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G-7



CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

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SWAZILAND

RURAL DEVELOPMENT AREAS INFRASTRUCTURE SUPPORT PROJECT

AN EVALUATION

The Project Is a Cooperative Activity

between

The Ministry of Agriculture and Cooperatives,  
Government of Swaziland,

and

The United States Agency for International Development.

The Evaluation Was Performed by a Team

Provided by the Consortium for International Development.

August 30, 1983

Mbabane, Swaziland

# The Swaziland RDA Infrastructure Support Project: An Evaluation

## Executive Summary and Recommendations

- I. Background: The Rural Development Area (RDA) Infrastructure Support Project undertakes to construct selected infrastructures and to develop institutions capable of continuing to provide and improve the infrastructure which is vital to the Swaziland RDA Program. The RDA Program is the keystone in the Government of Swaziland's (GOS) strategy to increase income and improve the general standard of living for the Swazi people residing on the Swazi Nation Land. Since the project was initiated in 1978, the RDA Program has expanded greatly. Today, there are 18 RDAs on which 26,566 homesteaders reside with an average family size of 8.2. They are the direct beneficiaries of the Project. Assistance for the RDA Program is provided to GOS by a consortium of aid donors and international agencies. The Infrastructure Project is USAID's major contribution.

The project began in 1979 and ends in 1984. The program goal, project goal, and project purposes, as stated in the Project Paper (PP), are the key economic objectives for the total RDA Program. The project cannot be evaluated except in terms of the success of the total RDA Program. Success in the project, according to the logical framework, is measured in terms of whether the RDA Program increases agricultural production.

- II. Major Findings: The RDA Program is a sound approach to rural development, but agricultural production has not increased as anticipated and there are some problems which need attention.

The major good aspects of the RDA Program are that it involves the people in planning, it is responsive to their perceived needs, the standard of living is rising in the RDAs, and it is successfully bridging the gap between the traditional and the modern sub-sectors of Swazi society.

The major reasons for agricultural production lagging behind projections in the PP are the severe drought of the past few years, the lack of adequate economic incentives (including marketing and policy), and lack of confidence on the part of homesteaders in the packages of practices which extension workers recommend. The Extension Service, perceived in the PP as being the key to RDA success, has made good progress, but the shortage of packages of practices which are responsive to RDA homesteaders' perceived needs is a constraint for it. Also, homesteaders

who want to make their entire living from farming have difficulty getting access to an adequate amount of land.

The evaluation team found that the RDA Infrastructure Support Project is contributing greatly to the RDA Program and the achievement of the goals GOS has in mind for it. Unfortunately, the project design is weak because of the narrow and highly restricted statements of program goal, project goal and project purposes, and the correlary objectively verifiable indicators in the logical framework. The criteria for evaluation do not do justice to the project. Also, the project inputs have little relationship to increasing production, especially in the short term.

The setting has changed since the project was initiated, but it remains vital to the RDA Program. Revisions in the project are needed.

The Project Paper calls for the Infrastructure Project to provide two specific types of activities for the RDA Program:

1. Infrastructure Construction of terraces, access roads, waterways, domestic water systems, dams, etc.; and
2. Institution Building, namely the Land Use Planning Section (LUPS) and the Land Development Section (LDS) of the Ministry of Agriculture and Cooperatives (MOAC).

USAID's planned inputs for the project are approximately 60 person years of technical assistance, 32 person years of long-term training, 5 in-country training courses, construction of 10 houses and a parts warehouse, a small amount of commodities, and loan funds for equipment purchases. GOS planned to provide equipment support (partially financed by the loan from USAID), maintenance and repairs, and salaries and wages valued at approximately \$12 million.

After a slow start, good progress was made on construction for several years. Recently, construction has been very restricted because of the serious financial constraints GOS is facing. LDS's operating budget for the fiscal year was almost totally expended within 60 days after its beginning on July 1, 1983.

The setting for the project has changed since 1978, and priorities for construction have quite properly been revised. In the PP, the emphasis in construction was almost entirely on soil conservation, mainly terracing. It has now been determined that terraces are frequently not an economically viable approach to soil conservation, and soil erosion is a much less serious problem than originally thought. There is a much greater need for access roads, safe domestic water supplies, and homesite leveling. LDS

and LUPS have quite wisely revised their work programs to emphasize the revised priorities.

In terms of institution building, good progress is now being made, but the project is several years behind schedule because of delays by USAID and GOS in delivering the inputs. The initial technical assistance team provided by USAID did not arrive until 1980, and then several members had to be replaced. Also, there were delays in the construction of housing, and this delayed the arrival of some of the expatriates. GOS did not create some of the positions in LUPS and LDS on schedule, and there were delays in filling them and getting participant trainees named. The project is about 2 years behind schedule.

LDS suffered the least from the delays, and, with a few exceptions, is in relatively good shape as an institution. The training program has been successful, and well-trained Swazis are available for most of the positions. The workshop is up to the job, and the field crews are performing admirably. To achieve project objectives, LDS needs more time, continued technical assistance for top management, assistance with middle level management training, and additional construction engineers. Internally, LDS has been constrained by some bureaucratic problems and lack of coordination in the design and monitoring of works. The latter problems are either now solved, or implementation of the recommendations will do the job.

LUPS suffered severely because of the delays in input delivery. In August 1983, the USAID team was still one person short, and many of the key Swazi personnel were in training abroad and will not return in time to overlap with the expatriate team currently doing much of the work. Because of the delays, LUPS cannot possibly become the strong organization the project design team envisioned by the end of project. However, a good foundation is in place, and with an extension of the project for at least 2 years, LUPS can become a strong, viable institution, fully staffed with qualified Swazis.

Whether LUPS is playing the best role possible in light of Swaziland's needs is open to question. The evaluation team feels detailed land use planning can best be done close to the farm (homestead), and LUPS should emerge as the unit in MOAC responsible for national level land and water policy guidance, national level planning, standards setting, and program monitoring.

The National Environmental Conservation Education (NECE) program was added to the project by amendment in 1980. The major objective was to develop and institutionalize an environment conservation education program in the RDAs.

The NECE program is behind schedule, but a good foundation has been laid.

### III. Recommendations:

Recommendations are included in the Evaluation Report where they are appropriate.

#### A. Recommendations concerning the RDA Program and USAID's relationship to it:

1. The GOS should continue to make the RDA approach the hard core of its rural and agricultural development effort on the Swazi Nation Land until thorough analyses, which consider the standard of living and political as well as economic considerations, prove conclusively that another approach is superior (page 27).
2. The RDA Program should remain dynamic and should be improved whenever and wherever possible. The five constraints to progress listed in Section V-B-1-b require immediate attention (page 27).
3. In the future, USAID should concentrate its program of technical and other assistance in rural and agricultural development in projects which directly strengthen and foster the RDA Program (page 27). Top priorities are:
  - a. The RDA Infrastructure Support Project (page 29);
  - b. Project(s) which provide extension with economically viable packages of practices which RDA homesteaders perceive as being relevant to their conditions (page 94);
  - c. Project(s) which assist the Extension Service to improve the delivery system for b above (page 96, 97, 98).

#### B. Recommendations concerning the Infrastructure Project

1. Solve the Financial Crisis: Since progress on the project is currently being constrained more by shortage of operating funds than from any other

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\* Figures in parenthesis indicate the page in the Evaluation Report on which the recommendation appears.

cause, the GOS, with assistance from USAID, should find a way to solve the financial crisis (page 29). (Uppermost in the minds of everyone should be to "get the LDS back to work").

2. Amend and Extend the Project: USAID and GOS should, as soon as possible, amend the Pro Ag and/or sign a letter of understanding or project amendment which will:
  - a. Extend the Project for at least 2 years, with 3 years being optimal (pages 29 and 52).
  - b. Take note of the changes in the setting for the project (pages 11-14), and, since the current work programs for LUPS and LDS represent a logical response to the current setting, legitimize them (page 29).
  - c. Revise (rationalize) the program goal, project goal, and project purpose in the logical framework so that they adequately define and describe the project's contribution to the RDA Program and are consistent with what the inputs and outputs of the project can be expected to produce (pages 22-23 and 29).
  - d. Revise the objectively verifiable indicators and targets for program goal, project goal, and project purpose in the logical framework so that they are adequate measures, and, given reasonably good management, will be achieved (pages 22-23). Also, update the inputs and outputs so they are representative of the revised work programs for the LUPS and LDS for the remainder of the project (pages 22-23 and 29).
3. Direct the USAID inputs toward institution building during the balance of the project, and, preferably with a 2-year extension, the technical assistance USAID should provide includes extensions for the current expatriate filled positions so they overlap with the Swazis being trained to fill them, personnel for continued high-level management advisory and mid-level management training assistance, and construction engineers (pages 52-53).
4. Emphasize Training:
  - a. Priorities should be established and personnel identified for use of the remaining training

- funds in the project as soon as possible (page 55).
- b. If the project is extended as recommended, USAID should give highest priority to training, especially for mid-level management. Also, additional construction engineers should be trained (page 56).
5. Improve Coordination: Regular meetings for coordination should be held between leadership in LUPS and LPS, and a high level official in MOAC should monitor the situation.
6. Recommendations for LDS:
- a. Decentralize: If LDS had several decentralized bases of operation and maintenance, efficiency would be improved (pages 30 and 49).
  - b. Give LDS greater responsibility for design work and construction monitoring (page 30).
  - c. GOS should give careful consideration to making LDS a parastatal organization, and possibly combining it with other operations (such as the tractor and machine-hire service) in the process (page 30).
  - d. For the satisfactory continuation of the construction program, it is essential that the services of two USAID contractor construction engineers be provided until after the return of the Swazis who are in training in the United States and additional construction engineers should be trained (page 49).
  - e. In the project extension, USAID should provide continuing support for management, additional construction engineers, and mid-level management and construction engineer/technician training (page 30).
  - f. CTA policies should be changed, and realistic depreciation rates utilized for payment into the sinking fund. GOS and USAID should reach agreement on where the sinking fund is to be held (page 58).
  - g. Space should be made available at the LDS office for the designers to work adjacent to the construction engineers (page 49).

h. If the LDO's office and the maintenance workshop were closer, it would improve supervision and coordination and reduce travel time (pages 49-50).

i. The following should be purchased or provided during the remainder of the project:

(1) Maintenance/Repair Equipment and Tools

Brake drum/roter lathe and tools, dynamometer absorption brake and attachments (for engine testing), and diesel injector calibrating unit (when mechanics can effectively utilize it; at present not experienced enough) (page 57).

(2) Spare Parts

Items needed for essential units of project equipment, especially those which are not available on the local market, and components to use for revolving/replacement stock, i.e., starters, generators/alternators, transmissions, etc. (page 57).

(3) Facilities

Secure, fenced, covered storage for batteries, tires, and lube supplies at workshop; secure areas for computer and safe storage of duplicate record discs; extension of parking area at workshop for service and transport trucks; new LDO office at workshop site; more secure area in parts warehouse for high-value, pilferable items (page 57).

7. Recommendations for LUPS:

a. GOS should give serious consideration to shifting detailed land-use plan preparation to a field office and possibly to an agency other than LUPS (page 31).

b. GOS should give serious consideration to giving LUPS greater responsibility in national planning, land use policy guidance, standards setting, and program monitoring (page 31).

c. The project extension should provide for overlap between USAID contractor personnel and

the Swazis being trained to replace them. Approximately 2 additional years are needed (page 32).

- d. Additional formal and on-the-job training should be provided during the remaining life of the current project and the extension to equip LUPS to operate effectively without expatriates (page 32).
- e. For construction, LUPS should issue planning guides, establish standards, do a better job of monitoring during construction, and have "sign off" authority (page 32).
- f. LUPS should conduct orientation sessions and workshops in which those involved in planning and implementation activities in the RDAs are provided with the basics of good planning (page 32).
- g. LUPS should increase the number of personnel involved in range management programs and increase the number and scope of pilot programs in range management in the RDAs (page 32).

C. Recommendations Concerning Special Programs and Problem Areas:

- 1. NECE: Seven recommendations are made for NECE on pages 75 and 76 of the report. The major recommendation is that NECE should concentrate on preparing a conservation education program attuned to RDA homesteader needs during the balance of the project.

Extension: Twelve recommendations pertaining to Extension are made on pages 96, 97, and 98. Basically, the recommendations call for strengthening the Extension Service, with emphasis on developing and taking to the field packages of innovations which are attuned to homesteader needs and conditions. The role of specialists should be reviewed, and technical assistance in training should be requested and provided by an aid donor.

September 1983

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## GLOSSARY

### Swaziland RDA Infrastructure Support Project

AAPC	Afro-American Purchasing Company
ADB	African Development Bank
AEO	Agricultural Extension Officer
AIO	Agricultural Information Office
BUs	Bovine Units
CCU	Central Cooperative Union
CID	Consortium for International Development
CPC	Chief Project Coordinator
CRDB	Central Rural Development Board
CTA	Central Transport Authority
DA	Director of Agriculture
DPS	Deputy Principal Secretary
EEC	European Economic Community
EO	Extension Officer (used interchangeably with FO)
LOP	End of Project
ERP	Economic Research and Planning Unit
EW	Extension Worker
FLC	Filed Level Officer
FO	Field Officer (used interchangeably with EO)
GDP	Gross Domestic Product
GOS	Government of Swaziland
IBRD	International Bank for Reconstruction and Development
IFB	Invitation for Bid
IIE	Institute of International Education

## GLOSSARY (Cont'd)

J-D	John Deere
LDC	Local Development Committee
LDO	Land Development Officer
LDS	Land Development Section
LFER	Logical Framework Evaluation Reference
LUP	Land Use and Planning Section
MOAC	Ministry of Agriculture and Cooperatives
MOE	Ministry of Education
MOW	Ministry of Works, Power, and Communication
NECE	National Environmental Conservation Education
NRDA	Northern Rural Development Area
OCSC	Overseas Construction Services Company
ODM	Overseas Development Ministry (United Kingdom)
OSARAC	Office of Southern Africa Regional Activities Coordination
PAR	Project Appraisal Report
PID	Project Identification Document
PM	Project Manager
PP	Project Paper
Pro Ag	Project Agreement
PRP	Project Review Paper
PS	Principal Secretary
RDA	Rural Development Area
RDAs	Rural Development Areas
RDA ME	Rural Development Area Program, Monitoring and Evaluation Unit
RDO	Rural Development Officer

GLOSSARY (Cont'd)

RSA	Republic of South Africa
SAMDP	Southern Africa Manpower Development Project
SAO	Senior Agricultural Officer
SCOT	Swaziland College of Technology
SEO	Senior Extension Officer
SNL	Swazi Nation Land
SRDA	Southern Rural Development Area
TA	Technical Assistance
TCC	Trans-Century Company
T&V	Training and Visit (System)
USAI	United States Agency for International Development, Mission to Swaziland
USAID/W	United States Agency for International Development, Washington, D.C.

## I. INTRODUCTION AND EVALUATION PROCEDURES

The Swaziland Rural Development Areas Infrastructure Support Project (645-0068) is a cooperative venture between the Government of Swaziland (GOS) and the United States Agency for International Development (USAID). A mid-project evaluation was anticipated in the Project Paper (PP) and Project Agreement (Pro Ag), and USAID contracted with the Consortium for International Development (CID) to provide a four-person team to do the job during August 1983. The evaluation is slightly later than mid-point in the project because there were some problems early in the project which made a delay appropriate.

A scope of work for the team was included in the contract between USAID and CID. The scope called for the team to use the logical framework in the PP as the primary point of reference and to prepare a report covering eight specific points. Briefly, the team was to review the effectiveness of the overall Rural Development Area (RDA) Program since the project is intended to contribute to its success, review the project purposes and outputs to determine whether they are contributing as anticipated to the RDA Program goals, examine the operations of the project to ascertain the adequacy of the quality of inputs provided by USAID and timeliness of their delivery, and recommend improvements for the future. Section VII of this report either responds directly to each of the eight points or cites where it is covered.

Upon arrival in Mbabane, the USAID Evaluation Officer informed the team it would be very desirable for them to follow the guidelines for project evaluation found in chapter 12 of USAID Handbook 3. This report is keyed to the major sections of appendix 12B of the Handbook, which provides the guidelines applicable to an evaluation of the type and scope requested by USAID.

The team, all with considerable experience in Africa, included the following:

Dr. Merle Niehaus--Agronomist; Professor and Head, Department of Agronomy, New Mexico State University.

Dr. Thomas Trail--Extension and Rural Development Specialist; Professor of Adult Education and Staff Development Specialist for Extension, Washington State University.

Mr. Clark Spooner, P.E.--Agricultural Engineer; Consultant and Retired USAID Employee.

Dr. John L. Fischer--Agricultural Economist and Team Leader; Executive Director, CID.

The team members met with many representatives of the Government of Swaziland and USAID. They worked closely with the Acting Senior Land Use Planning Officer in the Land Use and Planning Section (LUPS) and the Land Development Officer (LDO) in the Land Development Section (LDS) of the Ministry of Agriculture and Cooperatives (MOAC). They met with all of the project personnel provided by USAID and traveled extensively, visiting the central facilities for four RDAs and viewing parts of seven. They interviewed numerous aid donors and international agency and private sector people. Many reports, studies, and project documents were reviewed.

Before leaving Swaziland, the team members made oral presentations and discussed their findings and recommendations with the Deputy Principal Secretary (DPS), the Director of Agriculture (DA), and the Head of Extension in the MOAC; with USAID; with the Acting Senior Land Use Planning Officer; and with the Land Development Officer. This report is viewed as being supplementary to the messages communicated in these meetings.

