities with increases in agricultural productivity. An understanding of current soil conservation practices is essential to this effort. Eighty (100) percent of all households have bench terraces on their shambas though these are of varying quality and effectiveness. Sixty-two (80.3) percent have dug cut-off drains though again many of these have not been maintained (46/19 %). Only 14 (25.8) percent have made

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any efforts at gully rehabilitation (However, this figure is possibly misleading in cases where the land is flat and not subject to gully erosion or where soil conservation efforts have been effective enough to prevent gully formation). Thirty (80.4) percent claim to have done some re-seeding of pasture. Fifty-seven (95.5) percent practice crop rotation. Only six (9.5) percent have undertaken to destock for conservation purposes.

A partial explanation for poor erosion control performance is that many people have had no formal training in how to go about it (Mbithi and Kayongo-Male, 1978). When asked from whom they had learned about soil conservation, the main responses for the non-credit sample were: 1) no one (34.1%); 2) Ministry of Agriculture (31.1%); and 3) friends or relatives (11.9%). For the credit sample they were: 1) Ministry of Agriculture (54.5%); 2) no one (15.2%); and 3) at an MIDP (credit recipient) course (12.1%).

The use of traditional self-help (mwethya) groups has been widely suggested as a means to carry out soil conservation programs. Yet only fifty-one (66.7) percent of the households surveyed are members of such a group. The membership of these groups is primarily female. Of those who had some member of the household in a soil conservation oriented mwethya group, only 24.1 (43.2) percent of these were male members. Ninety (77.2) percent had one or more female members. Almost all mwethya groups were based on exchange labor only rather than payment in food, cash, or

in kind. Forty-five percent (74.2) of the households had used mwethya groups for soil conservation efforts on their farms.

A concerted effort was made both in the formal questionnaire and in informal discussions to determine what motivates certain individuals to undertake soil conservation measures. Generally those who had done so exceptionally well were of the opinion that others who had not were simply unwilling to take on the manual effort entailed. Clearly the so called demonstration effect is not effective. Shambas on which soil conservation structures were properly constructed and on which crops were doing extremely well were found surrounded by shambas on which very little erosion control work had been done and on which crop production was extremely poor.

The empirical evidence provides limited additional insight. An overall index of the effectiveness of soil conservation was constructed (using a scale of 0-5) and each shamba was rated by the researcher. When both the non-credit and credit sample are combined, the highest correlation between the index and variables assumed to be logically related to soil conservation work -- e.g., amount of adult labor available in the household, household education level, etc. -- is with credit acceptance ($r = .43$). When the two samples are analyzed separately, in the non-credit sample the index of conservation measures is not correlated in any meaningful way with any of these variables except a measure of overall level of wealth ($r = .31$) -- a Guttman scale of household possessions. However, for the credit sample the highest (though

moderate) correlations are with total crop income ($r = .37$) and crop income as percent of total income ($r = .35$) ($p < .01$ for all correlations reported). Moreover, the mean for the overall index for the credit group (3.31) is significantly ($p < .05$) higher than that of the non-credit group (2.14). These results suggest that willingness to undertake soil conservation efforts is related to a household's dependence on crops as a source of cash income. Thus the more innovative households (credit adopters) for whom income from crops is vital tend to take better care of their shambas.

These results imply that receptivity to soil conservation promotion is largely dependent on how well a household succeeds in crop production. While it is possible the direction of causation is from conservation to production and not the reverse, this seems unlikely. More likely, those who seek increased production work harder to insure the continued productivity of their soil and pastures. It follows therefore that any efforts to promote soil conservation should be part and parcel of campaigns to increase production and should not deal with soil erosion problems in isolation. It should be recalled, parenthetically, that such a single issue approach led to the downfall of the colonial erosion control campaigns in Machakos District in the past.

3. Project Beneficiaries

An analysis of who benefits from MIDP is complicated by several factors. Some project products, such as dams (and the soil conservation programs they entail), are public goods benefitting all who reside in a subcatchment area. Nonetheless

these benefits are restricted to a relatively small geographical area. And, as indicated in Part I, the location of these dams is largely determined by technical considerations. Other products such as the tick control program are more widely available for all who care to use them. It is perhaps the credit program which offers the best opportunity for analyzing any differential benefits of the program since: 1) it has a direct income effect and 2) it reaches the widest range of households in an MIDP operational area.⁸⁰

It is important to emphasize at the outset that the credit program is designed to benefit less well off households. Title to land, which would normally serve as collateral for a loan, is not a requirement for receiving credit. There is also a ceiling on inputs obtainable which prevents any one household from receiving more than that necessary for four acres, thus insuring that wealthier farmers do not monopolize access to the supply of scarce inputs. The only obstacle to obtaining a loan is unwillingness on the part of a farmer to agree to the crop husbandry practices upon which receipt of a loan is conditional (see Appendix I).

Data were collected on a range of variables believed to effect willingness and ability to accept a loan. These variables are: 1) a Guttman scale score of household possessions, an approximate measure of overall available capital (GSSCORE); 2) a measure of livestock assets (LSU) expressed in terms of equivalent stock units; 3) the total number of individuals in a household with some post-standard seven education (NOSTD7); 4) the total

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number of adults (16 to 64 years of age) in the household (ADULTS); 5) the number of years in which the household had similar loans in the past (YRSLOAN); 6) total hectares of land owned (TOTHAS); 7) a rating by the interviewee of the quality of soil on the household's land (LANDQUAL); 8) the number of individuals from the household involved in exchange labor activities in 1979 (#EXCHLBR); 9) the number of individuals from the household involved in paid employment away from the household in 1979 (#EMPLYD); 10) the total amount received by the household in 1979 from remittances (RENTOT); 11) the total 1979 income of the household from other forms of non-farm income (OFFFARM); 12) the total 1979 income from the sale of crops (CROPSAMT); and lastly 13) the total person days of hired labor purchased in 1979 (LDYHL) (expressed as a natural logarithm transformation).

Table 8.2 presents the results of t-test comparisons of means between the credit group and the non-credit group on each of the above variables. The credit sample has a significant ($p < .05$) higher mean for the variables GSSCORE, MOSTD7, YRSLOAN, TOTHAS, ADULTS, #EXCHLBR, and CROPSAMT. Thus credit recipients have in general greater available wealth (as reflected in household possessions), have more people with post-primary education, have had greater experience with credit programs in the past, own more land, have more adults in their households, are more involved in exchange labor activities, and earned more income from the sale of crops in 1979.

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Table 8.2. Differences between non-credit (n=160) and credit (n=66) households for selected variables.