## II. BACKGROUND AND DESCRIPTION OF THE PROJECT

### A. Background

The Rural Development Areas Infrastructure Support Project<sup>1</sup> (645-0068) is a joint undertaking between the GOS and USAID. The general purpose of the project is to construct selected infrastructures and to develop institutions capable of continuing to provide and improve the infrastructure which is vital to the success of the Swaziland RDA Program.

In the Infrastructure PP, the project was recognized as being only a part, albeit a vital one, of the RDA Program of the GOS. The economic feasibility and social analysis in the PP were based entirely on benefits the total RDA Program will produce. No attempt was made to determine benefits apart from the total RDA Program. There were no "with and without" projections for the project.

The RDA Program is the keystone in the GOS strategy to increase incomes and improve the general standard of living for Swazi people residing on the Swazi Nation Land (SNL). The RDA Program dates from 1970 when the GOS, with assistance from the United Kingdom, initiated a pilot RDA project. By 1974, there were four Rural Development Areas (RDAs) in the scheme, covering 6 percent of the Swazi Nation Land.

The basic ingredients in the pilot RDA project were consistent with the state of development art in the early 1970's. The project was well received by the GOS, and, by the mid-1970's, the GOS had decided to make the area development approach the hard core of its national rural sector development strategy. At that time, the GOS asked aid donors to assist it in expanding the RDA Program.

The RDA Program of 1983 is different from that of 1977, 1974, or 1970. Quite properly, it has been revised as conditions have changed. However, there are certain aspects which are fundamental, and must be taken into account in any fair and meaningful evaluation of the RDA Program. They are:

First, the RDA Program is basically an institution builder.

In the past, the structure of Swazi society and the economy have been sharply dualistic, with what is called "traditional" and "modern" components. In the mid-1970's, the modern subsector of the economy, representing about 30 percent of the people,

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<sup>1</sup> Hereafter, the term Infrastructure Project is used to designate the GOS and USAID activity covered under AID Project 645-0068.

contributed about 86 percent of Gross Domestic Product (GDP); and the traditional subsector, representing about 70 percent of the population, only about 14 percent of the GDP. The disparity in productivity, hence real incomes between the two subsectors had to be reduced if, in the long run, a stable social and economic structure were to emerge.

The governing mechanism for the RDAs bridges the traditional governing establishment and the modern governmental mechanism. Decision making is shared, with the traditional values being protected while the people are increasingly immersed in a modern, market-oriented economy. For example, one objective is to shift the Swazi homesteader from subsistence to semi-commercial and commercial agriculture through the development of institutions socially acceptable to the people. The RDA Program is front and center in Swaziland's nation-building effort. It links the government to the people and vice versa.

Second, the RDA Program involves the area approach to planning, and it takes into account all of the factors which must be considered if this approach is to work.

In establishing an RDA, the following four factors are considered: (1) Natural resources (RDA boundaries are normally based on watersheds), (2) the economic base, (3) social criteria, and (4) political groupings. By taking into account all of the above, RDA Program avoids many of the pitfalls inherent in other approaches to planning.

Third, the RDA is an ideal management unit for the delivery of GOS programs intended to foster national economic and social progress.

The RDAs are decentralized and close to the people. In most other developing countries, there is a tendency for the central government to exert ever increasing control over local affairs and to resist decentralization. In Swaziland, decentralization is taking place.

Fourth, the various parts of the RDA Program are so interrelated that they can rarely be viewed as independent variables and evaluated apart from the total program.

The RDA Infrastructure Project is a good example. The project does not generate benefits per se. It supports and facilitates the RDA Program, thus the "success" of the project hinges on the "success" of the RDA Program.

In 1977, a consortium of aid donors responded to the requests of the GOS for additional assistance to the RDA Program, and, thereupon, it entered a new phase. The objective was to increase the territory of the Swazi Nation Lands, the percentage of the territory covered by RDAs, and the number of RDAs. RDAs were to cover approximately 50 percent of the Swazi National Lands by 1983 and the number of RDAs was to be increased to 18. USAID was one of the donors in the consortium, and the Infrastructure Project was its contribution.

While the RDA Program is dynamic and has changed over time, an understanding of its content at the inception of the Infrastructure Project is a necessary prerequisite to a good evaluation of the project. For example, the benefits cited in the Infrastructure PP and used as a justification for the project are based on the program as it existed in 1977. The RDA Program, circa 1977, was as follows:

1. Suitable blocks of arable land are separated from grazing land. The arable land is protected against erosion by appropriate structures (terraces, grass strips, grassed waterways, etc.) and by agricultural management practices (strip cropping, crop rotation, etc.).
2. Grazing land is fenced from arable land so herds may be grazed with minimal supervision. Appropriate range management practices are sought to minimize grassland degradation and increase economic returns from livestock.
3. RDA centers are developed for administrative offices, staff housing, mechanization pool workshops, and cooperative marketing. The center becomes the hub of the RDA, from which administrative, marketing, and extension services radiate. The RDA must not be so large that access from the most distant point is difficult.
4. Roads are planned and locations established for schools, clinics, churches, and other central services.
5. Families are gradually encouraged to resettle in homesteads in closer proximity along the boundaries between arable and grazing land. The intent is to simplify the management of the lands used by each homesteader and to make it easier to provide access to central services and water supplies.
6. Safe domestic water supplies are planned for project centers and expanded by piping water to the vicinity of homesteads.

7. Small dams and reservoirs are constructed to provide water for livestock and to provide about 1 acre or less of irrigated vegetable garden per family.
8. Access roads within RDAs and feeder roads to the national highway system are constructed.
9. Each RDA has a complement of extension personnel to improve farming, marketing, and domestic science. Increased extension activity and consolidation of fragmented holdings permits farmers to utilize their land more effectively. Greater use will be made of improved seed, fertilizer, and pesticides. Emphasis is on moving from a subsistence to a partial commercial economy.
10. Where wood is scarce, communal woodland plantings are encouraged to provide the community with firewood and building poles.
11. A major supply depot and subsidiary depot are constructed. The Central Cooperative Union (CCU) will eventually take over the marketing of crops and supply of inputs.

The program for each RDA was divided into three phases:

1. The Planning Phase. An RDA is delineated, base data for the area are collected, and a detailed development plan proposed. The local people, through their chiefs, participate with technical agencies such as the LUPS and the Extension Department in preparing the plan.
2. The Minimum-Input Phase. A minimal package of inputs and services are introduced to initiate the process of increasing crop and livestock production and improving marketing operations. Among the inputs at this stage are improved seeds, fertilizer, and equipment; improved husbandry standards; construction of access roads; an RDA center and demonstration plots; and provision of extension and cooperative staff.
3. The Maximum-Input Phase. This phase completes the RDA development process by introducing greatly improved technology, intensive cropping, soil conservation, and improved rural infrastructure and social services. These efforts are based on detailed land use plans developed during the preceding phase.

The Infrastructure Project, which encompassed USAID's contribution to the expanded RDA Program beginning in 1977, was based on USAID's experience dating back to 1971 and careful study. In 1971, USAID made a \$2.2 million loan to purchase the heavy equipment needed to support the RDA pilot project launched

by GOS with United Kingdom assistance in 1970, to equip a demonstration ranch in the highveld, and to assist an intermediate term agricultural credit scheme. Major emphasis was on the construction of soil conservation structures, civil engineering, and infrastructure construction necessary to the RDA Program.

In 1972, USAID made a \$1.8 million technical assistance grant for technical services closely related to the activities covered by the 1971 loan. For example, the grant provided for the construction and equipping of a repair facility for heavy equipment, services of a workshop foreman, and training.

In 1974, USAID fielded an evaluation team to study the above activities and suggest courses of action for the future. The evaluation team found it difficult to evaluate the activities because they represented a collection of "selected inputs" to support the RDA Program rather than being a discrete project. However, the team concluded that such a "bits and pieces" approach could be effective and would be justified if certain conditions were satisfied, i.e., that the host country have:

1. "A sound, well-understood strategy for development," and
2. "The capability to manage (especially coordinate) a complete system, drawing inputs from multiple sources."

With regard to the first point, the team found the RDA Program was a sound strategy for rural development.<sup>2</sup>

The team concluded that the RDA strategy embodied almost every point USAID policies of the time were stressing vis-a-vis small farmers and rural development in general. Furthermore, the local people were very enthusiastic about the program, and it was creating a favorable attitude toward government--an important ingredient in the nation building process.

With regard to the second point, the team found that if the pace of agricultural development in Swaziland were to be quickened, the problem of coordinating activities, which was serious at the time, would become even greater. The team urged the aid donors, with the GOS's cooperation, to revise their systems for programming and to tighten up the management of almost all operations.

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<sup>2</sup> Author's underscore. The term rural development connotes more than the term agricultural development, and was used after much deliberation by the team. The team did not view the RDA Program as being one which should be evaluated solely in terms of increased agricultural production or productivity.

Before initiation of the Infrastructure Project, the Office of Southern Africa Regional Activities Coordination (OSARAC) conducted a study and concluded that between 1974 and 1977, considerable progress had been made toward solving coordination problems; however, the desired level had not been achieved. OSARAC expressed confidence that the problem would be solved in the future, and recommended the project be approved.

The 1974 evaluation team found that the specific inputs related to land use planning and land development being provided by USAID were being properly utilized, and was optimistic concerning the future. The key recommendation was that USAID should offer to help the GOS strengthen the agencies responsible for the RDAs, stressing management in areas such as soil conservation and range management. The team also recommended that if requested by GOS to do so, USAID should provide selected technical assistance and training to the RDA Program.

A Project Identification Document (PID) and a Project Review Paper (PRP) were prepared for the Infrastructure Project in 1976, and a feasibility study team was fielded in 1977. The project design team completed work in July 1978, and the Infrastructure Project was initiated shortly thereafter.

In 1980, the National Environmental Conservation Education (NECE) Program was added to the Infrastructure Project through an amendment. The NECE was the result of dialog in the late 1970's between Swazis concerned about their natural environment and USAID personnel. The major component of the NECE Program was conservation education, and the Infrastructure Project had been justified largely in terms of its contribution to soil and water conservation; therefore, the NECE was thought to be a logical addition.

## B. Description

### 1. Goals

Since the project was envisioned as an integral part of the much broader RDA Program, the program and project goals for the two<sup>3</sup> are co-mingled. The RDA Program goals accepted for the project<sup>3</sup> in 1977 were to double the income of 4,050 homesteads in the four well-established RDAs and to increase by 50 percent the income of 9,800 homesteads in the six RDAs being established at that time. These income goals were to be reached by March 1983. Also, the program was to accelerate the transition to commercialization, and the extent to which it was occurring was to be measured in terms of reallocation of hectarage to hybrid corn, cotton, and tobacco.

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<sup>3</sup>The PP did not accept all of the RDA Program's goals and objectives. The PP accepted only the economic ones, and adjusted them to the areas in which the PP assumed LUPS and LDS would be working.

Finally, emphasis was to be placed on self-sufficiency in food production, mainly maize, in the RDAs.

How was an Infrastructure Project to contribute to the purely production-oriented RDA Program goals? The PP indicates the project was to develop and protect the productivity of the land resource base in the intensive RDAs. The deterioration of the land was to be retarded. Progress was to be measured in terms of cropland productivity and livestock off-take rates. (The log frame provides the specifics.)

## 2. Purposes

The project's stated purposes were to: (a) Strengthen the RDA program's land planning and land development capability and (b) develop, install, and maintain conservation works. The PP clearly specifies that, while the project was to embody both physical construction and institutional development, priority was to be given to institutional development.

## 3. Project Outputs

Six types of outputs were specified:<sup>4</sup>

- a. Detailed land use plans were to be prepared under LUPS leadership for all 18 RDAs.
- b. The LDS was to construct, rehabilitate, and maintain land and water physical infrastructure works on the basis of the comprehensive land use plans prepared by LUPS.
- c. The LDS workshop was to be improved so that it would be capable of providing on-going maintenance commensurate with the workload of the LDS.
- d. A program to rehabilitate poorly designed and constructed conservation works was to be instituted.
- e. Improved management procedures for planning, designing, constructing, and maintaining the RDA physical infrastructure were to be developed and instituted.
- f. Swaziland personnel were to be trained so that LUPS and LDS would be able to operate without expatriate assistance.

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<sup>4</sup>The order has been revised to provide the reader with a more logical flow of activities.

The above were to be achieved by assistance from USAID as follows:

- a. Technical Assistance: Seven technicians were to be provided to LUPS, three to the LDS construction component, and four to the workshop. A total of 57 staff years of long-term assistance and 2.5 years of short-term assistance (consultancies) were to be provided.
- b. Training: Long-term training in the United States and formal, informal, and on-the-job training in Swaziland were to be provided in sufficient quantity to institutionalize LUPS and LDS with a full Swazi staff by 1984.
- c. Construction: Ten senior staff houses were to be funded by USAID.
- d. Commodities: Those necessary to achieve project purposes were to be provided at a budgeted cost of \$140,000.
- e. Heavy Equipment: Initially, 37 items were to be purchased at a cost of \$5.4 million, and an amendment added \$4.6 million for a total of \$10 million.

Total USAID project funding was to be \$17.2 million, and the GOS contribution was to be \$12.9 million<sup>5</sup>. The GOS contribution was for equipment maintenance; repair and operating costs; vehicle operation and maintenance; in-country per diem; and furniture and appliances. In addition, MOAC was to place \$5 million in a sinking fund for equipment replacement during the life of the project.

The NECE Program, added in 1980, has been handled separately from the rest of the project and a description of it, with funding details, is presented in Section VI.

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<sup>5</sup> Figures do not include the NECE Program added as an amendment to the Pro Ag in 1980. The NECE budget is shown in Section VI.

### III. THE PROJECT SETTING: 1983

One of the first steps which must be undertaken in a project evaluation is to determine whether the setting has changed. If it has changed drastically, the project may need major revisions, or perhaps be terminated. The period between the present time and 1978 has been one of great change in the Infrastructure Project setting. The changes have been both internal and external to the project. The more important changes are as follows:

A. Swazi citizens now play a much greater role in the planning and conduct of agricultural and rural programs.

In 1974, when the USAID evaluation team<sup>6</sup> did its work, the GOS was very dependent on expatriates for the design and implementation of projects and programs. There were very few extension workers available, and GOS was highly dependent upon bilateral aid donors and the international agencies for personnel. When the RDA plans were discussed with the 1974 evaluation team, the team found it was sometimes difficult to determine how much of the plan represented what the Swazi people wanted and how much was what the expatriate "experts" wanted. Today, the situation is very different. Swazis occupy almost all strategic decision-making positions, and it is clear that they are in the driver's seat.

B. The RDA approach is now relatively well institutionalized at the national level.

When the current Infrastructure Project began, the RDA Program really had never been more than a pilot project. Only two RDAs were far enough along to provide a basis for evaluation, and both were intensive RDAs. How people were ultimately going to respond to many parts of the program was not known. At the national level, little had been done to create support organizations and policy guidance mechanisms. GOS had indicated its intent to spread the program nationwide, but experience at that level of operation was lacking.

Since 1977, an administrative structure at the national level has been developed. Each RDA has a reasonably high level of autonomy and much decision-making is vested there, but the RDAs are linked together and a national support mechanism has emerged. The administrative structure may not be optimal and the system does not always function well, but the foundation is in place. Today, the job is not to create a new institution, but rather to strengthen it.

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<sup>6</sup> See Section II-A for a brief discussion of the team's findings.

C. The 1983 vintage RDA Program is dynamic.

In the mid-1970's there were those who viewed the RDA Program with its detailed land use and other plans much as a construction project wherein the task was specific, and, at some point in time, the job would be finished. (It is not strictly coincidental that in the early 1970's the RDAs were called "projects." In the minds of many, they were viewed as boni fide projects which would at some time be completed.) Today, the dynamic nature of the RDA Program is recognized and accepted by the GOS. The officials know the "job" will never be finished. The RDA Program is the GOS's major tool for influencing and fostering rural and agricultural progress, and the RDAs' programs and activities will change as needs change. The RDAs are and will remain key units for organizing the countryside.

D. Programs to foster rural and agricultural development in Swaziland will involve risk on the part of aid donors and the GOS.

When the Infrastructure Project was planned in 1977, it was believed firm, objectively verifiable conclusions could be reached about most of the RDA Program by 1983. Much data needed to reach firm conclusions have become available from the various RDAs since the mid-1970's, but they are fragmented and piecemeal. Analysis of the data is very difficult. Hopefully, the Hunting Team will do much of the job; however, not enough time has lapsed for anyone to reach valid conclusions about many aspects of the RDA Program. It takes time for extension and other programs to take root, mature, and finally produce "fruit." Much of the infrastructure has been in place only a few years. It is now clear that a final judgment on all aspects of the RDA Program cannot be made for another 5 to 10 years.

Since foolproof prescriptions for solving many of Swaziland's agricultural and rural development problems are not and cannot be available for many years, what are the GOS and the various aid donors interested in Swaziland to do? Are they to sit idly by and do nothing? Can they "get by" with more pilot projects? The evaluation team's judgment is that the answer to the latter two questions is "No." The setting today is such that the GOS, the bilateral aid donors, and the international agencies must take some risks and proceed with fairly large scale developmental programs based on the best judgment available.

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<sup>7</sup>The GOS has commissioned a detailed evaluation of the RDA Program, and it is being conducted by a group of experts provided by Hunting Technical Services, Ltd., a firm headquartered in the United Kingdom. Hereafter in this report, the group of personnel doing the detailed RDA evaluation is called the Hunting Team.

E. Financial support for the RDA Program from external sources has diminished, and the GOS faces a serious revenue crunch.

When the Infrastructure Project was initiated, the United Kingdom, the International Bank for Reconstruction and Development (IBRD), and the African Development Bank (ADB) were heavily committed to providing assistance to the RDA Program. It was appropriate to think in terms of maxi RDAs where the per capita investment in infrastructure and other developmental activities was rather high. Today, the setting is different. The United Kingdom technical and financial assistance has ended, as has World Bank funding except for the Hunting Team. At the present time, many parts of the RDA Program have ground to a standstill because of the unavailability of funds. Looking to the future, funding may be a very difficult problem for many years to come. The current RDA Program leaders must take the tight financial situation into account and recognize that the future may be little, if any, brighter.

F. Soil conservation is not as critical a problem as was believed in the mid 1970's and the demand for roads, homesite leveling, and domestic water supplies has increased.

Two factors contribute to the changed setting. First, the need for extensive land terracing and other major soil and land structures has been found to be less critical than was originally envisioned. The evaluation team did not find indications of serious erosion on the arable land. Grass strips and other innovations less costly than terracing are all that is needed. The range situation is of continuing concern, but the solution does not require large investments in land structures. In a technical sense, the priority given to soil conservation structures in the PP can now be lowered. Soil erosion will not do great damage to the environment in the near future. Second, the Swazi people in the RDAs are exerting greater influence in establishing priorities, and their priorities differ from those of the "experts." The people generally place top priority on homesite leveling, road construction, and domestic water supplies. Stock water, land terracing, and irrigation water development are important to them, but they are of lower priority.

G. The RDA development process is now viewed as a continuum, beginning with each RDA "as it is," and moving ahead with a development program as rapidly as possible.

When the PP was prepared, it was anticipated LUPS and LDS activities would be concentrated in a few maximum input RDAs. It now appears that the minimum input and maximum input RDA concept will be changed so that all RDAs will receive nearer to equal attention. It seems logical to the evaluation team that the mini-maxi concept could not possibly have been politically acceptable for very long. People in one RDA are not going to

stand idly by while the GOS pours great amounts of money into a nearby RDA. The mini-maxi concept could survive only so long as a bilateral aid donor was providing much of the funding for the maxis. Furthermore, the development process is not logically divisible into simple "mini" and "maxi" phases. The process is, rather, a continuum which can best be viewed as such. The meaning for the Infrastructure Project is that today and in the future the work will be distributed throughout the country, and not be concentrated in one or a few RDAs.

#### IV. THE PROJECT DESIGN IN RETROSPECT

##### A. Reevaluation of the Logical Framework

AID projects are based on a planning matrix called a logical framework (log frame). At the risk of oversimplification, the log frame calls for viewing a project in terms of inputs, outputs, project purpose, project goal, and greater goal. The idea is that if the inputs are applied, the outputs will be produced. If the outputs are produced, they will cause the project purpose to be accomplished. With the accomplishment of the project purpose, the project goal is achieved, and achieving the project goal contributes to meeting the greater, or societal, goal. For each--inputs, outputs, purpose, and goals--verifiable indicators are specified and quantified. The logical framework for the Infrastructure Project is shown in Appendix A.

In the process of evaluating a USAID project, it is very helpful to reevaluate the log frame very early to determine whether the data provided in it remain a sound basis for measuring progress. Two questions, among others, which must be answered are: (1) Are the verifiable indicators specified adequate measures for each item, and (2) is the assumed relationship between each item (still) valid? This section answers these two questions.

At the present time, it appears safe to conclude that the timely delivery of the high-quality inputs specified in the project plan could have produced the outputs indicated; however, the setting for the project has changed, and the work programs for both LUPS and LDS have been altered. The revised work programs are consistent with the project purpose and still fall within the framework of the original intent of the project.

In the reevaluation of the log frame, the evaluation team confirmed that if the project outputs are produced, they will cause the project purpose to be achieved. On this point, the original project design is still sound.

The project purpose, when it is achieved, will contribute to meeting the stated project goal, but the goal is inadequate and does not do justice to the project. It is unfortunate the project planners saw fit to state the project goal's verifiable indicators only in terms of increasing yields and production when so many of the LUPS and LDS activities envisioned in the project have no direct relationship to yield increases. The project purpose should have included opportunities to measure impact from domestic water development, access road construction, homesite leveling, and fencing. In the evaluation, the team considered the impact from all infrastructure activities on the RDAs in which LUPS and LDS have been involved.

The project goal, when it is achieved, will contribute in a general way to the program goal, but the relationship is tenuous at best, and the program goal does not do justice to the contribution the project outputs make to the total RDA Program. Only economic benefits are included in the program goal verifiable indicators, and the GOS clearly intends for the RDAs to do much more than increase incomes and production. The RDAs are expected to improve the standard of living for people living on the Swazi Nation Land and to contribute to the process of nation building. In the evaluation, the team concentrated on economic criteria which were measurable, but also considered the impact from contributions of LUPS and LDS to raising the standard of living in the RDAs and to nation building.

The Infrastructure PP indicates that institution building for LUPS and LDS is to be of much higher priority than construction. The verifiable indicators for the project purpose, and to a lesser extent for outputs, are not adequate for the institution building aspects of the project. They are much too vague and subject to individual interpretations.

#### B. Pre-evaluation Changes in the Project Design

Only one change has altered the project design since the inception of the Infrastructure Project. In 1980, the Pro Ag was amended, and the NECE Program was added. The addition was justified on the grounds that the major thrust of the Infrastructure Project was in soil and water conservation and that the NECE Program would contribute directly to conservation in the RDAs.

#### C. Consistency with Current USAID Programming Policy

The Infrastructure Project is completely consistent with current AID programming policy and philosophy. The RDA Program is designed to impact on the poor majority in Swaziland. Small farmers (homesteaders) in rural areas are the focal point for all project activities, and they are the primary beneficiaries. The project reaches a large number of people, and contributes to a rising standard of living for them.

The people who are beneficiaries are involved in planning RDA activities; thus, the project is responsive to their recognized needs and priorities. The small farmers (homesteaders) are private entrepreneurs, and the number of private tradesmen, transportation companies, tractor hire services, input delivery services, and marketeers increases as the RDA Program proceeds. The project activities contribute greatly to development of the private sector.

The RDA Program and the project have excellent records in terms of involving women on a full and equal basis with men. Fencing reduces the need for children to herd livestock, so

school attendance has increased and mothers have more time for their families. The RDAs have a number of women extension agents, and several professional employees on the project are women.

Self help is encouraged, and the evaluation team was very impressed with the way in which communities in the RDAs have organized themselves and contributed labor and cash for construction and maintenance in domestic water, irrigation water, and road projects. The project contributes directly to reduced infant mortality by providing safe domestic water supplies. The increased production of vegetables improves nutrition. Finally, the RDA Program, by concentrating on the poor majority, contributes to an improved distribution of income.

#### D. Current Validity of Socioeconomic Feasibility

The analysis of the socioeconomic feasibility and identification of beneficiaries in the PP were examined by the evaluation team to confirm their internal validity at the time and at present.

The PP called for the development of a social and economic baseline data study which would be used to measure RDA impact. The study was to focus on 13,850 homesteads in 10 intensive RDAs, and it was envisioned it would be of great help in the evaluation of the project. Unfortunately, the baseline data system was not fully developed as called for in the PP; therefore, the evaluation team had to rely on whatever other information and data were available.

There is much useful economic data being collected and analyzed by the Economic Research and Planning Unit and the RDA Program Monitoring and Evaluation Unit in the MOAC. Also, there have been several socioeconomic surveys, including a U.N. study, which include much potentially useful data. All of these sources were examined, and they will, of course, be used extensively by the Hunting Team. The Hunting Team includes several economists and at least one sociologist. Their analysis of the economic viability of the RDA Program should be much more thorough than could be done for this paper.

The direct project beneficiaries are the RDA homesteaders. The project goal, as stated in the PP, indicates the intent is to raise the income of these beneficiaries and move them from subsistence toward commercial agriculture. Although the data are not entirely clear, it appears that most homesteaders are still basically subsistence producers, but they are being emersed ever more deeply into the market economy. Section V-B and C provides greater detail.

Considerable attention was given to the economic soundness of the RDA Program and the project in the PP. The initial analysis in 1977 indicated that the RDA approach was economically

feasible, and the project would yield a satisfactory internal rate of return. Today, judged solely on the basis of production agriculture, which was the only criteria considered in the PP, neither the RDA Program en toto or the project are likely to be yielding a favorable internal rate of return.

The evaluation team concluded that it was not proper to consider only increases in agricultural production and farm income in determining the economic feasibility of the RDA Program or the project. The project must be evaluated from a much broader base, including criteria which look at improvement in the standard of living of homesteaders. The original RDA project documents indicated that, as a result of the program, the standard of living for homesteaders would improve. Project benefits contributing to the standard of living include improved transportation to markets, more social services, increased school attendance, better access to production inputs, greater access to extension services and general commercial life, better public health and sanitation, safer domestic water supplies, increased farm income, and better nutrition through growing vegetables, poultry, and dairy production. Although there is only limited hard evidence, it appears that the standard of living has improved. Increases in production listed in the log frame may eventually occur, and, in a year or 2, the internal rate of return for the project could be very favorable.

The project is still valid in terms of increasing and improving the standard of living of the homesteaders, and, indirectly, it is benefiting them economically. Incomes have increased, but probably more from off-farm employment, which became possible after the construction of access roads. The primary project beneficiaries are unchanged; the project's primary beneficiaries are still the homesteaders.

#### E. Sharpened Targets and More Practical Indicators

##### 1. General Comments on Verifiable Indicators

The evaluation team found that the objectively verifiable indicators listed in the log frame for the program and project goals were not closely related to the project purpose. Except for the construction of irrigation facilities, few of the Infrastructure Project inputs will have any direct effect on crop yields, and any indirect effects are probably years into the future. Therefore, many of the targets are dependent on inputs not under the control of this project. Even if all the inputs had been delivered as planned, the team feels the yield targets were still too ambitious to be obtained within a 5-year project.

Another reason for not reaching the production and income targets is that there has been an unanticipated reaction of homesteaders to high yields. The team learned that some homesteaders plant fewer hectares if yields go up, and, if they can find jobs, they use their spare time working in the non-farm

sector. Their farm income is not increased, and the target has not been reached; however, their total income has been increased. It was not possible for the team members to determine exactly how much, but they were told 60 percent or more of the income of RDA homesteaders comes from non-farm sources.

Support for the entire RDA Program was the basis for the Infrastructure Project, but the only quantifiable indicators listed in the log frame were economic. The program yield and production targets used in the log frame were those established by the World Bank team for the RDA Program. Since the RDA Program is only partially economic, it is not proper for it to be evaluated only in economic terms, and especially not in terms of yield increases or cropping patterns. This is especially true in the short run. The RDA Program is a key part of the Swaziland nation-building thrust, with the ultimate goal being to improve the standard of living of the people. The greater goal includes better health care, more education, the development of political institutions that bridge the gap between traditional culture and modern society, and better human relationships among the Swazi people. No measures of these were included in the program goal. In the future, they should be included, and the evaluation team considered them.

The project goals, if reached, will certainly help attain the stated program goals. However, based on the experiences of the evaluation team members in other developing countries, the specific target of doubling incomes within the RDAs so quickly is believed to be unrealistic. Also, it is interesting to note that the RDA target is to "double existing income" while the logical framework of the Infrastructure Project calls for doubling the "farm income." The latter will be much more difficult to achieve. A more practical indicator for the program's income goal would be one that includes all income and a scaled down amount of progress to be made within the time frame of the project. Since there is only a year to go, perhaps 5 to 10 percent would be a more realistic target increase.

The indicators which refer to hectares' increase for hybrid maize, cotton, and tobacco are somewhat unrealistic, and a necessary relationship to the program goal has not been established. Hybrid maize as a percent of total maize planted is increasing, and will almost certainly continue to do so barring continued drought. However, total acreage of maize may well be inversely proportional to yield. Economic realities may favor subsistence hectarage of maize, with the extra time of the farmer then being devoted to wage earning. There is little, if any, incentive to produce more maize than the homesteader needs for his own use unless there is a market and the anticipated price is high enough to be profitable.

Cotton and tobacco may have been profitable in the past, but yields are low and have not increased. Cost of inputs is rising and here again the incentives to expand hectarage very

much may be lacking. Given the lack of incentives, the targets need revision. A more realistic target would be to increase the yields of these crops 5 percent or so per year and let the hectareage be determined by economic realities. (This will almost certainly be the case no matter what hectare targets are set.) A marketing strategy which would provide a profitable maize price is needed, but may be unfeasible or impossible at present.

The project goal targets of increasing yields by 65 percent, 50 percent, and 75 percent for hybrid maize, cotton, and tobacco, respectively, by March 1983 are unrealistic. Since project inputs are not likely to directly result in higher yields for any of these crops, their inclusion as targets is open to question. The RDA Program as a whole should probably target increases of around 5 to 7 percent per year, assuming the current drought ends.

The fact that the targets were not reached by March 1983 in no way indicates failure of the RDA Program or the project. It means they were inadequate or overly optimistic, particularly in terms of the weather and the time frame.

The project indicator for range and livestock productivity is the off-take rate. In intensive RDAs, the PP reported it was 10 percent on an annual basis. The off-take rate calculated by the evaluation team indicates that during the 4 years of the project, the rate has been about 3 percent.<sup>8</sup> Improved marketing of livestock, marketing livestock at an earlier age, improved supplemental feeding via improved grazing (rotational) or with alfalfa or silage to shorten time to market, and price incentives could all exert a positive influence on the off-take rate. A more practical target would be an off-take rate of 5 percent, and better measures of livestock and range productivity are available and should be utilized. Accomplishment of the 5 percent off-take target is predicated on adoption of improved management practices and marketing systems.

In the original logical framework, the project purpose specifically limited targets to the intensive RDAs. This concept is no longer used. Revised targets should include works of all RDAs since plans are now made on this basis and development activities include all of them.

"Infrastructure works in place" should have been quantified wherever possible. This should have included those items shown in the Five Year Development Plan (PP, Annex V) as a minimum, i.e., terraces (now grass strips), fencing, access roads, domestic water supply systems, and others which are

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<sup>8</sup> Authorities are not in total agreement concerning how off-take rate should be calculated. The method used by the team may be different from that used by the project design team.

under the jurisdiction of LDS. The numerical figure of homesites or persons served with potable water would have been a better measure of the utility and magnitude of the work done than the numerical listing of water systems as shown in the development plan.

The indicator which refers to Swazi staff performing land planning, land development, and equipment maintenance functions efficiently and effectively is perhaps the most important target of the project, and is realistic in terms of output but not in terms of time. The output indicators refer to targets which are realistic if the project had been initiated according to plan. The targets are still realistic, but they cannot be reached by August 1984 and should be scaled down.

An important output is the preparation of land use plans for all RDAs. While it is debatable what level of plan is best and when the more detailed plans should be prepared, certainly plans for some RDAs should be prepared in detail because a few of them are quite advanced. The preparation of highly detailed plans will provide better training for younger Swazis than planning and designing construction works for the mini RDAs. However, before additional detailed plans are developed, the role of LUPS should be clarified. (This aspect of the evaluation is discussed elsewhere.) It is possible that the current role of LUPS in developing detailed plans for each RDA may not be the most appropriate one.

The current irrigation systems appear to be used primarily for vegetable production for home use and for cash crops. While vegetable production is mentioned in the PP, it is not stressed and increased yield or production does not appear in the logical framework. Vegetable production has increased income in the RDAs, and it is improving nutrition. Vegetable and possibly fruit production is turning out to be an important aspect of the RDA Program and should receive more attention.

The project goal is to develop and protect productivity of the land resource base in the intensive RDAs. This is a laudatory goal, which is at least partially achievable. However, unless soil erosion was at disaster levels, which it was not at the inception of the project, then meeting the project goal probably will not increase production during the life of the project. Therefore, it is not realistic to attempt to measure progress only by crop productivity and livestock off-take rates. It would have been much better and more realistic to have used erosion indexes as an indicator of progress. Such indexes are available and even rough estimates would measure progress in soil conservation better than crop and livestock productivity, at least for the short run.

2. Summary: Changes Needed in Indicators for the Present Evaluation and the Balance of the Project Areas

- a. A target of increasing farm income by 100 percent by March 1983 was unrealistic, even for the first four RDAs. The 50 percent increase for the other RDAs was also unrealistic. In the judgment of the evaluation team, a more reasonable target is a 5 to 7 percent increase per year in total homestead income.
- b. The indicators for the RDAs' contribution to the standard of living, an important goal for the RDA Program, are too limited, and there are none for the role RDAs play in nation building. Since standard of living is dependent upon infrastructure, some indicators of it should have been included for the project. The evaluation team looked for indications of what has happened to standard of living, and discussed the situation in oral reports. Quantifiable targets should be developed for the future.
- c. Targets for hectarage of crops are not meaningful unless they reflect economic realities. There should be no crop hectarage targets, and the evaluation team used none in reaching its conclusions.
- d. The crop production per hectare (yield) increases are not realistic. A 5 to 7 percent increase per year is reasonably realistic, assuming drought is not a factor.
- e. Livestock off-take rates have not been increased and the assumption of a rate of 10 percent in the PP is not supported. The target of 11 percent is not realistic. The off-take rate should be revised downward, or, better yet, a more adequate measure for range management and livestock productivity should be used.
- f. Infrastructure work in place is not a realistic indicator since the activities of LDS and LUPS never have been directed 100 percent toward PP-listed infrastructure. Indicators for the number and type of infrastructure work being done at present should be prepared.
- g. Qualified Swazi staff performing land planning, land development, equipment maintenance, and machine repair and operation is a realistic target, and should be the major thrust for the remainder of the project. (A major problem is the lack of LUPS technicians who have not returned from overseas training.)