Variable	Group	Mean	Standard Deviation	t-Value
GSSCORE	NC	4.23	2.00	-3.90*
	CR	5.33	1.76	
LSU	NC	22.73	22.75	-1.48
	CR	27.59	21.59	
NOSTD7	NC	0.81	1.18	-4.28*
	CR	1.73	1.57	
ADULTS	NC	3.96	2.79	-2.56*
	CR	4.98	2.59	
YRSLOAN	NC	0.09	0.43	-5.80*
	CR	0.67	0.75	
TOTHAS	NC	3.89	4.00	-2.81*
	CR	6.23	6.52	
LANDQUAL	NC	3.13	0.86	1.37
	CR	2.95	0.83	
#EXCHLBR	NC	1.07	1.67	-2.76*
	CR	1.76	1.78	
#EMPLYD	NC	0.92	1.03	0.99
	CR	0.77	0.96	
REMTOT	NC	1,356.34	2,406.26	-0.61
	CR	1,646.42	3,511.04	
OFFFARM	NC	1,932.70	3,923.06	-0.50
	CR	2,205.53	3,297.09	
CROPSAMT	NC	397.73	1,508.48	-2.78*
	CR	1,149.29	1,974.52	
LDYHL	NC	1.36	2.12	-1.77
	CR	1.92	2.32	

* $p \leq .05$

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Credit acceptance was then regressed on these same variables to see to what extent they would predict both individually and collectively adoption of the MIDP credit package.⁸¹ The results are shown in Table 8.3.⁸² Thirty-four percent of the variance in credit acceptance is explained by these variables. Household possessions, level of post-primary education, previous experience with credit, involvement in exchange labor are all positively (and significantly -- $p < .05$) related to credit acceptance. Livestock assets and number of household members employed predict credit use but in a negative direction.⁸³ These results are, however, somewhat puzzling and there is no obvious clearcut interpretation of their substantive significance.

An alternative approach to the analysis is more helpful. The sample was trichotomized into three groups --Low, Medium, and High-- on the basis of total income earned. Table 8.4 presents mean values (in shillings) for all variables in the model for each of the Low (0-1900), Medium (1900-4159) and High (4160+) total income groups. Two aspects of the table are of interest. One, for all variables, mean values increase as total income increases. Secondly, nine of the credit using households --16 percent of all loanees-- fall in the low income category, 38 percent in the medium income group and 46 percent in the high income category.

Table 8.5 presents the results of regression analysis for each of the total income categories. Credit acceptance is least well predicted for the low income category. Only 20 percent of

Table 8.3. Multiple regression analysis of credit acceptance (n=204+)

Independent Variables	Beta
LDYHL	.01
#EXCHLBR	.19*
CROPSAMT	.08
REMTOT	-.06
OFFFARM	-.08
ADULTS	.13
NOSTD7	.24*
YRSLOAN	.29*
GSSCORE	.18*
LSU	-.18*
#EMPLYD	-.20*
TOTHAS	.11
<hr/>	
R ² unadjusted	.381
R ² adjusted	.342
S.E. of estimate	.363
F (12,191)	9.800

+ n for NC = 148. n for CR = 56 (see footnote 82).

* p<.05. F value is 5.37 or higher.

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Table 8.4. Mean values for all independent variables in the model by total income category.

	Low	Medium	High
n*	70	68	66
Variable			
LDYHL	.38	.93	2.36
#EXCHLBR	.90	1.35	1.39
CROPSAMT	147.44	336.91	789.89
RENTOT	311.57	1,039.53	2,203.94
OFFFARM	430.79	1,034.18	2,673.36
ADULTS	3.30	4.19	4.55
NOSTD7	.47	.77	1.50
YRSLOAN	.16	.21	.41
GSSCORE	3.27	4.35	5.41
LSU	12.51	22.40	29.67
LANDQUAL	2.97	3.07	3.12
#EMPLYD	.54	.88	1.08
TOTHAS	2.62	3.65	4.67

* n for NC income groups: Low = 61; Medium = 47; High = 40; or 41, 33 and 27 percent, respectively, of all NC households. n for CR income groups: Low = 9; Medium = 21; High = 26; or 16, 38 and 46 percent, respectively, of all CR households.

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Table 8.5. Multiple regression analysis of credit acceptance by total income category.

	Low	Medium	High
n	70	68	66
Independent Variables	Beta		
LDYHL	-.014	.003	.145
#EXCHLBR	.042	.199	.220
CROPSAMT	.024	.315*	-.194
REMTOT	-.109	.170	-.291
OFFFARM	-.027	.169	-.419*
ADULTS	.208	.020	.331*
NOSTD7	.156	.368*	.183
YRSLOAN	.332*	.203	.326*
GSSCORE	.211	.097	.094
LSU	-.129	-.186	-.243
#EMPLYD	-.122	-.244	-.338*
TOTHAS	.013	.148	.088
R ² unadjusted	.338	.508	.409
R ² adjusted	.199	.401	.275
S.E. of estimate	.302	.360	.419
F	2.430	4.737	3.054

* $p < .05$. F value is 3.98 or higher.

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the variance for this group is explained by the twelve variables in the equation and of these only one variable, prior experience with credit (YRSLOAN), has a significant beta.

These poorer credit households are evidently not successful cash crop farmers in spite of the fact that they have previously used credit. It is intriguing then to ask why they continue to take credit. One answer is, of course, that though they appear not to be highly successful cash crop producers, the inputs obtained may enable them to increase domestic food supplies and perhaps earn some income from the sale of crops. However, the fact that these households have past experience with credit and that this relationship is the only statistically significant one in the equation, suggests that it is possible that credit use is a reflection of their social status in the community to some extent independent of their economic position. Family, clan or other socio-political connections may afford them access to the credit scheme in a situation where from an economic vantage point they are no more likely candidates for credit than other households in the same income category.

Though there are no data to demonstrate such a thesis, a general impression which emerged from the field survey was that credit use, a practice by no means novel to Kenya smallholders, was something that was more or less expected of leading, respected members of the community. Its social status value was on a par with its economic attractiveness.

Forty percent of the variance in credit adoption is explained for the middle income group. Only two of the predictor variables have significant regression coefficients-- crop income (CROPSAMT) and level of education (NOSTD7). These loanees are seemingly genuine cash crop farmers who depend on crop income for their livelihood. Moreover, the magnitude of the relationship of post-primary education to credit adoption is double that for either the low or high income groups. It is not clear what role education plays in this process but to use the term progressive farmers in reference to this group does not seem inappropriate.

Caution must be used in attributing substantive significance to coefficients which are not statistically significant. However, it is interesting that only in this income category do remittances (REMTOT) and off-farm income (OFFFARM) have a positive relationship to credit acceptance. Thus it would appear these sources of income play a role in supplementing crop income and perhaps in cushioning the risk credit use involves. It is also interesting that there is virtually no relationship between number of adults in the household and credit use; this in contrast to the low and high income groups.

The R^2 for the high income group is .275. Credit acceptance is predicted most strongly and negatively first by off-farm income and secondly by number of people employed away from the household. Thus households in this income category with high levels of off-farm income or individuals employed elsewhere do not take credit. Those households with greater numbers of adults

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(ADULTS) and with prior experience with credit (YRSLOAN), however, do accept credit.

Unlike the middle income group, therefore, upper income loanees are not primarily dependent on crop sales as a major source of income. But like the lower income group, they have had prior experience with credit.

It is unclear from these regression results, however, why wealthier loanees are wealthy, except for the fact that they are not major off-farm income earners. Observation of the absolute values for these households for the three income variables indicates a random pattern of households being high on one of the variables or in a number of cases having their total income come from two or even all three of these sources. In short, they employ a multi-faceted strategy to take advantage of all possible opportunities for earning income as opposed to the typical middle income category loanee who relies primarily on crop income. This likely explains the failure of any one income variable to predict credit acceptance (except OFFFARM) but it does not explain why the relationships are all negative.