- h. The output indicators all reflect sound targets even though there is not enough time in the project to attain them. They are not consistent with the current work plans for LUPS and LDS. They should be revised to reflect the current state of the project.
- i. The focus of project activities has changed and the input indicators no longer reflect reality. The revised focus is appropriate. The input indicators should be revised to reflect current project activities and plans.
- j. An additional, objectively verifiable indicator for the project goal should be a measure of soil erosion. The index used in the United States would be appropriate. (This may not be possible in the year remaining, but the Swazis should be taught how to do it.)

## V. PROGRESS AND PROBLEMS

### A. Introduction

The tasks prescribed for the evaluation team in the contractual scope of work and AID Handbook 12 are appropriate and were followed; however, the procedures and outline for reporting may be confusing to anyone not versed in AID's programming process, regulations, and jargon. Since the evaluation report should be of as much value to key people in the GOS and to other donors as it is to those familiar with AID, Part B which follows presents the major findings and recommendations in a manner which the evaluation team hopes will give its work greater utility. More detailed information for use by those with direct responsibility for project activities and who are concerned with the project's day-to-day operations and management is presented in Part C, which presents an evaluation based on the logical framework; in Part D, which provides specific data on implementation achievements in relation to what was planned in the PP; in Part E, which reviews the timeliness and quality of inputs for the project; and in Part F, which identifies causes for success and failure.

### B. Major Findings and Recommendations

#### 1. The RDA Program

The Infrastructure Project was designed to be supportive of the RDA Program, and, in the PP, the project and program goals are extracted from the general goals for the total RDA Program. The project does not "stand alone," and it was predicated on the assumption that the RDA Program embodies a good strategy for rural development in Swaziland.

The evaluation team took note of the fact that a team financed by the World Bank, called the Hunting Team (see Section III, Part D), is currently evaluating the RDA Program in-depth for the GOS. The Hunting Team evaluation will involve a professional input of approximately 60 person months; therefore, the report should include much better data and detailed analyses than can be expected from a team, such as the one provided by CID, whose job will be completed in 30 days and involves a professional input of only 4 person months. Also, the two teams may use somewhat different criteria as the basis for their evaluations. For example, the relative weights given to economic gains, changes in the standard of living, and nation building may vary considerably. Under the circumstances, it is only logical to anticipate that the two teams may reach slightly different conclusions.

After careful study and thought, the evaluation team for the Infrastructure Project concluded that the RDA approach is sound and that the GOS was very wise when it made the RDA

Program the central thrust in its efforts to foster rural and agricultural development on the Swazi Nation Land.

The above conclusion was reached in spite of the fact the evaluation team was unable to verify conclusively whether the project was achieving the verifiable indicators for the project purposes or for the project and RDA Program goals established in the PP. For example, the team concluded yields of some crops may be increasing, but the recent, severe drought and other factors obscure the data. Incomes appear to be up, but probably more from off-farm employment than from farm income.

The above is unavoidably paradoxical. If the project is not meeting many of the verifiable indicators specified for the RDA Program in the PP, how can the team endorse it?

First, the Infrastructure Project design uses only production, productivity, and farm income increases as criteria for evaluation of the RDA Program, and they are not adequate measures. Many of the objectives of the RDAs which are fitting and proper are overlooked in the PP. There are no measures for increasing the standard of living and linking the government to the people. These are important goals of the RDA Program, and they must be considered in any fair evaluation of it.

Second, there has not been adequate time for many parts of the RDA Program to yield many benefits. For example, benefits from a road constructed by the Infrastructure Project will not reach a maximum until several years after it is completed. Many roads have been built in the last year or so. When an additional extension worker is hired, it is unrealistic to expect production to jump dramatically the next year. The time frames in the PP were unrealistic.

Third, the team members personally saw sights, and heard reports which convinced them the RDA approach is working; however, improvements in it are indeed needed.

As might be expected, the RDA Program has many good features and certain parts of it have been very successful. However, the RDA Program also contains some features which are not so good, and there are problems which have constrained and lessened the progress which might have been made.

a. Good Aspects of the RDA Program

- (1) The people in the RDAs are involved in planning the RDA Program, and it is responsive to their perceived needs. Evaluation of projects throughout the world indicates this is both fundamental to good programming and contributes to project success.

- (2) Whenever roads are built, pick-up trucks and busses start routes over them. The people are being emersed more deeply into the market (commercial) economy.
- (3) Houses and shelter along roads were observed to be better than elsewhere. Whenever a road is built, new houses follow. The people are living better.
- (4) The people appreciate the domestic water systems, and are willing to contribute to their cost and upkeep. There must be health benefits.
- (5) The team found erosion on arable land not to be a serious problem. The RDA homesteaders are taking good care of the soil.
- (6) The standard of living has noticably risen in the RDAs. The number of people with safe water supplies, better clothes, children in school, etc., all indicate progress.
- (7) Many people outside existing RDAs are asking for them. The people are not fooled. They would not want RDAs if there were no net benefits.
- (8) The RDAs are a good managerial unit for the GOS. They are decentralized, and the leaders are close enough to the people to not lose touch with them. (This is something which is lacking in many developing countries.)
- (9) The RDA Program is now reasonably well institutionalized, and a support system for it is in place.
- (10) More vegetables are being produced in response to price incentives, and the national diet must be improved as a result. Vegetable production, relatively new in many areas, is increasing income.

b. Constraints to Progress

- (1) Marketing. The team believes the primary reason agricultural production is not increasing faster is the lack of adequate price incentives and market security.
- (2) Extension. A good foundation has been laid, but fine-tuned packages of practices which homesteaders know will pay off are not being delivered.

- (3) Coordination. Numerous ministries and agencies are involved, and their programs are not always coordinated.
- (4) Cooperatives. They are not doing all they could.
- (5) Land Allocations. There are homesteaders who would like to make a living farming and cannot do so because they do not have access to enough land. A system wherein some homesteaders could get more land while the rights of others in the community are protected would lead to increased production and would be in the national interest.

c. Recommendations

- (1) The GOS should continue to make the RDA approach the hard core of its rural and agricultural development effort on the Swazi Nation Land until thorough analyses which consider the standard of living and political as well as economic considerations prove conclusively that another approach is superior.
- (2) The RDA Program should remain dynamic and should be improved whenever and wherever possible. The five constraints to progress listed in Section V-B-1-b (pages 26-27) require immediate attention.
- (3) In the future, USAID should concentrate its program of technical and other assistance in rural and agricultural development in projects which directly strengthen and foster the RDA Program.

2. The Infrastructure Project

a. General Progress and Problems

Once the team members had reached a conclusion on the RDA Program, they were able to devote their entire attention to the Infrastructure Project. The PP calls for the project to provide two specific types of activities for the RDA Program:

- (1) Construction of terraces, roads, waterways, dams, domestic water systems, etc.; and
- (2) Institution building, namely the Land Use and Planning Section and the Land Development Section of the Ministry of Agriculture and Cooperatives.

The evaluation team observed that good progress has been made on construction, but, since the project was initiated, the needs and demands for construction activities have changed rather dramatically. The LUPS and LDS have adjusted their work programs to meet the new needs and demands.

The Infrastructure Project design team planned for major emphasis in construction to be given to soil conservation, small irrigation, and stock water ponds. The evaluation team found that soil conservation is not as serious a problem as was anticipated. From the ground, the team observed little erosion on arable land, and a flyover by air verified the ground observations. Aerial pictures and maps dating back to the early 1970's were reviewed, and little change in erosion was found. The main conservation problems are in the grazing areas, and there the problems are mainly near watering facilities and along trails. Many of the activities, such as terracing, covered in the PP are not needed to the extent envisioned. While some effort must continue to be given to soil conservation, mainly in the grazing areas, much of the effort of LUPS and LDS can quite properly be reallocated elsewhere.

As the local people have become more deeply involved in RDA planning, their perceived priority needs, namely homesite leveling, domestic water supplies, access roads, and fencing, have had to be given more attention. RDA managers and extension personnel at Mhamba and Lumombo told the evaluation team the homesteaders place top priority on domestic water supplies, homesite leveling, and access roads. They mentioned that the homesteaders greatly appreciate what LUPS and LDS do for them in this regard. The USAID contractor personnel reported almost all of the requests they have received from the field were for domestic water supplies, homesite leveling, and roads. Dr. Glen Magagula, Dean of the Agricultural College, surveyed homesteaders as a part of his doctoral dissertation research, and he says: "The GOS must develop a rural development strategy based not only on agricultural development but also on the improvement of the quality of rural life. The strategy must also be based on the increased incorporation of non-farm enterprises in the rural areas which can directly and indirectly benefit agricultural development by increased demand for agricultural products, improved services and facilities for homesteaders, generation of rural capital, evolution of a community atmosphere, and reduced migration of young people to the urban centers."

The project design team did not take into account the fact that LUPS and LDS, by their very nature, had to backstop the entire MOAC and possibly even other ministries serving the rural areas. It is not practical to believe LUPS and LDS can have human resources and equipment available which are unique and from time-to-time are badly needed elsewhere, yet refuse to become involved. Therefore, in the last few years, the project personnel and USAID supplied equipment have been used in activities closely, but not directly, related to producing the PP outputs.

The evaluation team concluded that the revised work plans for LUPS and LDS were justified, and endorses them. The following are the major recommendations concerning the project in general:

Recommendations: As soon as possible, USAID and GOS should (1) amend the Pro Ag or sign a letter of understanding which will legitimize the current work programs for both LUPS and LDS; (2) extend the project; and (3) revise the logical framework for the remainder of the project so that it will more adequately define and describe the project's goals and purposes.

b. The Land Development Section: Institution Building

The LDS has, in general, made good progress. Institution building has proceeded rather well. Most of the personnel needed are on board. The Swazis on the field teams and in the workshops are, in general, well qualified for their jobs. Until recently, the equipment was relatively well maintained and utilized. The Development Officer in charge of the LDS is an able young Swazi.

LDS faces the usual problem found in any organization, namely how to keep abreast of the times and improve itself. There are problems needing attention and the project purpose will not be achieved on schedule. Recently, the lack of money for operations has caused serious and troubling developments. Today, the equipment is being used at only partial capacity because of the shortage of funds. Lack of spares is causing equipment to be deadlined. There is a shortage of construction engineers, and middle level management is thin. However, the team's general conclusion is that LDS as an institution is in fairly good shape.

The following are the major problems in the LDS, with correlated recommendations for their solution.

Problems and Recommendations:

Problem: Inadequate budget and funds. Unless there is enough money for LDS to operate, the project cannot possibly be successful

Recommendation: GOS and USAID should make every effort to arrange for the funds needed to "get LDS back to work."

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<sup>9</sup> Justification for the extension is provided in the following section. It is included here because it should be covered in the amendment.

Problem: The revisions in the RDA Program require the LDS to work throughout the country, and this is causing LDS employees to have to travel excessively, thereby reducing efficiency.

Recommendation: Decentralize. If LDS had several decentralized bases for both operations and maintenance and management were able to coordinate activities, efficiency would be improved.

Problem: RDA activities have suffered because of bottlenecks in design work and inadequate monitoring.

Recommendation: LDS should be given greater responsibility for design work and construction monitoring. This will call for additional engineers--one for each of the regions in a decentralized system. (This recommendation does not include "sign off" authority. This, the team believes, should be with LUPS.)

Problem: Inefficiency due to inflexibility in governmental regulations.

Recommendation: Give careful consideration to making LDS a parastatal organization. LDS should possibly be combined with other operations in the process. (A study should be initiated as soon as possible to determine the pros and cons. Potential income sources should be considered. Merging LDS with the machine hire service should be considered.)

Problem: Top and mid-level managers are making good progress, but they need advice and counsel until more mid-level persons are trained and the LDS is strong. Also, the construction engineers needed will not have been trained by the end of the project.

Recommendations: In the Pro Ag amendment, extend the project, with USAID providing continuing support for top management, additional construction engineers, and mid-level management and construction engineer/technician training.

c. The Land Use Planning Section: Institution Building

LUPS has accomplished much since 1978; however, only modest headway has been made in institution building, and some rather serious problems exist. LUPS is currently being led by a very able young Swazi, who is acting Senior Land Use Planning Officer. The Senior Land Use Planning Officer is in training, and will return soon.

The project got off to a bad start in LUPS. The personnel which were to be provided by USAID did not arrive until almost 2 years into the project, and then several were not found to be satisfactory and had to be replaced. Participants for training were hard to find. The revised needs and demands discussed above caused a certain amount of confusion. The result is that the project is about 2.5 to 3 years behind schedule in terms of institution building in LUPS.

As indicated earlier in this report, the project setting has changed since the project was initiated, and a major concern of the evaluation team is that LUPS may now need to play a slightly different role than was envisioned for it in 1977-78. Two questions need answering when the proper role for LUPS is under discussion: First, is it wise for LUPS, a centralized agency, to be responsible for preparing detailed land use plans for every hectare in all RDAs? Second, who in GOS should be responsible for broad-gauged national planning, policy guidance, and program monitoring in land and water use?

The evaluation team members are of the opinion LUPS could make the greatest contribution to the people of Swaziland by having responsibility for detailed land use planning shifted to a regional office of LUPS, or to LDS, with Extension and other agency inputs. The evaluation team believes LUPS should be playing a broader role than it is at present. It should be more concerned with land use and water policy, standards setting, and project monitoring. (Whatever organization prepares detailed RDA land use plans, the team believes very strongly that it would be better if they were prepared in a regional office closer to the field.) The current role of LUPS in land capability assessments, water resource plans for major rivers, and in range management appears to be satisfactory; however, much work remains to be done in all areas.

The following are major problems in LUPS, with recommendations for their solutions:

Problem: Where should detailed land use plans be prepared and who should prepare them?

Recommendation: GOS should give serious consideration to shifting detailed land use plan preparation to a field office and possibly to an agency other than LUPS.

Problem: Who should be responsible for national level land and water use policy guidance and planning, standards setting, and program monitoring?

Recommendation: GOS should give serious consideration to giving LUPS greater responsibility in national planning, land use policy guidance, standards setting, and program monitoring.

Problem: The LUPS participants in training at present and planned for the future will not be back in time to overlap with current USAID provided personnel.

Recommendation: The project extension recommended above should provide for overlap between USAID contractor personnel and the Swazis being trained to replace them. Approximately 2 additional years are needed.

Problem: There are not enough Swazis in training to effectively operate LUPS when they return.

Recommendation: Additional formal and on-the-job training should be provided during the remaining life of the current project and the extension.

Problem: Some of the structures the evaluation team observed being constructed are not up to standard.

Recommendation: For construction, LUPS should issue planning guides, establish standards, do a better job of monitoring during construction, and have "sign off" authority on construction.

Problem: LUPS finds its job more difficult than necessary because RDA managers, extension personnel in the field, and other people directly involved in the RDAs have little comprehension of what is involved in good land use planning.

Recommendation: LUPS should conduct orientation sessions and workshops in which those involved in planning and implementation activities in the RDAs are provided with the basics of good planning.

Problem: Little progress has been made in reducing herd numbers on the RDAs and in improving range management.

Recommendation: LUPS should increase the number of personnel involved in range management programs and increase the number and scope of pilot programs in range management in the RDAs.

### C. Evaluation Based on the Logical Framework

The logical framework<sup>10</sup> from the PP was used as the primary point of reference for the evaluation. This part of the report reveals the findings.

#### 1. Program Goal

The program goal stated in the PP is "to assist Swazi farmers in making the transition from subsistence to semi-commercial and commercial agriculture," and there are two objective verifiable indicators. The first verifiable indicator is, "Farm income of 4,050 homesteads in the Northern, Southern, Central, and Matlangatsha RDAs increase 100 percent from April 1978 to March 1983; and farm income of 9,000 homesteads in six newly established RDAs increase 50 percent by March 1983" (see Logical Framework Evaluation Reference [LFER] #1, Appendix A).

Before proceeding with the discussion of the extent to which the verifiable indicator targets have been achieved, note should be taken of what appears to be a discrepancy between the PP, the Five Year Plan and the general RDA Program documentation. The PP calls for doubling of "farm income" whereas the general RDA documents call for doubling of total income. The discrepancy may be a result of misuse of the indicative farm budgets, in the World Bank's Appraisal Report. In the indicative budgets, it was shown how the gross crop margin for a typical homestead in one RDA could be doubled. Later in the report when doubling farm income was discussed, it apparently referred to the data on doubling gross crop margins in the indicative budgets.

The evaluation team was not able to get access to recent income data for the RDAs; however, from a review of production and other data, it is obvious to the team that a 100 percent increase in either farm income or total income in the four early RDAs has not been achieved. However, there have been some changes and total farm plus non-farm income appear to have been increased significantly. Non-documented information obtained during the evaluation indicates that some homesteaders have opted to use hybrid maize seed, fertilizer, tractor plowing, etc. to obtain the same production as before, but using less land and labor. They then find a job in the non-farm sector and make more money than had they increased farm production.

In 1978, a survey (deVletter, 1981) found that only 18.3 percent of the cash income for Swazi Nation Land homesteads was from farming. Almost 71 percent came from non-farm wage earnings and 10.7 percent from non-agricultural, home-based activities. If the subsistence farming production is given a value based on then current prices, the non-agricultural income was more than 60 percent of total real income.

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<sup>10</sup>The logical framework from the PP is shown in appendix A.

Discussions in the RDAs led the evaluation team to believe the RDA Program has increased the number of homestead family members who are wage earners. This results from accessibility to jobs created by the new roads and by the use of hybrid maize seed and fertilizer which allows subsistence with less land and labor. It is interesting to note that in a study by Russell, Mbatha, and Sithole ("Sample Survey of Maize Growing in Swaziland"), it was found that homesteads having more than average maize production also had higher numbers of wage earners in the non-farm sector.

The trend to greater off-farm income is likely to continue since there is little profit incentive to stimulate increased production of maize beyond that needed for subsistence, and in recent years the profitability of cotton has been reduced too. Input costs have risen faster than crop prices for most crops. The exception appears to be irrigated vegetables. Their production has increased and there is an apparently favorable profit margin. Unfortunately, income from vegetable production was not available. The profitability of vegetable production is, at least in part, because of the ban on importation of South African vegetables brought about by a cholera outbreak in South Africa.

Farm crop income is a function of hectarage, yield, and prices. Yields have not been significantly increased, and acreages under cultivation have not increased enough to come close to producing the farm income targets. However, much of the lack of success in raising yields may be explained by severe droughts in 1981-82 and 1982-83 and by the period of time devoted to mourning the late King's death during planting season 1982. Also, much of the early emphasis of the RDA Program has been on the installation of infrastructure, most of which has no immediate effect on yield.

The logic of using program goal indicators of the type listed in the PP is open to question. The inputs of the USAID Infrastructure Project being evaluated will have very little immediate effect on crop or livestock yields even if accomplished according to plan. They will, of course, have an indirect effect, but it will not be apparent for several years. Therefore, the accomplishment of the indicators for the program goal are dependent upon other RDA inputs which are not under the control of this USAID assisted project.

The Evaluation Team believes that production increases in the RDAs will eventually occur because of the education and training activities of the Extension Service and because of better management made possible by soil conservation, more and better roads, fences, irrigation systems, etc. Many of these inputs are interdependent and it is not possible to obtain the desired results unless all the strategic ones occur on time at the level intended.

The evaluation team takes note of the fact people in the RDAs are increasingly being exposed to a commercial economy. Pickup trucks begin routes over the roads constructed by LDS within a few days after they are finished, and buses begin routes over them soon thereafter. People interact more and more with the "outside." The team feels very strongly that had the program goal(s) been properly stated, with appropriate verifiable indicators, the project would be contributing greatly to achieving them. The standard of living is noticeably higher where LUPS and LDS have been active.

The second indicator for the program goal is that "subsistence farm hectarage for hybrid maize, cotton and tobacco increases from 2 percent, 7 percent, and 1 percent of total farm hectarage respectively to 13 percent, 15 percent, and 7 percent from April 1978 to March 1983" (see LFER #2, Appendix A).

The data are available for the verifiable indicator, but, as indicated earlier in this report, they are not a very meaningful measure of program goal achievement.

The area of land within the RDAs has increased from about 77,000 hectares in 1976-77 to 522,000 in 1983. In 1982-83, the following were the hectarages produced and percentages of the referenced crops on RDA homesteads:

<u>Crop</u>	<u>Hectares</u>	<u>% of Cropped Land</u>
Maize	34,500	60.8%
Cotton	6,242	11.0%
Tobacco	209	.4%
Other Crops	<u>15,714</u>	<u>27.7%</u>
Total Cropped Land	56,665	99.9%

The indicator refers to hybrid maize, presumably on the basis of an assumption those producing for the market would use hybrid rather than open pollinated varieties. While this is probably correct, there is no necessary relationship; however, the use of varieties requiring hybrid seed has been increasing very rapidly in the RDAs. In 1982-83, it was estimated about two-thirds of the maize hectarage was hybrid, but the area seeded to maize within the RDAs has declined by about 4,000 hectares since 1980-81. Cotton hectarage increased until 1980-81, but declined by about 4,000 hectares since then. Tobacco hectarage has increased from 154 ha in 1979-80 to 209 ha in 1982-83.

Six assumptions are relevant to achieving the program goal. The first assumption is that the RDA Program will enhance rural living and encourage people to live in rural areas. The assumption that the RDA Program will enhance rural living is valid, and it is reasonably certain more people reside in the rural areas as a result of it. The improved water systems, access to markets, new schools, social services, access to

inputs, and new roads were found to be factors encouraging people to remain in the countryside. Also, access roads, increased subsistence crop yields and other inputs have enabled members of the homesteaders' families to take wage earning jobs in the non-farm sector. They maintain ties to the homestead, and many people working in the cities go back to the homestead on weekends.<sup>11</sup> This has kept permanent migration to urban areas at a minimum.

The second assumption is that homesteaders are receptive to change. There are numerous examples showing this to be true. A recent ban on the importation of vegetables from the Republic of South Africa (RSA) has resulted in a dramatic increase in vegetable production in the RDAs. Apparently this occurred without a formal recommendation that it occur, and was simply a response to market conditions. Many homesteaders are now producing for both home use and internal markets. This should improve both income and nutritional status. However, there are other examples of homesteaders resisting change. For example, farmers apparently prefer to keep their cattle as an investment rather than sell them to reduce stocking rates. This is verified by the failure to reduce livestock numbers. However, the evaluation team found that whenever the homesteaders resisted change, the incentives needed to justify the change were either lacking or the homesteaders did not understand how they or their family members would benefit.

The next assumption is that productivity will increase, and this will result in increased net income. This appears to have occurred, though not in the way intended. Although overall productivity is difficult to document, there is evidence it has occurred. In some cases, yield increases have resulted in fewer hectares being planted and more people taking off-farm jobs. In any case, net income has increased, but probably more as a result of access to off-the-farm employment and reduced labor requirements necessary to achieve subsistence.

It was assumed that climatic conditions would be favorable. This assumption has not been met, and it has played havoc with the RDA Program. For the past two crop seasons, there has been a very serious drought. There is little doubt but that yields would have been even lower than they were had there been no RDA Program. Production targets have not been met, and the drought may be the major cause. There is no way the impact of the drought can be measured with any degree of certainty.

Farm inputs and credits were assumed to be available when required. This has not always occurred. Credit has been available in many cases, i.e., for cotton growers, and it has

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<sup>11</sup>An analysis of what would have happened in the urban areas without the RDA Program would be helpful. If people not employable in the modern subsector of the economy can be maintained at less cost in the rural areas, the savings may be regarded as a benefit of the RDA Program.

been used. However, to get credit, cattle must be provided as collateral, and many homesteaders do not own cattle. Credit is a serious problem in Swaziland, but the evaluation team did not find unavailability of credit to be a serious restriction to increasing production. In one case, the team found too much credit was extended by a cotton cooperative and the program failed. In other cases, credit has been extended at an interest rate which is too low for the lending agent to break even.

It was assumed that GOS would fill all field extension positions and would upgrade the education/information delivery service to meet the needs of the expanded RDA Program. A real effort has been made to do this, and the Extension Service has been greatly expanded over the past few years. In terms of numbers the targets have nearly been met. However, the total manpower needs of the RDA Program have not yet been met and more upgrading is needed. Serious deficiencies still affect the Agricultural Information Office (AIO). Little written or visual materials are produced and distributed to agents. There is also a lack of appropriate and relevant research information for dissemination to homesteaders.

## 2. Project Goal

The project goal is "to develop and protect the productivity of the land resource base in the "intensive" RDAs." The evaluation team was very disappointed that the project design team used only soil conservation as a project goal, ignoring all other activities in which an infrastructure project would be involved. The goal should say something about the contribution access road construction, safe domestic water supplies, and fencing make to the people residing in RDAs. Conservation is important, and it should be a part of the project goal, but even so, there are better measures available than those specified as verifiable indicators. A scientifically sound index for soil erosion is available, and it should have been used as one of the verifiable indicators.

The first indicator is "crop production per hectare farmed by traditional farmers in intensive RDAs increases by 65 percent, 50 percent, and 75 percent for hybrid maize, cotton, and tobacco, respectively, from April 1978 to March 1983" (see LFER #3, Appendix A). These are not good indicators, and, even if they were, they are unrealistically high. They have not occurred. There has been a slight increase overall in maize yields, probably because of the increased use of hybrid maize seed. There has been no increase in the yield of hybrid maize, and a significant increase should probably not be expected in so short a time. The average maize yield (hybrid and local varieties) in 1976-77 was 1,730 kg/ha (29 bu/acre) on all RDAs. In 1982-83, the comparable yield was 1,168 kg/ha (18.6 bu/acre). The lower yield in 1982-83 was, no doubt, caused by the severe

drought and may have been even lower without the program inputs. What the average maize yield on RDAs under normal weather conditions would be cannot be determined at this time.

Maize yields have fluctuated widely, and it is clear that the yield on RDAs is higher than the yield on non-RDA land (+17 percent over last 5 years). However, it is not clear whether this is because of extension activities, infrastructure, or the fact that better farmland may be in the RDAs. Also, the four older RDAs have higher maize yields than the newer RDAs (+26 percent, 1,606 kg/ha versus 1,181 kg/ha respectively). Again, it is not clear what the reasons for this difference are. Despite the increases in yield that have occurred, there has not been a parallel increase in production. Apparently homesteaders plant fewer hectares when they are reasonably sure of higher yields.

It is clear that hybrid maize out yields local and other open pollinated varieties. The Estimation of Output Report, 1982-83 (third annual edition), reported that open pollinated maize yielded an average of 860 hg/ha in 15 RDAs and 4 non-RDA locations in 1982-83. Hybrid maize yielded 1,372 hg/ha. The corresponding figures for 1981-82 were 932 and 1,604 hg/ha.

Cotton yields apparently have not increased since 1978. What yields would be without the unusual circumstances are not determinable with any degree of accuracy. (Production increased from 1978 to 1981, but decreased from 1981 to 1983, both changes caused primarily by fluctuations in hectarage.)

Tobacco yields have apparently declined since 1979-80, again because of drought. (Hectarage has increased slightly, and was at its highest level, 209 ha, in 1982-83.)

The second verifiable indicator for the project goal is to increase livestock off-take rate in the intensive RDAs to 11 percent by March 1983 (see LFER #4, Appendix A). This is not a particularly good indicator, and the evaluation team was unable to verify how the original 10 percent off-take rate for intensive RDAs was calculated. Better measures of livestock productivity and range management are available. The team understands the Hunting Team will deal with livestock in depth; therefore, their report may fill in the gaps.

According to the 1982 RDA annual report, a total inventory of 228,192 Bovine Units (BUs) were reported for 15 RDAs. The total "off-take" for the 15 RDAs was reported to be 8,231 BUs. Accordingly, using the figure of 8,231 BUs, the "off-take" rate for bovine was 2.7 percent for 1982 in the 15

RDAs. Analysis of diptank records indicates an off-take rate of about 3 percent between 1979-82. This was verified in interviews with MOAC officials.<sup>12</sup>

MOAC had set a target "to increase the annual off-take of the national cattle herd to 12 percent" by 1983, and the evaluation team was informed the "off-take" targets were not realized either in the RDAs or elsewhere.

The total cattle population was calculated by an MOAC official to be about 635,278 in 1992, and the projection of the birth rate result would probably show an increase in total livestock units in the future if the component "death, slaughter and sales, and permit out" does not increase very rapidly.

Cattle are highly valued in the Swazi culture, and sometimes serve as a "walking" bank account. Cattle held have appreciated in value; in fact, they have appreciated so fast they have proved to be a much better investment than many other alternatives, i.e., savings account, crop production, etc! Cattle are exchanged between families and neighbors to fulfill certain obligations, and it is not uncommon for homesteaders to resist selling cattle for cash unless there is a dire need for the cash. A study by Magagula (1978) indicates that 70 percent of homesteaders interviewed in four RDAs had not sold any cattle during the previous 3 years.

Cattle are also important as a form of collateral to get credit from banks for buying needed inputs for crop production. Cattle held by the homesteader as collateral are not likely to be sold on the commercial market. The drought would also have the effect of keeping the "off-take" rate low. Homesteaders who have suffered crop losses during the year will hardly "sell" their cattle since they are the only assets they have to get loans for inputs for the coming crop year.

Another problem is that there is only one organization (Swaziland Meat Corporation) that buys beef on a widespread basis. Homesteaders report a large seasonal variation in price, and they are not accustomed in general to selling directly to the corporation. The absence in the market of other buyers providing competition to the corporation may keep the price at unattractive levels.

The above are some of the reasons the destocking program of the RDA Program has not been successful. If the destocking program is to succeed, off-take rates must, as the project envisioned, be increased. Off-take rates can be increased through a number of incentives. Some are: (1) increase prices for beef; (2) encourage banks and credit sources to loan money to

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<sup>12</sup>Off-take rate as used by the evaluation team is defined as cattle marketed or slaughtered divided by the number of Bovine Units.

homesteaders for crop inputs, using excess crop production as collateral; (3) improve marketing opportunities for cattle, both internal and external; (4) decrease time of feeding out cattle for market through more effective management techniques; (5) encourage expanded use of fattening farms by homesteaders; (6) develop a pricing system that includes selling on arrival by the kilo rather than by the head; (7) encourage the development of competition in the cattle markets; and (8) research the possibilities of homesteaders growing small plots of alfalfa, grass, or silage for winter feeding.

Two assumptions were listed for the project goal, and neither is valid. It was assumed that progress in destocking herds and improving range management would occur. Very little destocking has occurred, and what constitutes improved range management under Swazi conditions is debatable. Fencing, mostly perimeter fencing, has been built. In some cases, perimeter fencing has concentrated the livestock population on a smaller area and accelerated soil erosion along trails and near water and dipping facilities.

The assumption that other donors would continue to support the RDA Program was valid until recently. However, several of the major donors have now or soon will be phasing out their support, and the future does not look very bright. The evaluation team concluded that the current budgetary crisis was the major stumbling block in the road of ultimate project success.

### 3. Project Purpose

Two project purposes are listed in the log frame. The first is "to develop, install, and maintain conservation works in the RDAs designated for intensive development." The verifiable indicator is "Infrastructure Works in Place" (see LFER #5, Appendix A).

The table on the following page shows the Land Development Service work completed between 1978-82. The quantity of work completed is very impressive, and the evaluation team compliments the project leadership. The works which were most requested by the people living in the RDAs, access roads, domestic water supplies, and land leveling for homesites, are reflected in the figures in the table.

The maintenance and construction of terraces have been found to be expensive, and time consuming, and not necessary for soil conservation (see Part B). As a result of this determination, the LDS, with cooperation from LUPS, has concentrated on realignment (where necessary) and layout and marking of contours for 1.5 meter wide grass strips. Terraces constructed are below expectations, but the evaluation team feels the reduction, when weighed against the increases in other activities, is fully justified.

LAND DEVELOPMENT SECTION

WORK COMPLETED 1978-1982.

Source: LDS Construction Engineers 8-83.

ACTIVITY	1978	1979	1980	1981	1982	1983 through JUNE	TOTAL
TERRACES(+grass strips)	345	87	270	1324	3007		5033 ha.
ARTIFICIAL WATERWAYS							
ACCESS ROADS (construction)	216	298	242	591*	423	131	1901 km.
BRIDGES	7	28	8	14	26	11	91
DAMS (stock)	2 ea	2	1	3	7	1	16
DOMESTIC WATER SUPPLIES	5	3	5	8	6	3	30
IRRIGATION RESERVOIRS		4	4		3	1	12
WEIRS (diversion)	3 ea.	1	1	3	1	3	12
IRRIGATION CANALS	4.8 km.	10	5	4	18	2	43.8 km.
ROAD MAINTENANCE	80	737	271	359	760	357	2564 km.
HOMESITE LEVELLING	532	432	869	1326	1313	221	4693 home-sites
BUSH CLEARING	306 ha.	134	384	904	244	7	1979 ha.
FIREBREAKS--	404 km.	350	380	215	470	250	2069 km.
CONSERVATION DIVERSIONS	10 ea.	10			1	1	22
IRRIGATION DAMS	2 ea.				3	1	6
CRITICAL AREA PLANNING	2 ha.	2					4 ha.
CULVERTS					21	10	31
LAND LEVELLING	20 ha.	150					170 ha.
FISH PONDS	17	14	2				33
RICE PADDIES	23	43	10	30	2	11	119 ha.
FENCING			322 km.	321 km.			

Source: MOA RDAP Annual Report Dec. 1982

Domestic water supplies, from start of program, 1976: Systems 39 (when completed), people served 67,500.

Note: Construction by MOAC and Peace Corps Volunteers with some local contributions of funds and labor.

Designs made by LUPS.

\*About 300 km. built in east for Hoof & Mouth disease control.

Source: MOA report to Rural Water Supply Board, May 23, 1983.

A large amount of the time of the LUPS designers is currently being utilized in the preparation of plans for water systems. An example is the extensive system being installed at the Mahlangatsha RDA, which will serve 1,000 people. Trenches for the water site have been voluntarily hand dug by the local people. In several observed sites, domestic water supply systems have been incorporated in new stock dams or added to existing works.

The maintenance of roads installed by LDS has involved a considerable amount of work as shown in the table. It is difficult to differentiate between maintenance and reconstruction, the difference being only a matter of the amount of work that has to be accomplished. All of the maintenance and reconstruction is done with a motor grader. LDS maintains only those roads which it has built and for which the Public Works Department has not agreed to assume maintenance responsibility.