Why then do these wealthier loanees bother with credit? If the social status argument posited above for the lower income group applies also in this case, this is a partial explanation. More importantly, it was argued that households in the upper income group pursue a multi-faceted strategy to earn income. Thus credit is but one attempt to generate cash, via crop production, while at the same time income earning activities are carried out

on other fronts. For the very wealthy non-loanee, however, credit acceptance is economically likely not worth the bother.

Several general conclusions can now be drawn concerning the benefits of the credit program. Firstly, the majority (84 percent) of the credit recipients are in the middle or upper income categories (as defined in this analysis). The poorest households in the survey are for the most part not taking the credit package. Secondly, those "middle income" households who do utilize the credit are apparently genuine farmers for whom income from the sale of crops is an important component of total income.

The third and wealthiest group of credit users is also the group which received the greatest proportion of credit allocated (46 percent of the total number using credit). These households often have other sources of income in addition to that from crops. While the contribution of this group to overall production levels in the district may be substantial, it is questionable whether they are those most in need of credit. Indeed, they ought to be those most able to purchase inputs on an outright cash basis. They are better off not only in terms of income but all other indicators, including land owned. This raises the question whether thought should be given to attempting to funnel credit to those who would appear to be more in need of the credit program.⁸⁴

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IX. POLICY IMPLICATIONS OF THE STUDY

While caution must be exercised in inferring from a case study to more general situations, the results of the survey nonetheless suggest certain policy implications. The following issues are ones which merit the consideration of policy-oriented personnel interested in the development of semi-arid areas.

1) The most noteworthy finding from the study concerns the relative importance of off-farm income for the economic livelihood of semi-arid area farmers. In short, many semi-arid households depend on alternative sources to farming for cash with which to supplement subsistence and/or minimal surplus production. Off-farm sources of income are particularly important in enabling them to survive poor crop seasons.

All but the wealthiest of households are dependent on subsistence production to meet basic food consumption needs. The typical situation is, of course, one where the household has some, but not a great deal, of off-farm income. Thus it must strive to insure minimal subsistence production. But the household is hesitant to invest additional resources in cash crop production for which the returns are only marginally profitable and often fraught with risk.

There are therefore two basic impediments to increased production. One is limited working capital to invest in production in order to make it more productive and profitable. A second is risk aversion in a situation where households with meager income levels are reluctant to gamble already limited resources in a context of frequent

crop failure. As a result of these two impediments, production levels remain stagnant.

This suggests that there is a hierarchy of production strategies in semi-arid areas. The first is essential production of subsistence food crops. A second is maximization of off-farm income earning opportunities. In addition to the role this activity plays in increasing general income and welfare levels, its critical relationship to crop production lies in its contribution to greater working capital levels and risk minimization through income source diversification. Once the latter impediments are ameliorated, the household can turn to a third option, on-farm income generation through cash crop production.

Programs which are concerned solely with production activities too often ignore the crucial role of non-farm income. A single focus on encouraging agricultural innovation (use of hybrid seed, fertilizers, etc.) disregards the fact that off-farm income is a major determinant of a farmer's ability to absorb the risk that innovation entails.

An exclusive focus on encouraging innovation in such situations is, moreover, biased against the poorer farmer who has less access to off-farm income. The wealthier farmer with access to such income has two substantial advantages over the poorer farmer. One, he/she has the off-farm income which can act as an all-important cushion with which to absorb risk in areas prone to frequent crop failure. Secondly, he/she has that additional bit of capital and income which pushes him/her over the margin at which crop production can become a meaningfully profitable enterprise over the long term despite the occasional crop

failure. In many cases the best and most successful farmers encountered in the survey were those with substantial sources of non-farm income. This does not mean they regard farming as a second priority activity. Indeed, all were proud of their capacity as successful farmers. But it is undeniable that off-farm income plays a significant role in this success in enabling them to hire labor, purchase inputs, etc.

Program initiatives to encourage increases in production must therefore concentrate on enabling farmers to minimize the amount of risk involved. Greater attention to ways of fostering increases in off-farm income is likely an effective indirect means of stimulating crop production. Indeed, the most successful households in the survey were those which were maximizing not only crop production but a range of income earning opportunities. To ignore the role of off-farm activities altogether is to condemn poorer households not only to continuing minimal income levels but also likely continuing insufficient subsistence production levels.

2) A related issue concerns the role of credit. (While credit programs are by no means an essential component of semi-arid development programs, provision of some production inputs is likely required.)

Firstly, ecological factors make credit a riskier proposition for farmers in semi-arid areas than in higher potential areas. Secondly, at a time of escalating petro-chemical costs, input packages are becoming increasingly expensive. Thirdly, the financial and managerial costs of administering credit programs are substantial. All of these points mean, again, the bias of such programs works contrary to the

interest of those poorer farmers most in need of inputs who are least able to take advantage of them.

Evidence exists, however, indicating that significant gains in productivity could be achieved through different crop husbandry techniques (ploughing at the right time, soil moisture retention measures, etc.) which are not as tied to capital and income resources (but often are dependent on labor inputs). Thus greater attention ought to be given to the development and the widespread promotion of such alternative husbandry techniques rather than an exclusive concentration on credit as the centerpiece of a production strategy.

3) A consistent theme encountered in the survey concerned a reported shortage of labor, notably for weeding, at critical points in the crop cycle. This is particularly the case since many adult males are employed elsewhere. Also, in the very dry areas, women must travel considerable distances to fetch water (Whiting and Krystal, n.d.; Redlich, 1971), thus reducing the time they can spend in production activities. It is therefore important that attention be given in the development of production technologies to minimizing labor requirements which occur at periods of peak demand.

4) The need to tie promotion of soil conservation to production programs is a theme which received emphasis in Part I, V.A.2 and in section C.2 above. A further point concerns the problem of maintenance of conservation structures. The lessons of the past are that these structures, once completed, often fall into disrepair after the initial promotional campaigns subside. An essential component of erosion control programs needs to be instruction, for the local organizations

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involved, in both the technology and the rationale for maintenance procedures so as to assure their long term effectiveness.

NOTES TO THE TEXT

- ¹For an historical treatment of why and how this general approach achieved its current prominent conceptual status and a description of its diverse meanings and usage, see Cohen (1979:5-42).
- ²See Part II, Chapter VII.A of this report for a more detailed treatment of this subject.
- ³It is essential to distinguish this mode of agricultural production from pastoralism which is typically practiced in "arid" regions and involves a different set of behavioral and organizational questions. It should also be added that in the drier portions of semi-arid regions livestock usually assume greater importance.
- ⁴A description of the overall policy framework which will guide such efforts is found in Government of Kenya (n.d.a).
- ⁵The administrative units of the Kenya Government from largest to smallest are the province, district, division, location, and sub-location. Machakos District has seven divisions, 28 locations and 206 sublocations.
- ⁶A more detailed description of the physical and social setting of the project is found in Part II, Chapter VII of this report.
- ⁷This emphasis derives from the Government's formal policy decision to increase agricultural output and alleviate poverty in arid and semi-arid areas (Republic of Kenya, 1979a:211). While the primary motivation for this emphasis is equity considerations, additional objectives include exploitation of ASAL productive potential, resource conservation and integration of ASAL areas into the national market economy (Government of Kenya, n.d.a:11-12).
- ⁸The rules which govern research in Kenya understandably do not permit direct quotation of or reference to information in current Government of Kenya files. These files are not public documents as is a document like the Development Plan. This report draws extensively from such materials to which the author had access under the terms of research clearance granted him by the Government of Kenya. However, because of the rules referred to above, it will not be possible to cite, or provide references to, specific sources as would normally be the case.
- ⁹This reflects a clear Government decision to strengthen existing district level ministerial capabilities rather than create new project structures (with the one exception of the MPO's office -- see Chapter III.A). Thus, in the design stage, any project components believed to be important to the program's objectives were located within existing ministerial departments.

- 10 The figure in parentheses beside each project component heading indicates the percentage of the EEC-funded 177 million shillings budget initially designated for each component. Two components of the budget are not listed as they are not strictly "activities." These are Technical Assistance (13.5 percent) and Physical Contingencies (6 percent).
- 11 As of August 1980, a total of 7,600 farmers had received training under this program. The details of this credit scheme are provided in Appendix I.
- 12 Appendix II provides a description of the strategy for the MIDP soil conservation program. In August 1980 MIDP was active in six dam catchments and planning for work in an additional seven was underway.
- 13 As of August 1980, 7 earth dams were being either designed or constructed, and 30 subsurface dams were either under construction or had been completed.
- 14 This figure does not include costs of providing actual credit inputs, plus a produce buying fund, which are included in the Crop Development budget.
- 15 See Appendix I for a description of the MIDP credit scheme.
- 16 The IRD literature often stresses the appropriateness of a health component in IRD projects. While the EDF is funding improvements to the Machakos Hospital and a number of health centers in the district, these are not formally part of the MIDP program because of technicalities in the donor's funding procedures.
- 17 The term technical assistant as used in MIDP, and in this report, refers to expatriate technical advisers. While recruited and paid by the consulting firm (itself under direct contract to GOK), in terms of day-to-day duties TAs are solely responsible to the Government of Kenya and are under the supervision of their respective ministry's district head, not the consulting firm (or the EEC). Thus, the consulting firm has no direct involvement in MIDP activities. Prior to involvement in MIDP, all TAs are formally reviewed and approved by their respective ministry's Nairobi headquarters. The Machakos Program Officer (MPO) acts as general chief of party which primarily means his role in this position is to insure good working relations between TAs and their fellow officers. TAs are responsible to the MPO only in the sense that, as with all officers, his task is to aid them with project implementation. In the event of unsatisfactory performance of a TA, the MPO, the MEPO, the EEC and the operating ministry concerned meet with the consulting firm to discuss appropriate action including possible replacement (one such incident has occurred).

- ¹⁸The term decentralization is used in a number of ways in the literature. In the Kenyan context it has generally been employed to refer to movement from Nairobi to the district level of influence on the decision-making process concerned with the allocation of government resources. The organizational vehicle for this transfer is the District Development Committee (DDC) -- see n. 21 below. Since the DDC is composed of both Nairobi controlled civil servants as well as local government officials and other local representatives, there are aspects of both a "deconcentration" and a "devolution" strategy in Kenya's approach to decentralization. For elaboration on these terms see Uphoff, Cohen and Goldsmith (1979:69).
- ¹⁹An interesting historical footnote is that in the project design process the donor argued for a separate planning authority cutting across all ministries involved with strong executive power over expenditure of funds and implementation. This proposal was vetoed by the Ministry* of Finance and Planning which insisted on strengthening existing channels instead. Since Kenya hoped to duplicate much of the MIDP approach elsewhere, the Ministry felt a separate planning authority in each district was not desirable.
- ²⁰The PCC has responsibility for coordination of all ASAL projects, not just for MIDP. It is served by a secretariat which acts as its administrative arm. Staff for this secretariat are provided by the Rural Planning Division of the Ministry of Economic Planning and Development.
- ²¹Each district in Kenya has a District Development Committee (DDC) which oversees development efforts in the district. Chaired by the District Commissioner, its membership is composed of senior officers of all ministries represented in the district, members of Parliament from the district, local government officials, local level officials of parastatals and representatives of voluntary organizations operating in the district. Each DDC is served by a District Development Officer (DDO) who acts as a coordinator of the DDC's activities under the direction of the District Commissioner. DDCs monitor all development activities calling attention to problems, articulating district needs and priorities, etc. They also formulate five-year district development plans (two to date) setting forth district objectives and general ministerial programs (see Delp, 1980). They implement a Rural Development Fund Program which channels funds from the Ministry of Economic Planning and Development via district operating ministries to small-scale projects the DDC identifies on the basis of local needs. In addition, they provide input on priorities and potential specific projects to several ministries' nationwide programs, namely the Rural Water Supplies Programs, the Rural Access Roads Program and the Rural Health Services Program.

*Now two separate ministries.

- 22 For additional GDK statements on district planning, see Republic of Kenya (1971:110-121); Republic of Kenya (1974:5-6).
- 23 Previous input to ministries from districts was often limited to DDC recommendations on siting of projects (e.g., location of a dam), or, at most, on overall funding levels, i.e., requests for more. However, as is often pointed out in the literature on decentralization, it is genuine influence over funding allocation which empowers sub-national units with meaningful planning capability. It is only when there is assurance that funding will be forthcoming that detailed district planning seems worthwhile.
- 24 There is an additional advantage in having the AIE at the district and that is surety of control over funds. In some ministries, provincial level officers have considerable discretion over a pool of funds shared by districts. It sometimes happens that when a district applies for its share of these funds, it finds that they have been diverted to another district to meet some emergency need.
- 25 An obvious question is why AIEs have not been issued directly to districts elsewhere. A partial explanation is that without an effective means of carefully monitoring all payments made, the system is open to abuse. In MIDP there are mechanisms whereby both the MPO's office and the District Commissioner's office carefully check that all expenditures are legitimate (see Appendix IV). Reimbursement procedures involve further checking by the donor. Perhaps most critical though is the on-site presence of the MPO's office in which all payment vouchers are scrutinized. Because this office carries out this function, ministries have greater confidence that funds are being properly expended than they would if such an office did not exist.
- 26 The allusion to the realm of the ethereal is intentional. As Chambers (1974:25) points out, much of the clamor about integration suffers from a lack of specifics, "These two words (integrated and coordinated) have done grave disservice by allowing vague thinking and by discouraging identification in detail of certain important and potential benefits."
- 27 Water is given special prominence in light of the MIDP strategy of orienting soil conservation efforts around an earth dam -- see Appendix II.
- 28 An initial project design document submitted to the donor was, for example, rejected for funding because it was not "integrated enough."
- 29 Honadle et al. (1980:30) quote a distinction between integration and coordination made by Morris and Leschier which is useful here, "Integration...mean(s) that action which brings previously separated and independent functions and organizations (or personnel, or

resources, or clientele) into a new, unitary structure; whereas coordination...describe(s) various efforts to alter or smooth the relationships of continuing, independent elements such as organization, staff and resources." MIDP line officers are mid-way along the continuums represented by each of these definitions. They are part of a "unitary" MIDP structure but at the same time operate to some extent independent of it.