The second project purpose is "to strengthen the RDA Program's land use planning and development capability." The indicator in the logical framework is "Qualified Swazi staff performing land planning, land development, and equipment maintenance functions efficiently and effectively" (see LFER #6, Appendix A).

In LDS, there are qualified Swazis in most of the slots, and, on this score, the project has done very well. The workshop and the work units are functioning properly and the machines and equipment are relatively well maintained. (This aspect is covered more thoroughly in other segments of this report.) At the present time, there is an adequate number of qualified mechanics; 135 qualified, GOS-certified operators of heavy equipment; and well trained drivers for all the equipment being used. The Land Development Officer (LDO)<sup>13</sup> is well qualified.

The major weakness in LDS appears to be in the area that might be termed "middle management." There are not enough people who are qualified to do the program and personnel management is needed. One result is that priorities are sometimes set by default, rather than by a formal planning process. Progress is being made, however, and the number of Swazis trained in land development and equipment maintenance is the bright spot of the project.

LDS could operate fairly well if all except one of the expatriates were not replaced at the end of their tours; if the Swazi it is assumed will serve as a construction engineer returns on schedule; and if the tours of the expatriate construction engineers are extended slightly to overlap and train them. (This assumes LDS is not assigned additional responsibilities.)

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<sup>13</sup>The Land Development Officer is in charge of LDS. In U.S. terminology, he would be the director.

In LUPS, there are two uncertified surveyors (engineering technicians), and four LDS surveyors working on the project have received in-service and on-the-job training from the construction engineers. Eight LDS technicians (untrained surveyors) will participate in formal surveying training in September 1983, and completion of the course will permit the participants to be certified by the Swaziland College of Technology (SCOT). Continual on-the-job training and in-service training are needed to upgrade skills related to the job. In addition, in LUPS there are a soils technician and a draftsman. In the Cartography Section there are one administrator and two draftsmen.

LUPS is currently understaffed and depends very heavily on the expatriates. The expatriates are planning and, more often, designing projects. This is appropriate and is according to PP plans, but training Swazis, including those who have returned from participant training, is not receiving enough attention. Six Swazis are in the United States in graduate programs, and the majority of them return in late 1984, '85, and '86. When they return, many, but not all of LUPS's needs will be met. The expatriate personnel should be kept aboard until the Swazis returning from training abroad have the on-the-job experience they need to be effective (see Part B, Section V).

The Senior Land Use Planning Officer<sup>14</sup> is in the United States to obtain an M.S. degree. The person acting as Senior Land Use Planning Officer, who has an M.S. degree, has not been officially named as Acting Senior Land Use Planning Officer; however, he has been in the position for more than a year. The evaluation team feels he is doing a very good job; however, his not having been given the title officially has created some problems in the operations of the section.

Two assumptions support the project purpose, and both are reasonably valid. The assumption that GOS maintain its commitment was certainly met through 1982, and it is still being met in a philosophical sense. However, the GOS budget for the RDA Program has been drastically reduced this year, and this has greatly limited the progress of the project. LDS is currently out of operating money and the fiscal year has 6 months to go.

The assumption that inter-departmental and inter-ministerial coordination and cooperation exist among all GOS units is a utopian assumption that will never be 100 percent met in Swaziland or anywhere else. There has been progress but there are still problems in coordination, even between LUPS and LDS. The current understaffing intensifies the latter problem. It is heartening to see that representatives of various units tend to

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<sup>14</sup>The Senior Land Use Planning Officer is in charge of LUPS. In U.S. terminology, he would be the Director.

work together and solve problems at the local and RDA level. The relationships among the agencies with an interest in providing safe domestic water needs further attention, and the senior officers in LDS and LUPS must meet regularly and coordinate activities.

#### 4. Outputs

Six outputs are listed in the log frame. All of the listed outputs have been accomplished to one degree or another. Few if any of them have reached their targeted level, but progress is being made and in some cases that progress is very impressive.

The first output listed in the logical framework is "construction of terraces, grass strips, dams, canals, diversions and access roads," and the indicator for it is "RDA Management Unit and project team to re-evaluate and determine magnitude of infrastructure outputs by August 1980" (see LFEF #7, Appendix A).

Since the major parts of the project have been delayed for 2 or more years, the verifiable indicator has not been met. Also, by August 1983, it had not been done as a formal exercise, but some is being done informally on a continual basis. LUPS is in the process of developing a detailed plan for the Lubombo, Mahamba, and Madulini RDAs and preparing grazing management plans for several RDAs and the dairy farms. While the indicator has not been achieved, much has been achieved in terms of meeting the output. The table on page 41 shows accomplishments.

The second output is "heavy equipment maintenance workshop," and the verifiable indicator for it is "workshop employing good management practices and keeping equipment downtime at 10 percent by August 1981" (see LFER #8, Appendix A).

The LDS workshop met the target of 10 percent or less equipment downtime early in 1981, and continued to maintain this record throughout 1982. The good record probably was not so much the result of a large improvement in the functioning of the workshop, but was the result of the addition of over 80 new major units to the fleet.

The goal of a downtime rate of 10 percent as called for by the logical framework is felt to be lower than should normally be expected on a long-term basis. A 15 percent rate is attainable-- provided spare parts are available and equipment is replaced when obsolete or uneconomical to repair.

The workshop regularly produces a utilization of equipment report, and this is a good management practice. In the month of May 1983, utilization averaged from 10 to 30 percent for each of the six operating units. This is a low rate. The primary reason for the low rate of utilization for equipment was

the budgetary crisis. In addition to the shortage in the operating budget, the lack of final plans from LUPS may be a contributing factor, as are coordination of procurement and timely delivery of construction materials to the job site.

Many of the jobs undertaken by LDS are small and widely dispersed. For the many small jobs undertaken by LDS, high rates of utilization, such as those produced on big construction jobs (70-90 percent) are impossible.

There is great interest in obtaining the actual operating cost per unit of equipment and per job. LDS is preparing to obtain the information, but it will not be readily available until the new computer is programmed and in operation. The spare parts operation is scheduled to be programmed first.

Much indicative data relating to the effective functioning of the workshop and LDS as a whole are being recorded, and plans have been prepared to do an even better job. Data on equipment downtime and utilization are being recorded by LDS; at present, the utilization of the data is being improved. Once the computer is in service, the following will be readily available:

a. Equipment Downtime. (The ratio of the hours a unit was not in working order to the total working hours in a month.) A record will be kept for all units of major construction equipment, including heavy trucks.

b. Utilization. (The number of hours that each unit was actually doing productive work expressed as a percentage of the total working hours in a month.) A record will be kept for each piece of major construction equipment, including heavy trucks.

c. Cost Accounting. (For each major piece of equipment and for each job.) A monthly summary for each unit of equipment will be available, including repairs, depreciation, fuel, and labor. Annually, the cost of operation per hour of use will be calculated for major units, the total costs for each job will be determined.

The third output listed in the log frame is "land use plans," and the indicator is "plans initiated for all intensive and non-intensive RDAs and completed for all intensive RDAs by August 1984" (see LFER 9, appendix A).

LUPS has prepared some plans for all RDAs; therefore, it can be said that at least one part of the indicator target has already been met in full.

Plans have been published for the first four RDAs, and much work has been done as well for some of the subsequent maximum input RDAs. In all RDAs, there are plans for what areas will be cultivated, where livestock will be grazed, and the location of most roads and domestic water supplies.

The team considers all of the published plans to be "complete," but beyond this the issue of what constitutes a "complete" plan is unresolved. As indicated elsewhere in this report, the concept of planning envisioned when the project was initiated viewed planning as being something which at some point in time was finished. This is no longer the case. There will always be a need for planning. The job will never be "complete."

At present, it appears that LUPS personnel are very busy, and it seems likely that plans for all intensive input RDAs will not be published by the target date of August 1984. The evaluation team questions whether they should be. The team members view planning as a continuing function, and more adequate measures than "complete" plans should be used as indicators.

For most RDAs, there are fairly detailed maps available showing arable land, grazing areas, access road locations, etc. Enough planning has been done to show what is to be done by RDA management. Since the LUPS is understaffed and the USAID contractor personnel arrived about 2 years late, it is understandable that planning is behind schedule.

The fourth output listed is "conservation works rehabilitation program," and the indicator is "program established and implemented by March 1982."

Rehabilitation work has been done as required, but not according to a formal plan. The table on page 41 shows accomplishments. It is difficult to distinguish between maintenance and rehabilitation. In many cases, the decision as to what to call the work is very arbitrary. Much of the work on terraces and grass strips has been rehabilitation work. Some of the older works are in need of maintenance and others need to be renovated because of poor original design.

The fifth output is "improved management procedures for planning, designing, and constructing RDA physical infrastructure." This output is directly related to the project purpose, namely, to develop, install, and maintain conservation works in RDAs designated for intensive development and to strengthen the RDA Program's land use planning and development capability. The verifiable indicator is that improved management procedures were to be in place and functioning by March 1980 (see LFER #11, appendix A).

Improved management procedures were neither in place nor functioning by the target date, March 1980, because of the delay in arrival and other problems encountered with the first team of expatriates provided by the USAID contractor.

Since 1980, LDS has instituted a number of improved management practices in the maintenance workshop. These are:

- a. A recordkeeping and paper flow system (May 1983);
- b. An established reporting and workshop monitoring system (May 1983);
- c. Manpower and scheduling system in the LDS office (1982);
- d. A system for scheduling maintenance and repairs on major equipment (1982);
- e. A system of daily reports required of the manager and foremen (1982);
- f. Individualized job sheets for repairing major equipment, indicating the problem and parts needed;
- g. Organizational charts for LDS (October 1982), which help in both short-run and long-run planning;
- h. A systematic training schedule for workshop personnel (1981); and
- i. Inventory control and procedures (1982).

The above procedures contributed greatly to improving the operation and organization of the workshop. The procedures have resulted in more timely control and delivery of resources, and have enabled LDS to develop, maintain, and install conservation works in a more effective manner. Further improvements can be accomplished through improved implementation and supervision, which has been planned and is being implemented at this time.

A study, which included an evaluation of the operations, management, and information systems of LDS and recommendations for improvement, was completed in June 1983. Specific management guidelines and procedures are outlined in detail in the report. One of the major recommendations is that LDS move toward decentralization of the maintenance workshop. Several regional workshops are to be established. The evaluation team commends the leadership of LDS for conducting the study and moving aggressively to implement the recommendations. The decentralized approach to maintenance should be more effective and reduce the travel time for mechanics and maintenance personnel.

The evaluation team visited several of the six LDS construction units, observing two of them in operation. They are well managed, and very good procedures are being utilized. The team feels that decentralization could further improve operations, and it is already being tried on a pilot basis.

The evaluation team was informed of or noted questionable elements of the design on three construction jobs. In one case, the design by the LUPS engineer was correct, but it was changed "on-the-job" during construction. The team learned that construction work is sometimes not monitored to the extent it should be. The problem is the shortage of expertise. In another case, LUPS designed what the chief and RDA management wanted, after pointing out that operating costs would be high and better sites were available. This situation highlights the problem of the role of LUPS. Should (or could) LUPS have stopped the activity? The third was a simple project where, because of the shortage of personnel in LUPS, the people, with LDS assistance, had moved ahead without benefit of design assistance from LUPS. Recommendations made in Section V-B will correct these problems.

Management procedures in LUPS have not been refined and improved as fast as was anticipated in the PP because of understaffing of both the expatriate team and the MOAC team. Several of the MOAC personnel are in the United States being trained at present. Recently, LUPS has been playing "catch up" because of getting such a late start. This has led to what the evaluation team regards as being a serious problem, namely that the priorities for activities have sometimes been set by default rather than by plan. As LDS and RDAs have pressed for assistance from LUPS, the personnel in it have had to concentrate more on design work and, by default, less on RDA and other planning.

From the viewpoint of the evaluation team, the number one concern about LUPS management is the question of what should be the role of LUPS in the RDA Program, as well as in the overall land and water development activities of the entire nation. Recommendations in Section V-B are intended to solve the problem.

The people in LUPS at the present time are doing what they can under the circumstances, and the evaluation team compliments them on the fine job they are doing. In general, the planning process is orderly and the proper issues are considered. The untimely death of one of the USAID contractor personnel and the delay in obtaining a satisfactory replacement has been a serious constraint to LUPS in improving management. The Senior Land Use Planning Officer will soon be returning from training, and an expatriate Land Use Planning Officer should arrive in September 1983. This should help significantly.

The evaluation team was concerned about the timing and level of LUPS involvement in the RDA planning process. At present, planning is initiated by the chiefs, representing the people, in cooperation with RDA extension personnel officials and various other groups. They prepare what is called the People's Plan. It appears that there is generally no LUPS involvement until after the People's Plan has been prepared. Then the plan comes to LUPS for comment and revision. Should LUPS or another agency be doing anything before or during the preparation of the People's Plan?

After reviewing the situation, the evaluation team has recommended serious consideration be given to revising the role of LUPS. When a decision has been made on the future role of LUDS, the managerial needs can be determined with much greater accuracy. The team suggests most of the design work should possibly be transferred to LDS and the preparation of detailed plans for each RDA to a regional office. The central office of LUPS in Mbabane probably should not be trying to prepare detailed land use plans for every hectare in the nation, or the RDAs.

Since LUPS is currently understaffed, behind in planning, and many of the Swazis being trained will not be returning soon, it is not likely that much change can be made in overall management by the end of the project. If, as has been suggested elsewhere, the design function is moved to LDS or elsewhere and the project is extended, the improvements needed can be accomplished.

As construction site visits were made by the team, it became apparent that, for optimum effectiveness in management, closer coordination and better construction supervision are needed. In discussions with LUPS and LDS officials, the team was told coordination was much better now than it was earlier. Regular meetings for coordination are needed, and a high level official in MOAC should monitor the situation.

A review of the proposed LDS's construction program indicated that finished design plans are needed for a number of jobs. The team felt that if the design personnel were working in regional offices, possibly within the LDS organization, conditions would be improved (see recommendations on this point in Section V, Part B). However, the success of the regional office reorganization will depend on the availability of trained personnel. There are only two construction engineers (TA personnel) on the job at present, and their Swazi replacements will not return from training until after their scheduled departure. Decentralization will not help solve this problem. For the satisfactory continuation of the construction program, it is essential that the services of the two USAID contractor construction engineers be provided until after the return of the Swazis, who are training in the United States, and additional construction engineers should be trained. Also, space should be made available at the LDS office for the designers to work adjacent to the construction engineers.

Within the LDS, there are some minor personnel and coordination problems which came to the attention of the team. The situation has been studied in detail, and the report written by the TA Administration/Management Advisor makes many excellent suggestions for improving management. In it, the advisor noted the Land Development Officer has more responsibilities than one person can handle. In the absence of enough construction engineers, the LDO often has to assist in the field and coordinate accounting, procurement, maintenance, and planning.

His office is remote from the maintenance workshop and the parts/supply warehouse. A closer location would improve supervision and coordination as well as reduce travel time.

The recent acquisition of the computer will allow the parts records and procurement to be simplified and improved. As programming proceeds, equipment operations and maintenance records will be added, as will personnel, payroll, accounting, and operational costs, accounting for each piece of construction equipment and job performance. This will make more accurate budgeting and forecasting possible. (Security for this unit is essential.)

Output number six is crucial in terms of developing, installing, and maintaining conservation works in RDAs and strengthening the RDA Program's land use planning and development capability. It is, "trained Swazi personnel for key posts in the MOAC." The verifiable indicator shows who and when personnel are to be aboard (see LFER #12 appendix A).

Swazi technicians are to be in established posts of LUPS, LDS, and the LDS workshop by April 1984. One technician returned in June 1982 with an M.S. degree in range management, and he is now the acting Senior Land Use Planning Officer in LUPS. Two Swazis departed for training in January 1982, and will return in January 1984 (civil engineering and soils). Another Swazi will return in June 1984 (soils), and two technicians have departed for training in agricultural engineering, but they will not return until after the EOP.

The delayed departures and subsequent late return dates for participants have contributed to the shortage of personnel working with USAID contractor personnel. If the project terminates in August 1984 as planned, the majority of the Swazi technicians will, for all practical purposes, arrive at the same time or after the U.S. technicians have left. There will be no opportunity for overlap and on-the-job training.

Another part of the verifiable indicator is that 158 heavy equipment operators and 42 light vehicle operators were to be trained and on the job by August 1981. The project got underway with the recruitment of qualified U.S. contractor personnel in January 1980, so the August 1981 date was not met. However, the Equipment Operator Specialist had trained a total of 135 persons in the operation of heavy equipment by March 1982. In-service and on-the-job training is being provided for all heavy equipment operators and truck drivers on a continuing basis. All 135 of the persons trained were certified by GOS, and 41 were identified as potential instructors.

Sixty mechanics are to be trained by August 1984. In August 1983, a total of 88 mechanics had been in training since January 1982. Of these, 35 have been certified by SCOT. This exceeds the figure of 60 set in the logical framework.

In-service and on-the-job training is continuing. In addition, a parts and supply manager completed a 90-day parts and management course (May-July 1983) sponsored by the Afro-American Purchasing Company (AAPC). The participant is currently working as a counterpart to a USAID contractor. In addition, a technician responsible for field maintenance was trained by a member of the USAID contractor team who departed in November 1982.