- 30 This dilemma of competing demands is illustrated by the following paraphrased comment of one officer concerned with soil conservation, "I am rewarded by my ministry for achieving physical targets. When coordinating with other ministries, things don't move as fast and the results are often less 'visible'. Therefore my superiors evaluate me as having performed poorly."
- 31 The MPO has a rather insightful way of referring to himself as the "left arm" of the DC.
- 32 An unfortunate early loss to MIDP (though common in this type of project) resulted from the departure of the first Planning Officer for advanced academic training. A very capable, energetic Mkamba from Machakos District, his contribution to the "start-up" planning process and solicitation of local level input was a significant factor contributing to the project's favorable beginnings.
- 33 The issue of what constitutes appropriate project boundaries is a common one in the IRD literature both in terms of overall project boundaries as well as with regard to appropriate sub-project administrative units for implementation. See Cohen (1979:77-78); also, Ahmad (1975:136). Since administrative, especially sublocation, boundaries tend to follow rivers in Machakos, there is a certain degree of overlap of physical and administrative units in some but not all cases.
- 34 A cynical interpretation is that since these budgets utilize "grant-in-aid" funds the Government employs less stringent criteria in determining what will be approved. A more charitable explanation is that Government has now had enough experience to know that MIDP submissions are based on sound planning and implementation practice. In short, the confidence Government extends has been earned. In any event, the contrast between current MIDP practice and the earlier "shopping list" approach (lists which were usually ignored by central planners) to district planning described by Chambers (1974:140-141) is quite dramatic.
- 35 Even rarer as Cohen (1979:41) points out are attempts to go beyond specific examples to articulate organizational principles which are applicable across a number of IRD settings.

- 36 While it was thought desirable that farmers complete all soil conservation work on their farms prior to receiving credit, two factors worked against strict adherence to this rule. It would have meant that one and perhaps two seasons would have passed before this work would have been completed. This would have meant not only that the credit program would have been at a standstill during this period but also that important gains in productivity (as a result of credit inputs) would have been forfeited. Secondly, this would have sorely taxed MOA's supervision capacities. In fact, it simply would not have had the resources to check on every farm involved to ascertain that the work had been completed satisfactorily.
- 37 The sheer problem of geographical coverage on this scale could have resulted in the entire life-of-project funding and manpower allocations for some project components being exhausted in one operational area alone.
- 38 This example affords an opportunity to comment on several dimensions of the term integration as used in the literature. Typically integration has a functional connotation -- one activity linked to another in terms of the "work" involved. Physical integration refers to the proximity of activities within some given geographical boundary. Still another sense is a diachronic one in which activities may be coordinated in some functional way but also sequentially across time, e.g., MIDP dam catchment activities. Any one or combination of these meanings may apply depending on the context.
- 39 This is essentially the point Ruttan (1975:16) makes when he argues, "It is important to rural communities that...activities and services be simultaneously available, but not necessarily administratively integrated."
- 40 The motivation underlying this "moderated" approach is well stated by Ahmad (1975:141), "The objective of integration is not to maximize coordination among administrative structures but to seek practical solutions" (emphasis added). Or, from Chambers (1974:25), "Coordination and integration should be optimized, not maximized."
- 41 Many district level implementing officers in other districts undertake little in the way of coordinated activity. Failure to do so forfeits opportunities to obtain maximum benefit from scarce resources, e.g., MOA and MOCDD field personnel often work in isolation of one another.
- 42 Recently Government invested considerable effort in producing district five-year development plans (see Delp, 1980). These plans, with varying degrees of sophistication, set forth broad overall objectives and strategies for interministerial coordination over the plan periods. MIDP is, by comparison, a significant improvement on this process because far more detailed work plans are specified, revised and implemented on an annual basis.

- 43 The "voluntaristic" nature of the MIDP project management model also contains its problems in this regard. The necessary task is to persuade and to provide incentives for implementing officers to work closely together until they themselves are convinced of the benefits of this approach. Pressure for too much "product" before the rationale is internalized could drive them in the opposite direction.
- 44 A particular problem exists at the lower district field staff levels. For example, even where district MOA and MOCD heads try to coordinate their programs as much as possible, locational and sublocational personnel may simply be unable to do much to help each other. MOA extension agents may not have transport which enables them to supervise and advise MOCD loanees.
- 45 Uphoff, Cohen and Goldsmith (1979:303ff), in their analytical framework for thinking about rural development participation, distinguish between the kind of participation, who participates, how participation occurs, and in what context. Using some of their concepts and terminology, and speaking in broad generalizations, MIDP can be described as follows: "Local residents" participate in "material" and "social" "benefits" individually and/or collectively on a "voluntary" basis as a result (primarily, though not exclusively) of "inducements initiated" by the project ("from above"). "Local leaders" participate in "decision-making", "implementation", and "benefits" ("material", "social", and, especially "personal") on the basis of both "voluntary" and "coercive" "inducements initiated" by the project and elsewhere in GOK ("from above").
- 46 Cohen and Uphoff (1977:33-35) argue that an important form of participation is in "initial decisions" at the design stage. It should be noted that local input from Machakos in the design of MIDP occurred primarily in the form of requests from MEPD for suggestions from district level officers concerning priorities the project should address. (An interministerial team organized and directed by MEDP produced the design document.) MEPD complained at the time of a lack of response to these requests. Thus, the design process was primarily carried out in Nairobi, except for a number of field trips to the district by the design team, with minimal district and virtually no subdistrict local level input (though the DDC did periodically review design documents). Partly, though not entirely, this was due to pressure from the donor for an acceptable project design document with which to begin the program by a certain time.
- 47 The problem of urgency is compounded by the problem of project complexity. Complex projects inherently contain more problems, competing for management's attention and squeezing out time available for fostering participation.
- 48 Technical assistants do file reports as required. But the incentive structure which they respond to is somewhat different than that of

their Kenyan counterparts. E.g., TAs are subject to disciplinary measures if there is general consensus on the part of the MPO, MEPO and the operating ministry concerned that a TA is not performing well (see n. 17). While the MPO can complain (usually via the DC and DDC) to an individual ministry about a Kenyan officer, it is only that ministry's Nairobi headquarters which can take action. Moreover, the MPO would be very hesitant to do this since his success is mostly dependent on his ability to ensure by persuasion an atmosphere in which cooperative efforts can take place.

- 49 A major factor inhibiting "impact analysis" derives from the fact that MIDP benefits are of diverse types and are also geographically widespread. How does MIDP evaluate the welfare implications for individual households of the credit program versus that from localized subcatchment soil conservation efforts versus the impact of the rural workshops? Do each of these merit a separate evaluation effort and if so in what detail and at what cost? It is these types of considerations which make evaluation of IRD projects so problematic.
- 50 One of the TAs raised an important point on this matter. He pointed out that TAs do not work under the same constraints as do their counterparts. The Kenya civil service, like many elsewhere, is quite hierarchical with careful adherence to the instructions of one's superiors a cardinal principal. Rewards are given for carrying out narrowly defined tasks well. This atmosphere does not encourage initiative and risk-taking and thus does not build up an officer's capability to assume a wide range of responsibilities. TAs, moreover, while under the supervision of the ministry within which they work, do not have a long term stake in the bureaucracy. They spend only brief time in it and then are gone. Thus, they are often much bolder in their willingness to deploy resources, try new approaches, etc. They fail to recognize that similar actions by their counterparts involve a substantial degree of professional risk if and when there are failures.
- 51 It also makes even more difficult acceptance of the need for technical feasibility studies. Projects very quickly come in for the criticism that they exist only for the purpose of planning, not for providing concrete benefits to rural people.
- 52 For example, in a survey of heads of households in four sublocations of the first MIDP "operational area," water was most frequently mentioned as the thing they wanted MIDP to provide their area. See Part II of this report, Chapter VIII.C.
- 53 This may not always be the case, however. See Part II, Chapter VIII on the relative importance of non-farm income.
- 54 This, however, is not an unqualified argument. For example, feeder roads and other marketing channels may be necessary before farmers are able to participate in the money economy.

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- 55 MIDP's history is one of learning how to deal with such phasing questions. As previously indicated in IV.8.1.a above (also see n. 36), an early attempt to insist that soil conservation efforts on individual farms predicate credit receipt had to be abandoned as organizationally unrealistic. Similarly the soil conservation strategy was completely revamped to make water development dependent upon previous soil conservation efforts organized on a subcatchment basis. To the extent that such issues can be anticipated during project design, the less time and resources lost to this type of learning process.
- 56 A dominant consideration in choosing the first operational area was ease of administration during the early stages of project life -- ready access to Machakos Town, existence of a basic road network, etc.
- 57 These components would appear to represent what Cohen (1979:91) labels "generic sets" of activities which "naturally" fit together. They are "natural" since "...they share functional objectives which can best be reached when they work in concert..." i.e., they have a "required interdependence."
- 58 A distinction must be made between components which are included (i.e., are simultaneously available) in an IRD project on the basis of specific benefits they in and of themselves provide recipients as opposed to those components which, in conjunction with other components, achieve certain complementarities (i.e., are carefully coordinated activities). Both types play a valuable role in IRD projects. However, the latter necessitate more concerted organizational efforts to insure coordinated planning and implementation. The MIDP operating principle offers a useful guideline here -- only where clear technical complementarities exist, where the impact of one activity is strengthened by its coordination with one or more others, should detailed integration linkages be sought. However, just because such complementarities do not exist is not justifiable reason to exclude a component. For example, a health component could provide benefits to project recipients even though it was not specifically coordinated, in terms of service delivery, with other components.
- 59 Such results are by no means axiomatic. See Chambers' (1974:25) criticism of those who too easily regard integration and coordination as automatic benefits without realizing they may entail greater costs than alternative approaches yet be less effective. The advantages of an integrated organizational structure are realized only when that structure is kept "trim", when the organizational energies (staff time, paper work, management input, etc.) devoted to integration efforts are limited to the minimum required to achieve project objectives. MIDP "lessons learned" have largely had to do with discovering which organizational procedures are and are not essential in this regard.

- ⁶⁰Cohen (1979:52) calls attention to the fact that vertical integration is as important to IRD success as horizontal integration. As the earlier discussion of MIDP illustrated, specific responsibilities -- district level budgeting, disbursement capability -- devolved from the center greatly enhance local ability to effectively pursue project objectives. As an example of where central support was not forthcoming, Chambers (1974:21) cites central government failure to release funds on time as a major reason for poor project performance in the Kenya Special Rural Development Program.
- ⁶¹The need for central support of projects in semi-arid regions is particularly critical given the usual minimal levels of staff and other resources in these areas. Nonetheless, it must be conceded that IRD can provoke line agency competition at the center which can in turn cripple interministerial cooperation at the local project level. However, if such rivalries can be avoided, it is the case that at the subnational level it is usually easier for line officers to agree upon and effect specific integration activities than would be the case between ministerial headquarters.
- ⁶²See Honadle, et al. (1980:47-50) for a discussion of alternatives for "organizational placement" of project management in IRD. One major advantage of using the subnational administrative structures is that it builds upon existing government channels. See Cohen (1979: 56-58) for a discussion of the problems of a management unit separate from established government structures.
- ⁶³For a general discussion of additional dimensions of this process of building up local self-sustaining organizational capacity to pursue project goals, see Honadle, et al. (1980:183-192).
- ⁶⁴The requirement is not for anything more than elementary planning capability. But an essential criteria is that planning proposals be "reasonable", that is, administratively feasible within cost, staffing, time, resource, etc. constraints. If plans are simply unrealistic, then integrated implementation obviously becomes impossible.
- ⁶⁵This is also a function of the fact that IRD projects are almost by definition (1) complex, and (2) large scale. There are certain inevitable consequences which this implies, not the least of which are problems of replicability and host government assumption of recurrent costs. For a discussion of pro and con arguments concerning the issues of size and complexity in IRD, see Honadle, et al. (1980:39-42).
- ⁶⁶It is perhaps on this point that MIDP, despite its many achievements, is most subject to question. There is as yet no clear evidence that a commitment to the overall MIDP approach is developing on the part of a significant number of district level officers. In part this is due to the fact that officers are usually subject to frequent changes

in posting and therefore do not have a long term vested interest in the program. But it must be conceded that it also indicates that district officers do not yet see the program as their "own", one which they have come to believe in and wish to vigorously promote. A major test of MIDP success will be the extent to which this objective can be achieved.

⁶⁷This discussion may sound perjorative but is not meant to be. Indeed, in some cases it is the TA who is simply not very effective. Moreover counterparts by virtue of their cultural backgrounds have recourse to a set of skills which allows them to accomplish ends in ways TAs typically are unable. Yet a disturbingly recurrent theme in many project post-mortems is the failure not only to teach local counterparts how to run the project administrative machinery but also to motivate them to want to do so.

⁶⁸See Uphoff, Cohen and Goldsmith, (1979:33-58). Also Development Alternatives, Inc., (1975:145-146).

⁶⁹Part II of this report examines both the above general concerns in more detail with respect to MIDP.

⁷⁰A description of the criteria used in selecting these sublocations is found in Chapter VIII.A.

⁷¹Ideally all households should have been enumerated but it was felt this would have been too great an imposition on the assistant chiefs involved.

⁷²All data collected, however, have been provided to MIDP in frequency distribution form.

⁷³Readers familiar with Kenya census data may find this figure rather high. One explanation is that census figures exclude members of a household who are not resident in the household at the time of enumeration whereas such members were counted in this survey. A second lies in the definition of "subunit" used in delineating what constitutes a household -- see the following footnote.

⁷⁴The Kenya Central Bureau of Statistics definition of subunit was used: "A semi-autonomous unit within the household usually eating and sleeping independently but still dependent on the holding as a source of income or food" (Republic of Kenya, 1977a:20). While the CBS definition refers primarily to polygamous households, any married couple and their unmarried offspring, other than the head of household and his wife, were considered a subunit in this survey if they conformed to this definition.

⁷⁵The usual caveats must be made about this income data -- the limitations of a "one-shot" survey, problems of memory recall, failure to

capture all income received in kind, etc. Several responses can be made. One, as others have argued (Government of Kenya, n.d.b), households with very limited and infrequent cash sources can usually remember specific amounts of cash income received. In the end, however, one must make an in situ judgement about the ability of respondents to answer the specific questions asked as well as the honesty of these responses. The researcher believes that amount of outright falsification was minimal and that memory recall was not a major problem. Thus the data are believed to be relatively accurate approximations of actual income amounts. Stated another way, it is questionable whether the considerable expense of a more thorough method, e.g., bi-weekly recording, would produce increases in accuracy significant enough to merit the cost involved (not to mention the probable reduction in sample size).