A total of eight land surveyors was to be trained by March 1981. This was not accomplished due to USAID contractor personnel not arriving until 1981. Several surveyors were hired in 1981, but they have been transferred to management positions. At this time, 13 individuals are working as untrained surveyors (engineering technicians). Two are taking a correspondence course in surveying, and eight are receiving on-the-job training. The latter group is scheduled to participate in a formal training course in September 1983. Completion of this course will permit the participants to be certified as Grade 3 surveyors. Five of the surveyor trainees will be eligible for certification as Grade 2 surveyors when they complete the correspondence course in surveying.

While the project is admittedly behind schedule, the current leadership of LUPS, LDS, and the USAID contractor personnel have done an excellent job of training Swazi personnel. The evaluation team believes the effort will yield great benefits in the years ahead, and they recommend training be given top priority in the future.

Three assumptions are stated for the outputs. First, it was assumed that rural people will adopt recommended conservation infrastructure maintenance practices. The fact that grass strips are evident throughout the cultivated land of the country is evidence that this is a valid assumption. Inspection from the air indicated that the grass strips and terraces are functioning well in all areas, not just near the roads.

Some of the grass strips have gotten too narrow and farmers need to be reminded that a certain minimum width must be maintained. This could become part of an expanded conservation education program with extension. The NECE can help. Also, little progress has been made in destocking rangeland. This is a socioeconomic problem, and will probably not be resolved within the life of this project.

A definite trend toward tractor plowing is evident. The plows used are moldboard or disc. Some thought should be given to using chisels, with or without sweeps, instead of the currently used plows. Yields would not likely be reduced and erosion would be lessened. Research concerning the effect on weed population would be needed, if it has not already been done. Where oxen are used for plowing, a change to the traditional "point" plow might be advantageous in terms of erosion control.

It requires much less energy than the moldboard plow being used and in many soils it is just as effective. Low till and no till production should be investigated.

Based on numerous field trips and an inspection of much of the country from the air, the evaluation team concluded that few new terraces are needed. Grass strips are almost as effective and they cost much less. In general, erosion of the arable land has been controlled to a remarkable extent, and most conservation effort in the future should be aimed at the grazing lands. The grazing land conservation program should include destocking, diversions across trails, judicious location of water sources and dipping tanks, and, possibly, rotational grazing.

Another assumption was that GOS was to have established the posts required and all the necessary counterparts and participants would be trained in a timely manner. This assumption has not been fully met. The Swazi replacements for several expatriates were assigned late. Six of the seven Swazi counterparts will not return until EOP or later. Most of the Swazis in the workshop are trained and in place.

The assumption that trainees will be working in positions for which they were trained has been met.

## 5. Inputs

Inputs to be provided are divided between USAID and GOS.

### a. USAID Inputs

#### (1) Technical Assistance

The verifiable indicator is that USAID is to provide 59.66 staff years of technical assistance and expenditures of \$5,910,900 (see LFER #13 appendix A). The following table shows the number of USAID contractor staff years provided as of August 1983. The total is 36.04, which is 60.47 percent of the total 59.66 allotted. While there is almost a full year to go on the project, if staffing levels remain at present levels, the full 59.66 years will not have been utilized, and neither will the budget of \$5,910,900.

The team has noted elsewhere that much of the technical assistance to be provided by USAID arrived late, and the project has been delayed as a result.

#### Recommendation:

The team recommends the project be extended for 2 years and that hereafter USAID inputs should give emphasis to institution building. Technical assistance USAID should provide includes additional time for the current expatriate filled

PREVIOUS STAFF

LAND USE PLANNING SECTION

Land Use Planning Officer (COP) (Halliday, B.)	08/80 - 08/81	13 months
Soil Mechanic Conservationist (Schoephorster, D.)	09/80 - 08/81	12 months
Range Ecologist (Bishop, D.)	10/80 - 08/81	10 months
Civil Engineer (Hydrology) (McNown, J.)	06/81 - 10/82	.5 months
Resource Economist (Rogers, R.)	08/81 - 08/83	24 months
Land Use Planning Officer (COP) (Cooper, H.-died)	02/82 - 07/82	6 months

LAND DEVELOPMENT SECTION

Construction Engineer (Beckman, R.)	01/80 - 12/80	12 months
Equipment Operator/Trainer Advisor (Moore, C.)	03/80 - 03/82	24 months
Senior Mechanic Instructor (Feather, R.)	12/79 - 10/80	10 months
Parts/Supplies Manager (Seward, C.)	12/79 - 10/80	10 months
Parts/Supplies Manager (Andrews, J.)	12/80 - 08/81	9 months
Mechanic Instructor (Nystrom, E.)	12/80 - 09/81	10 months
Manager Administrator (COP) (Dallis, S.)	12/79 - 10/81	24 months
Mechanic Field Superintendent (Yoder, H.)	12/79 - 11/82	36 months
Construction Engineer (Chester, R.)	02/80 - 07/81	17 months
Total		232 months (19.33 yrs.)

PRESENT STAFF (as of 1/9/83)

<u>TCC</u>	
Soil Scientist 4/82	16 months
Range Ecologist 8/81	24 months
Const. Engr. 1/82	19 months
Const. Engr. 1/82	19 months
Civil Engr. (Design) 6/80	38 months
Civil Engr. (Hyd.) 6/83	3 months
Civil Engr. (Soil Mech.) 2/81	18 months
<u>OCS</u>	
Admin/Mgr. 10/81	22 months
Spare Parts/Supply 11/81	21 months
Mech. Trainer 11/81	21 months
Total	<u>201 months</u> (16.75 yrs.)
As of 1/9/83, Total Service Provided from Previous and Present Staff	<u>433 months</u> (36.04 yrs.)

positions so there are overlaps with the Swazis being trained to replace them, personnel for continued high-level management advisory and mid-level management training assistance, and construction engineers if operating funds are found for LDS to operate at full capacity.

(2) Training

The inputs programmed for USAID to achieve the project purpose and goals were participant training for land planning and land development and in-country maintenance workshop related courses (see LFER #14, appendix A). A total of 32 study years of participant training at a total cost of \$645,000 were to be provided. The following participants have been or are currently in long-term training.

<u>Position</u>	<u>Departed</u>	<u>Return</u>	<u>Degree</u>
Range	Jan 80	June 82	M.S.
Ag. Engr.	May 83	Jan 86	B.S.
Ag. Engr.	Jan 83	May 86	B.S.
Soils	May 82	May 84	M.S.
Soils	Jan 83	Jan 86	B.S.
Civil Engr.	Jan 81	Sept 84	B.S., M.S.
Civil Engr.	Jan 80	Jan 84	B.S.

Accordingly, 10 study years of long-term training has been utilized, and an additional 12 years are committed for present participants. An additional 10 years can be utilized in case present participants need additional time to finish degree requirements or for new participants. Some of the additional study years money could be utilized for participant study in USDA-sponsored courses or in specialized training appropriate to supporting of project goals. It is recommended that priorities be established and personnel identified for use of the remaining training funds as soon as possible.

The verifiable indicator calls for a number of in-country courses and workshops. A number of in-country workshops have been held. A week-long maps and soils workshop was held for 20 RDA project coordinators and extension staff in March 1983, and it will be repeated in October 1983 for 20 RDA and extension personnel. A 2-day workshop in irrigation training was held in spring 1983 for 15 extension agents. Two 1-week welding courses were conducted for 16 workshop personnel. A 3-day management course was offered to 15 mid-level managers from RDAs. Representatives of Champion graders taught 30 grader operators during a 2-week course. (All of the participants were certified upon completion of the course.) A 1-week course for grader operators was sponsored by the Galleon Company.

Representatives from many of the equipment companies indicate they will send their trainers free of charge to train workshop personnel in the operation and maintenance of their equipment. All they require is payment of food and lodging. USAID is urged to provide the small amount of funding needed to cover this cost. This support will enable top quality trainers to provide up-dated training to workshop and other personnel at a minimal cost.

Recommendation:

If the project is extended as has been recommended, USAID should give highest priority to training, especially for mid-level management. Also, additional construction engineers should be trained.

(3) Construction

Construction to be provided by USAID is as follows:

	<u>PP Estimate</u>	<u>Disbursed (July 31, 1983)</u>
10 Senior Tech. Houses & 1 Parts Warehouse	\$435,000	\$435,000

(4) Commodities

Commodities to be provided by USAID are as follows:

	<u>PP Estimate</u>	<u>Disbursed (July 31, 1983)</u>
Vehicle, Office, Field & Training Equipment, Supplies	\$140,000	\$89,961

Recommendation:

The following should be provided by USAID during the remainder of the project:

(a) Maintenance/Repair Equipment & Tools

Brake drum/roter lathe, and tools Dynamometer absorption brake and attachments (for engine testing) Diesel injector calibrating unit (when mechanics can effectively utilize it; at present not experienced enough)

(b) Spare Parts

Items needed for essential units of project equipment, especially those which are not

available on the local market Components to use for revolving/replacement stock, i.e, starters, generators/alternators, transmission, etc.

(c) Facilities

Secure, fenced, covered storage for batteries, tires, and lube supplies at workshop  
Secure areas for computer and safe storage of duplicate record discs  
Extension of parking area at workshop for service and transport trucks  
New LDO office at workshop site  
More secure area in parts warehouse for high-value pilferable items

b. GOS Inputs

GOS was to provide the inputs shown under LFER #17 to 23, inclusive.

The PP projected total GOS support for the RDA Program at a total of \$12,228,600 for the 5-year life of the program. The team found it impossible to document the detailed amount allocated to individual sections, such as LUPS and LDS, but overall inputs to the total RDA Program were available. The following is the GOS expenditures on the RDA Program for 1979-83.

<u>Year</u>	<u>Expenditures</u> <u>(in millions)</u>
1979	3.8
1980	4.2
1981	4.4
1982	4.0
1983	<u>2.3</u>
Total	18.7

The evaluation team concludes that in terms of aggregate funding, GOS has done very well. The original Pro-Ag called for the GOS to establish a sinking fund in the MOAC to provide capital equipment replacement funds for heavy construction equipment. The MOAC sinking fund has not been established, but funds have been deposited annually with the Central Transport Authority (CTA). MOAC has paid CTA through the fiscal year ending in April 1984. The team was unable to determine how much MOAC has paid CTA, but the amount for the current year was reported to be about \$2 million. GOS has promised to provide the information needed to USAID within a few days.

If the information provided to the evaluation team is accurate, then an unrealistically high amount is being paid to CTA.

CTA is apparently calculating the life of the equipment at 5 years. This is unrealistic considering the utilization of this equipment. The Caterpillar Company uses the figure of 10,000 hours under average conditions as the life expectancy of its equipment. It would thus take 40 hours of use per week for 50 weeks per year to get 10,000 hours usage in 5 years. This is, of course, an unattainable usage level.

The Association of American State Highway Engineers lists normal depreciation used by the U.S. state highway maintenance departments for various pieces of equipment. The life range is from 5 years for light duty to 10 years for several heavy-duty items. Considering past experience and present observations of equipment utilization and maintenance in Swaziland, 10 years for tracked tractors (bulldozers), excavators, graders, and front-end loaders would appear to be reasonable. The short period of life used by CTA inflates the MOAC payments and misleads auditors and others so that they reach erroneous conclusions concerning daily running costs of the heavy equipment.

Funds for replacement of trucks of all types, buses, and passenger vehicles are paid to CTA by an additional levy on fuel so that depreciation is proportional to the actual usage of the vehicles.

#### Recommendations:

CTA policies should be changed, and realistic depreciation rates be utilized. (A rate based on hours of life would be the most desirable.) GOS and USAID should reach agreement on where the sinking fund is to be kept.

#### c. Validity of the Assumptions Regarding Inputs

The only assumption was that GOS, USAID, and contractors would provide goods and services on time as required. There has been a good faith effort on the part of all parties, but many of the inputs were not timely, e.g. the establishment of a full USAID contractor team and the assignment of personnel by GOS, both of which occurred late. When inputs were delivered is shown in Parts D and E. Timeliness of inputs has been a problem for both USAID and GOS. Examples are the U.S. contract personnel arrived late, and one key position is vacant at present; construction contracts were delayed; and GOS counterparts and trainees were assigned late, and in some cases still have not been assigned.

D. Implementation Schedule Analysis

In this part of the report, the implementation schedule from the PP is reproduced, and the date each activity was actually accomplished, with remarks, has been added.

Swaziland RDA Infrastructure Support Project  
Implementation Analysis

DATE PLANNED	ACTION	DATE ACCOMPLISHED	REMARKS*
8/78--8/79	PHASE I		
8/78	PP Completed & Submitted	8/78	
9/78	PP Approved; Loan Agreement Authority Granted	9/78	
9/78	Project Grant/Loan Agreement & PIOs Signed	2/79	
10/78	Specifications for New Equipment Prepared	4/79	
10/78	RFPs for Technical Services & Workshop Management Contract Issued	2/79	
10/78	RFPs for Housing & Workshop Parts Warehouse Issued	10/79	
12/78	Contract Awarded for Construction of Housing & Workshop Parts Warehouse	11/79	#1
12/78	Proposals for Technical Services & Workshop Management Contract Received & Opened	3 to 9/79 9/79 10/79	#2
1/79	IFBs for Equipment Issued	6/79 4/82	1st Order, #3a 2nd Order 3rd Order

\*See pages 63-66

PLANNED	ACTION	DATE ACCOMPLISHED	REMARKS*
1/79	Construction Starts on Housing & Workshop Parts Warehouse	8/79	
1/79	LUPS & LDS Counterparts & Participants Selected	9/79 to 8/83	#3b
1/79	Contracts Awarded for Technical Services & Workshop Management Contract	9/79	
2/79	Bids for Equipment Received & Opened	10/79	1st Order, \$5.4 mil.
		6/82	2nd Order:
		Not Done	a) \$2.3 mil.
			b) \$2.3 mil.
3/79	Contract for Equipment Awarded	11/79	
4/79	L/Comm for Equipment Issued	12/79	
7/79	Workshop Parts Warehouse Completed	7/80	
7/79	Land Use Planning Office Arrives	4/80	
7/79	Housing Construction Completed	6/80	5 in Manzini
		7/80	5 in Mbabane
8/79	Initial Commodities Designated for Local Procurement Acquired		
8/79	GOS Recurrent & Capital Budgets Established	Not Done	
8/79	Office Space Allocated; Offices Furnished	Done upon Arrival of Personnel	
8/79	First Project Appraisal Reports Completed	5/80	

DATE PLANNED	ACTION	DATE ACCOMPLISHED	REMARKS*
9/79--8/80	PHASE II		
9/79	LUPS & LDS Participants Depart for Training	6/80 6/81 6/82	#4
1/80	Workshop Participants Identified	2/82	#
3/80	Improved Planning, Design, & Management Procedures Established	10/82	
3/80	Environmental Criteria Established	Not Done	#6
3/80	Surveyor Consultant Completes Training of Surveyors & Departs	Not Done	#7
3/80	Baseline Social & Economic Data Collected & Analyzed	Not Done	#8
4/80	Sinking Fund for Heavy Equip- ment Replacement Transferred to MOA Trust Account		#9
6/80	Heavy Equipment Shipped	5 to 8/80 10 to 12/80	1st Order 2nd Order
8/80	Heavy Equipment Arrives	9 to 12/80 1 to 3/81	1st Order 2nd Order
8/80	Conservation Works Targets for RDAP Reevaluated & Set for LOP	Not Done (formally)	#10
8/80	Second PAR Completed	None Made	
8/80	First External Evaluation, PP Review	8/83	Being Done by This Evaluation Team
9/80	Workshop Participants Depart for Training	6/83	#11
8/81	Equipment Operator Specialist Completes Training of Operators & Departs	3/82	#12
8/81	Equipment Downtime Being Main- tained at 10%	9/81 through 82	Discussed Elsewhere
8/81	Third PAR Completed	Not Done	
3/82	Conservation Works Rehabili- tation Program Implemented	Not Done	#13

DATE PLANNED	ACTION	DATE ACCOMPLISHED	REMARKS*
8/82	Fourth PAR Completed	Not Done	
8/82	Workshop Trainees Return from Training & Are Assigned to LDS Workshop as Understudies U.S. Technicians	8/82	#14
8/82	Second External Evaluation PP Reviewed	Not Done	
7/83	Posts for Additional Land Planning Officer, Resource Economist, & Range Econom. Established	Not Done	#15
8/83	Fifth PAR Completed	Not Done	
8/83	Work Plan Completed for Phase IV	6/83	LDS Plan Complete & Published; LUPS Plan?
8/83	U.S.-funded Workshop Technicians Depart	Partially Accomplished 11/82	#16
8/83	Training Workshop & Field Maintenance	11/81 to 8/83	#17

Remarks

#1. December 19, 1978: Contract awarded for construction of housing and parts warehouse.

The contract was actually awarded in November 1979. A 6-month delay was encountered because the job was advertised for bids in the United States and none were received. Local tenders were made and came in over budget. Revisions were made and retendered.

#2. December 1978: Proposals for technical services and workshop management contract reviewed and opened.

The contracts were negotiated in Washington, D.C. The initial contract went to IIE, and, in March 1979, it began to recruit personnel. No candidates acceptable to USAID and GOS, MOAC, were found. In September, TransCentury and Overseas Construction Services were employed, and they recruited the technical assistance personnel.

#3-a January 1979: Invitations for BIDS (IFBs) for equipment issued.

The IFB issued June 1979 was for the first tranche of equipment, valued at about \$5.4 million. The second IFB issued was at \$2.3 million. The third and final tranche has not been ordered.