- 76 It is interesting to note, with respect to the previous footnote, that a survey in another semi-arid portion of Machakos District, using a similar methodology but with a somewhat smaller sample size, found a mean 1980 income of 4885 shs. (Government of Kenya, n.d.b).
- 77 It is essential to emphasize here that this income figure refers only to cash from sale of crops. Subsistence crop produce was not valued and could of course constitute a considerable resource available to households.
- 78 The reader should be reminded that extreme values in a distribution can greatly influence measures of central tendency. Thus, if those cases (N = 12/10) which are more than three standard deviations from the mean are eliminated, the mean for crop income falls to 248 (869) shs.
- 79 This generalization is somewhat unfair in that it would likely not be as applicable in dam/soil conservation subcatchment areas where MIDP activities are site specific and involve more locally organized input, especially labor. Indeed, local delegations do visit the MPO to petition for assistance and to discuss potential joint MIDP-local area activities. Nonetheless the bulk of those interviewed, and therefore presumably the general population served by MIDP, feel the program is an external force whose activities are carried on outside the realm of their influence. At most they see themselves as primarily responding to MIDP initiatives. Hopefully, the newly emerging sublocation credit committees (see III.D.4) will change this perception.
- 80 It must be conceded this is a subjective and limiting choice. The welfare impact of better access to water, for example, may be more highly valued by MIDP recipients than minor increases in income from the credit program.

- 81 Since MIDP credit is a fixed input package with a ceiling on that obtainable, there is no variation in the amount of credit received. Therefore the dependent variable of credit acceptance/non-acceptance is a dichotomous one. This involves violation of basic assumptions in regression analysis. However, there is increasing evidence that use of a dichotomous dependent variable in regression analysis produces fairly robust results. Thus, the decision was made to proceed with this technique rather than to opt for some variant or Logit or Probit analysis which is more complex and expensive.
- 82 It should be noted that both samples are smaller in size than originally reported. This results from the removal of "outliers" from each. While a certain amount of skewness is to be expected in income variables, examination of the land area, remittances, off-farm income and crop income variables indicated the presence of a number of extreme values. For example, most of the abnormally high values for off-farm income were cases of rural based teachers whose incomes were considerably above the rest of the sample. While it is undeniable that these outliers represent a "real" phenomenon and are not simply the result of measurement error, their presence in the data has a disturbing effect both substantively and statistically. For example, the salaries of the rural teachers mentioned above have an influence on the mean and standard deviation for OFFFARM quite disproportionate to their absolute number in the population. In a small sample such as this research involved, their presence can markedly distort results obtained. Moreover, the deleterious effect of outliers on regression analysis is well known. A careful examination of each outlier case was therefore made and those cases which were greater than three standard deviations from the mean were excluded from the analysis. This somewhat arbitrary rule was tempered by substantive judgements on the degree to which each individual case constituted genuine abnormalities. Finally, the land quality variable was removed from the analysis because of very low correlations with all other variables in the analysis, including the dependent one.
- 83 The peculiar negative relationship of credit acceptance to livestock ownership requires comment. One explanation lies in a different view of livestock than the conventional one which sees them as indicative of wealth. In semi-arid areas livestock often take on a somewhat different function than in higher potential areas. They are not treated as productive resources as much as a form of insurance. In times of hardship such as crop failure or drought or when there is a sudden need for cash, an animal or two may be sold to cover this immediate need. Further, livestock in such areas, particularly goats, are seldom cared for on the basis of profit-oriented animal husbandry techniques. Instead they are often left to browse and fend for themselves under the less than watchful eyes of young children. Hunt took this position regarding livestock in Mbere. She excluded livestock from her analysis arguing that they are not treated as working capital or risk capital for crop innovation. Instead she

believes livestock holdings at any one time are more a matter of chance disappearing quickly in times of emergency. Once acquired livestock are rarely sold except when absolutely necessary. Household assets, she argues, are purchased with cash and reflect more accurately past and present purchasing power (1975:20).

⁸⁴It also raises the question whether the MIDP limit of inputs adequate for four acres per household is the best one for controlling access to credit benefits. While it would be administratively very difficult to determine, on an income basis, who is most in need of inputs, it would nonetheless appear that many households are presently receiving the MIDP subsidized inputs when they are also those most able to afford them on a cash basis.

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APPENDIX I -- BRIEF OVERVIEW OF MIDP CREDIT PROGRAM

The MIDP credit program consists of two components. The first, a food crop package loan, is designed to assist farmers who would normally be unable to purchase inputs. The inputs are for:

- 1) Cotton and/or sunflower
- 2) Maize
- 3) Beans

Since the latter two crops are primarily subsistence crops, the loan package is designed so that income from cotton or sunflower, upon sale of these crops (solely to the cooperative society), covers the costs of inputs for both food and cash crops and hopefully results in some surplus income as well (after the costs of inputs have been deducted from monies paid to the farmer by the society for his cash "anchor" crop(s)).

Conditions which govern receipt of the loan are: (1) the loanee must be a member of a cooperative society; (2) he/she must have no outstanding debts to the society above 150 shs.; (3) no one household can receive a loan for inputs covering more than that necessary for four acres; (4) farmers may take a loan for less than four acres but at least half the area must be for a cash crop (cotton and/or sunflower); (5) the smallest area for which a farmer can receive a loan is two acres of which one acre must be cotton or sunflower and one acre maize or beans. In addition, farmers selected by societies for loans are only given inputs if they attend an MIDP training course on farm management and crop husbandry.

It should be noted that title deeds are not required for a farmer to receive a loan. It can be seen, therefore, that this loan package is clearly designed with less well-off, smallholders as intended recipients.

A second component is the cotton credit program in which farmers can apply for credit for cotton insecticide only. This program was not foreseen in the original MIDP design. However, the decision of the Kenya Cotton Seed and Lint Marketing Board (CSLMB) to discontinue cotton credit in 1979 would have resulted in widespread loss of income in Machakos District. MIDP therefore assumed the financing and administration of a cotton credit program and also began to act as a buying agent for CSLMB.

Farmers apply for credit for insecticide, the cost of which (payable within nine months of receipt), is deducted upon the sale of cotton to the cooperative society. The four acre limit but not the training requirements of the food crop package loan also apply to this program.

A farmer can not participate in both the crop package and cotton credit program. In addition, any cooperative society member can purchase any input on a cash basis. (35 percent of the total inputs supplied were sold on a cash basis for the short rains season of 1980.)

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APPENDIX II -- BRIEF OVERVIEW OF MIDP APPROACH TO SOIL CONSERVATION

Guiding Principles

MIDP employs a "total catchment" approach. Catchment in this case refers to a micro or subcatchment area of the larger operational area. The average size of MIDP subcatchments to date is 7 sq. km. (with a range of 4-10 sq. km.). A catchment approach is utilized for two reasons. One, it is believed that isolated soil conservation activities on individual shambas are relatively ineffective in combating erosion compared to a comprehensive set of conservation activities organized within a given micro drainage area. Second, given MIDP's commitment to integration of sectoral activities, soil conservation work is usually undertaken in subcatchments where earth dams will subsequently be sited (but occasionally also in "non-dam" catchments).

Strategy and Activities

The MIDP soil conservation effort begins with a series of barazas (traditional public gatherings) to get local understanding of and commitment to the tasks involved. A critical aspect of this process is to explain that the work transcends individual farms, i.e., the total catchment approach. A plan is then produced by MIDP outlining in general terms what MIDP will contribute and what farmers must contribute, both on their individual shambas and collectively. If general agreement is achieved, then a survey of farms is carried out which specifies the total tasks expected of each farmer and of groups -- cut-offs, terracing, etc. If after this step all parties are still in agreement (formalized in writing), the program moves forward.

In general, a three-year effort is envisioned in a given subcatchment. A fundamental working principle is that soil conservation activities should not take farmers away from normal production activities. Thus, the timing of conservation work is tied to the seasonal timetable of farmers.

Principal components of the strategy include terracing, digging cut-offs, afforestation, and pasture rehabilitation, including fodder crops. Year 1 is devoted to construction of terraces and cut-offs as well as afforestation. Year 2 involves gully reclamation and road drainage work. Year 3 is concerned with "finishing touches" completion work. Concomitant with these activities, in every subcatchment MIDP operates two one-acre pasture reclamation demonstration plots. These plots are fenced by MIDP in exchange for a farmer's commitment to not graze the plot for three years.

Training

MIDP has hired 40 soil conservation supervisors. They are Form IV school leavers who are given on-the-job training for one year. Ninety-five percent of this training is very practical in nature with only a minimum of theoretical input. After a year's training, supervisors must take an MIDP-administered examination. Successful completion of this examination and their field supervision duties result in supervisors being absorbed into the Civil Service structure as employees of MOA.

All day-to-day subcatchment activities are under the direction of these supervisors who are in turn supervised by MIDP headquarters staff. Initially MIDP trained Ministry of Agriculture Technical

Assistants (TA's)* (operating at the location level) in one week sessions. However, it found that these TA's conveyed little to farmers because: (a) TA's have many other duties -- extension, credit supervision, etc., and (b) TA's are subject to all the routine problems of the extension service -- poor morale, etc. MIDP continues to do some of this training and keeps TA's informed of its activities but its primary mode of operation is through its own supervisors.

Recruitment and Payment of Labor

MIDP prefers to use mwethya groups (traditional labor exchange groups) as a labor source so as to build on the existing local organization base. However, where work must be completed urgently, casual laborers are also utilized. In the latter case, the following procedure is employed. All interested labor is registered in a subcatchment in order to: (1) ensure there is adequate labor available; (2) discourage in-migration, and (3) ensure that only the able-bodied are included.

Payment is for "taskwork" in every case except where the work is not readily measured, in which case payment is for "daily work." Payments to mwethya groups are signed for by the assistant chief and group chairperson. Payments are in the form of either: (a) cash, (b) deposits into the group's account to be used for future collective efforts, or (c) payment in kind -- piping, etc. (rarely).

*Not to be confused with expatriate technical advisers.

Payment System

Failure to pay labor in a timely manner constituted a serious setback to MIDP early soil conservation efforts. Critical components of the current more successful system include: (a) submission of monthly muster rolls by MIDP field supervisors, (b) preparation of paysheets and subsequent monitoring of the payment process by MIDP headquarters staff, and (c) development of procedures for insuring that payments, once authorized, are actually made in the field.

Additional Activities

MIDP is carrying out educational campaigns through schools and adult education centers. This primarily involves provision of visual aid materials on soil conservation. MIDP also provides assistance to six nurseries enabling them to produce fodder crop seedlings.

Major Problems

The following represent major constraints the MIDP soil conservation program has had to overcome:

- (a) ensuring that labor is paid on time and in full
- (b) procurement of materials, especially hand tools, due to delays caused by GOK tendering procedures
- (c) lack of promised GOK counterparts (two junior soil conservation engineers promised in the initial project financial agreement)

APPENDIX III -- MAJOR STEPS IN MIDP BUDGET FORMULATION AND APPROVAL

- (1) In late November intersectoral discussions are held between the relevant district operating ministry staff and the MPO's office concerning specific types of interministerial cooperation requiring budgetary coordination. Physical targets and budgets are then specified for individual ministries.
- (2) Discussions of individual ministry's tentative targets and budget are held at a given ministry's headquarters in December (usually two meetings). Present at these discussions are the relevant district head, a representative from the MPO's office, and budget officers of the central ministry. By mid-January district heads forward their final budget submissions to their respective headquarters.
- (3) At this point budget submissions proceed through the normal budgetary review and approval mechanisms in Nairobi at the relevant ministry and then the Ministry of Finance. However, the MEPD Assistant Secretary designated to assist MIDP (see III.A) and link-men provide a useful service of helping to "push through" budgets by acting as liaisons between ministerial budget sections and MIDP district personnel.
- (4) By March or April, individual ministries in Machakos have usually heard (usually by making inquiries) from officers at headquarters on the "success" of their submissions. Formal notification, however, is received when the Development Estimates are printed in June. Two things happen at this point. (1) If necessary (rarely), district heads may, with MPO support, approach their Nairobi

headquarters and try to renegotiate funding levels they asked for but did not receive. (2) If district budget submissions were approved as submitted, it is at this point when funding levels are certain that detailed time schedules for implementation are prepared.

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APPENDIX IV -- STEPS IN MIDP PAYMENT PROCESS*

- (1) After annual budget approval, the EEC advances 25 percent of the EEC funded total MIDP budget to the Ministry of Finance to be used as working capital.
- (2) At the beginning of each financial year, each ministry sends one sixth of its budget to the Machakos District Treasury to be used as a working imprest.
- (3) The Authority to Incur Expenditure is issued by Accounting Officers of individual ministries to their ministries' implementing officers in Machakos.
- (4) Payment vouchers are prepared by an implementing department, signed by the implementing officer (AIE holder), and forwarded to the MIDP office.
- (5) Assuming the voucher is for a legitimate reimbursable expenditure, it is endorsed by the MPO and then taken by the MIDP accountant to the District Treasury. The District Treasury pays the voucher, writes the check number on the voucher and sends the voucher back to the MIDP accountant.
- (6) The MIDP accountant photostats the voucher and supporting documentation, then:

*Mention should also be made of one additional payment mechanism. There is a provision whereby, according to the terms of the Lome agreement, an EDF National Authorization Officer can approve direct payment for certain items. Whereas normally all expenditures must come out of a ministry's budget, in this special case the normal procurement and payment procedures may be shortcut to acquire urgently needed specialized types of equipment or services.

- (a) takes the original voucher to the MIDP implementing ministry's Nairobi headquarters for disbursement. The implementing ministry, upon presentation of the voucher, issues a check to the District Commissioner and gives this check to the MIDP accountant who in turn forwards it to the District Commissioner.
- (b) presents photocopies of the voucher and documentation to an EEC representative who visits Machakos on a monthly basis to check these and authorize reimbursement (to the External Aid Division, Ministry of Finance which in turn reimburses the ministry concerned).

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