#3-b January 1979: Counterparts in LDS designated.

In September 1979, a construction engineer was designated in LUPS, but he withdrew. His replacement was designated March 1983.

#4. September 1979: LUPS/LDS participants depart for training.

The PP called for sending nine participants abroad for long-term training early in the project. The following is a list of participants, with departure and return dates.

<u>Position</u>	<u>Departed</u>	<u>Return</u>	<u>Degree</u>
Range	Jan 80	June 82	M.S.
Ag. Engr.	May 83	Jan 86	B.S.
Ag. Engr.	Jan 83	May 86	B.S.
Soils	May 82	May 84	M.S.
Soils	Jan 83	Jan 86	B.S.
Civil Engr.	Jan 81	Sept 84	B.S.
Civil Engr. <sup>15</sup>	Jan 80	Jan 84	B.S.
Economics			

<sup>15</sup>This individual was sent for training in land evaluation by the British. The position in LUPS is tied up while the individual is in training, and he may not return to LUPS.

#5. January 1980: Workshop participants identified (see #11).

#6. March 1980: Environmental criteria established.

The PP indicated that environmental criteria would be established to assure that environmental considerations would be incorporated into the design of construction and other project activities. The GOS and USAID contractor technical assistance personnel were to devise criteria mutually acceptable to GOS and USAID for activity selection, taking into account the recommendations contained in the PP's Environmental Analysis Section. No environmental criteria had been established as of August 1983. One of the reasons given is that the current LUPS, LDS, and USAID contractor personnel do not feel especially well qualified to develop the environmental standards needed.

#7. March 1980: Surveyor consultant completes training of surveyors and departs.

No surveyor consultant was hired. As noted elsewhere in this report, the need is being met through other means. In the LUPS, there are two uncertified surveyors (engineering technician may be a more suitable description) taking a Civil Engineering Technology Correspondence Course which includes training in surveying. One LUPS technician is receiving training in surveying from project engineers, four LDS surveyors have received in-service and on-the-job training from the construction engineers, and four personnel with other titles are receiving in-service training. A formal, in-service, week-long surveying course will be offered in September 1983.

#8. March 1980: Baseline socioeconomic data collected and analyzed.

The PP called for a study to develop a social and economic baseline data base. The study was to focus primarily on 13,850 homesteads in the intensive RDAs. The study was to be the responsibility of the resource economist, and he did not arrive until August 1981. He left in August 1983, and has not been replaced.

Because of the late arrival of the resource economist, it was decided to use another approach. Much of the data needed is being collected and analyzed by the MOAC's Economic Research and Planning (ERP) Unit and the RDA Program's Monitoring and Evaluation (RDA ME) Unit. Also, USAID is assisting a U.N. economic research survey to develop more reliable socioeconomic data on rural families living on Swazi Nation Land. The evaluation team reviewed the work of the above groups, and believes the data being collected by them will be adequate for socioeconomic evaluation by EOP. Social and economic data collection should be done by ERP and RDA ME.

#9. April 1980: Sinking fund for heavy equipment replacement transferred to MOAC trust account.

Funds covering depreciation of heavy construction equipment have been paid by MOAC to CTA, which is the agency of GOS which holds title to the USAID-supplied equipment. These funds are held and used for the replacement of old GOS-owned equipment. No dedicated sinking fund for the replacement of the equipment supplied by this project has been established in MOAC. The problem is under consideration by the Minister of Finance per information from the Deputy Permanent Secretary, MOAC, on August 25, 1983.

Depreciation funds on trucks are paid by an additional levy on the fuel which is supplied to all GOS vehicles by CTA.

#10. August 1980: Conservation work targets for RDA Program re-evaluated and set for life of project.

Because of the late start of the project and the difficulty in getting a USAID team fielded and functioning, this has not been done formally. Many conservation works have been accomplished. These include terraces, diversions, irrigation systems, roads, dams, fences, and brush clearing. However, many times they have not been done as a result of comprehensive land use plans, and they have not been accomplished at the rate which was originally planned. The table on page 41 shows what has been accomplished.

#11. September 1980: Workshop participants depart for training.

No participants departed for training by September 1980. Two participants nominated were turned down by GOS. One participant attended and completed a 90-day parts and supply management course. He departed May 1, 1983, and returned July 31, 1983.

#12. August 1981: Equipment operator specialist completes training of equipment operators and departs.

The equipment operator specialist departed in March 1982. He trained a total of 135 persons in the operation of heavy equipment and the driving of trucks. The training was excellent.

#13. March 1982: Conservation works rehabilitation program implemented.

Since a number of conservation works were poorly designed and constructed during the early phases of the RDA Program, a 3-year works rehabilitation program was to have been started by March 1982. Because of the late start of the project and because

of the higher priority of other things, this has not been done. Much rehabilitation and maintenance, particularly on roads, has been accomplished, but not as the result of a formal 3-year plan.

#14. August 1982: Workshop trainees return from training and are assigned to LDS Workshop as understudies to U.S. funded technicians.

The Parts and Supply Manager returned July 31, 1983, to assume responsibility in the LDS Workshop. He is working as an understudy to the U.S. technician. Others were not sent.

#15. July 83: Posts for additional land planning officer, resource economist, and range ecologist established.

No additional posts were established by GOS. A job freeze has been in effect since the financial situation became a serious crisis.

#16. August 1983: U.S.-funded workshop technicians depart.

Counterparts are gradually phasing in and U.S. technicians are being phased out. Training of counterparts has been conducted through on-the-job and in-service training. The U.S. field maintenance technician departed November 1982, and his counterpart has taken over this position. The tour for the USAID contractor training officer in the workshop ends in November 1983 and it is being evaluated. Two counterparts have been trained, and have assumed major responsibilities in the workshop. A counterpart in the parts department has been trained. The senior level U.S. advisor is scheduled to leave in late 1984.

#17. August 1983: Training workshop and field maintenance

Since November 1981, the following category of Swazi workers in the workshop and in Field Maintenance Units have received certification from the Swaziland College of Technology.

<u>Former Grade</u>	<u>Present Grade</u>	<u>Category</u>	<u>No.</u>
II	I	Heavy Plant Mechanic	8
II	I	Motor Mechanic (Vehicle)	1
III	II	Heavy Plant Mechanic	6
Untested	III	Heavy Plant Mechanic	13
Untested	III	Motor Mechanic (Vehicle)	4
Untested	III	Auto Electrician	3
			<u>34</u>

E. Review of Timeliness of Delivery and Quality of USAID, GOS, and other Donor Inputs

Probably the major constraint to the success of the project within the projected time frame is the lack of timeliness in the delivery of the inputs by both USAID and GOS.

Part D provides details on when the inputs were delivered. USAID initially asked the Institute of International Education (IIE) to recruit the personnel to be provided by USAID. IIE was not successful, and, after almost a half-year delay, the two current contractors were given the job. The delays led to the first USAID team arriving well after the previous expatriate team (from the United Kingdom) had left. Overlaps with the United Kingdom team would have been of great value to the USAID team. Then, most of the "first team" provided by one of the new contractors did not work out for various reasons. The Swazis with whom the evaluation team discussed the problem all said that many of the first team were not well qualified for their jobs. The "second team" was not recruited or functioning until well into 1980. Finally, key individual provided by a USAID contractor died, and his replacement is still not on board.

The delays in the provision of top quality personnel by the USAID contractor hit LUPS especially hard. The LDS equipment arrived and there were pressures from the RDAs to put it to use. Sometimes the work in the RDAs proceeded without adequate plans.

The decision by USAID/W to use two contracts to provide the personnel was not wise because it led to confusion and controversy in the project which caused further delays. As might have been anticipated, the personnel from the two contractors did not always work together harmoniously. After about 2 years, stronger leadership was provided by both USAID and GOS, and this problem was resolved.

GOS inputs were not timely either. Many of the personnel who were to replace the USAID contractor team were not assigned until well into the project, and some are still not assigned. Eight Swazi LUPS and LDS personnel are or soon will be in training out-of-country; therefore, they are not available for on-the-job training. This, in turn, will prevent the overlapping of the USAID contractor personnel and the Swazis who are to replace them. (Many of the contracts for the U.S. personnel end well before the end of the project, further complicating the overlap problem.

While there were problems with some of the first U.S. contractor team members, for the most part the quality of the human inputs has been adequate. The personnel being provided at present by the USAID contractors are, in general, very well qualified. The personnel provided by GOS have, in general, been very good.

Equipment purchased for the project was procured in accordance with USAID regulations. The timing of the arrival of the equipment in Swaziland was satisfactory. When there were late arrivals, they did not cause any significant delay in implementation of the project.

There have been problems because of the lack of standardization of equipment. Because of the necessity to use competitive bidding, John Deere (J-D) tracked (with bulldozer) models 550 and 850 were purchased. Spare parts procurement and stocking would have been simpler if the same makes and models as those previously used in the RDA Program had been purchased; however, this is not regarded as being a serious problem. Even if the same make of equipment had been provided, the later models would have had many parts which were not compatible with earlier models. The J-D units have performed satisfactorily.

The first group of Champion motor graders were furnished with Allis-Chalmers engines, and they have been a continuous source of trouble. Three units are now deadlined because of engine trouble. The second group of three Champion graders is equipped with General Motors diesel engines at the request of LDS, and they are satisfactory. The possibility of replacing the Allis-Chalmers engines has been discussed with the local dealer, but no decision has yet been made and no firm quotations have been received.

Two D-8 Caterpillar tracked tractors (with bulldozer blade) have been purchased and delivered, and the need for such a large tractor has been questioned. This large size was specifically chosen for efficient land clearing with heavy chain to improve grazing conditions. This method of clearing is used successfully in the United States. The LDS Caterpillar D-7 tractor were tried and found to be inadequate for the conditions. As soon as the drawbar attachments and heavy chain, now on order, are received, the D-8s will be put in service. If the D-8s are not utilized full time for land clearing, they can be used effectively on large scale road and dam construction.

The construction of housing and the warehouse were delayed as a result of a decision by USAID/W to advertise in the United States for U.S. contractors to do the job. This was unrealistic because 10 houses and a warehouse to be constructed in Swaziland are not a large enough package to interest a U.S. contractor. There was no response, and the construction had to be readvertised.

The work in LDS is currently proceeding at a very slow pace because of a shortage of funds. Other aid donors and the international agencies are providing reduced amounts of assistance, and, because of the near crisis economic conditions in the world and the Southern Africa region, GOS is unable to provide the budget needed. The positions vacant in LUPS are not being filled because of the GOS hiring freeze.

Repairs for over-the-road equipment are supposed to be provided by CTA. A surcharge on fuel goes to CTA to pay for the services. LDS has often been unable to get timely service from CTA; therefore, the repairs must be made elsewhere. If LDS's work is not to be delayed, they must pay twice!

The following itemizes the major problems concerning timeliness and quality of inputs.

1. The provision of technical assistance personnel by USAID was not timely. The selection process was delayed by 6 months while the IIE tried to recruit suitable personnel.

2. Some of the personnel initially provided by Overseas Construction Services Company (OCS) and TransCentury Company (TCC) were not suitable, sympathetic, or compatible, and selected ones had to be replaced.

3. The decision by USAID/W to divide the provision of technical assistance (TA) into two contracts led to controversy and slowed progress for the first 2 years of the project. (After an almost complete change of personnel, a satisfactory working relationship has been attained.)

4. The USAID decision to advertise in the United States for U.S. contractors to bid on the 10 houses and warehouse to be constructed in Swaziland was unrealistic. There was no response, and 4 to 5 months were lost. The lack of project housing delayed the initial arrival of TA personnel by about 3 months.

5. The GOS was slow to provide personnel and candidates for overseas training (participants). This was due to a lack of suitable candidates, and, perhaps, to an excessive workload on the part of some of the key MOAC officers.

6. The GOS is currently slow in allocating a recurrent budget. In the past, other funds could be used to supplement a smaller than anticipated GOS allotment for operating funds, but this year there are no other donor funds available. Activities including utilization and repair of equipment have been curtailed.

7. The funds for the replacement of equipment are held by the CTA, and are not within the control of the MOAC as envisioned in the PP. To date, this has not caused any serious delays in replacing equipment, but it could possibly do so in the future.

8. Repair and replacement funds for over the highway vehicles are paid to CTA in the form of a surcharge on fuel, but CTA is unable to provide the repair services needed. LDS must, therefore, perform the repair tasks for itself or send them elsewhere if it is to function in a normal manner. The LDS pays twice for the repair services, and they are delayed.

F. Identification of Causes for Successes, Constraints, and Failures in the Project

1. Overall RDA Program

a. Causes for Successes

The RDA Program is responsive to the perceived needs of the people, and the evaluation team feels this is the strongest point in the program's favor. Although the decision to initiate an RDA is made at high levels, nothing is done without the agreement and support of the people. The initial land use and other plans are prepared at the local level with the full participation of the people. This plan is then analyzed and modified at various levels, but it returns to the people for approval. The chiefs and Village Development Committee work cooperatively with LUPS, LDS, and RDA officials in all planning and implementation.

The RDA Program bridges the traditional and modern elements in Swaziland and prevents open confrontation. This is excellent, and it is a major factor in the success of the program. The availability of funds from several aid donors and international agencies has provided flexibility which has been very beneficial. Unfortunately, the funding situation has changed for the worse. The loss of external funding plus a reduced GOS budget is currently creating a serious problem for the RDA Program and the project.

Another reason for the success of the RDA Program is the strong support, both financial and philosophical, of GOS.

The large pool of human resources available in Swaziland, which includes many people with potential for developing the basic skills needed to manage projects and provide extension and other services, has been a significant factor in nationalizing the RDAs. Many developing countries could not have moved their own citizens into so many strategic positions so fast.

The quality of the resources--soils, topography, climate--are all contributing factors to the success of the RDA Program

The establishment of a sizeable extension thrust early in the RDA Program's life has been responsible for much of the success to date, and extension's impact should increase considerably in the future as recommendations are fine tuned and homesteaders become more confident in the agents.

## b. Constraints and Failures

Problems and failures in the RDA Program are not surprises to anyone with experience in developing countries. Most of the problems can be solved with the judicious application of inputs and improved management, but this will take time. Quick "fixes" for RDA problems are not likely to be found.

The RDA Program has not generated some of the anticipated economic benefits, and therein lies the greatest current problem. While the evaluation team believes the economic benefits anticipated will eventually be generated, this is by no means a certainty.

The severe drought has hindered economic progress in the RDAs. The drought has reduced yields and caused delays in increasing livestock off-take rates. No one can ascertain at this time precisely what the impacts from the drought are.

The lack of a marketing infrastructure which would allow the Swazi homesteaders to sell their crops and livestock at a reasonable profit is a major constraint. Marketing has been given too little attention in the RDA Program.

The RDA Program is suffering because the ranges are overstocked and poorly managed, and little progress has been made in finding readily acceptable ways to increase productivity in the livestock subsector. The problem is compounded by the tradition of the Swazi homesteader to treat cattle as a bank account, rather than as an income-producing enterprise, and the fact that in recent years, cattle have appreciated in value at a faster rate than the appreciation of savings accounts or other investment alternatives.

Extension has not had packages of innovations to recommend which have been adequately demonstrated to the homesteaders to the point that they are willing to place complete confidence in them. The relationship to research has been tenuous, and homesteaders have quite properly viewed many of the recommendations with suspicion. Before the extension program can be as successful as the RDA Program leaders would like, extension agents in the field must "prove themselves" to the homesteaders.

The high cost and/or unavailability of certain inputs is a constraint. For example, the acid soil (pH 4.2-5.0) requires a considerable amount of lime if it is to be made optimal for maize production and even greater quantities must be applied for beans and some other crops. Lime is very costly in Swaziland, and an effort must be made to find a cheaper source of lime or alternative ways to increase yields.

Those homesteaders who would like to make a decent living farming are often unable to get access to enough land. If homesteaders are to become commercial farmers, the current system for allocating the Swazi Nation Land must be changed.

Lack of good baseline data is a problem because it is not possible to accurately ascertain how much progress has been made. Several efforts have been mounted to obtain the data needed, but much is yet to be done.

Coordination of activities sometimes is a problem in the RDA Program.

## 2. Infrastructure Project

### a. Causes for Successes

The project has been successful because it is responsive to the perceived needs of the people. LUPS and LDS are in high profile positions, and the people appreciate what they are doing.

The project has succeeded when the personnel assigned have been top quality and they have had adequate funds to get the job done. (This applies to both USAID contractors and GOS.) The leadership in both LUPS and LDS is very good, and it has been a large factor in the success of the project.

The project made good progress when adequate operating funds were available for LDS, but progress has now slowed almost to a standstill because of the budget crisis. At the present time, the greatest threat to project success is the budget crisis.

The project has succeeded in institution building where the training program has been effective and on schedule.

### a. Constraints and Failures

The project was delayed because of the late arrival of the original expatriate team and the slowness on the part of GOS to provide personnel.

LDS is currently operating at far less than capacity because of budgeting constraints.

The project has been constrained by the lack of parts, which is largely a function of money.

The project has been constrained by GOS regulations which limit the flexibility management needs to operate efficiently. Examples are limitations on travel before and after official work hours, and the inability to reduce the number of employees to only those needed.

Operations of LDS have been hampered by the centralization of operations. A decentralized operation would reduce travel time and increase efficiency.

Over the long term, it is now clear a very serious problem will arise when the expatriates who are doing the required work are phased out before Swazis in participant training return and get the on-the-job training they need. In-service and on-the-job training is crucial for the interaction and transition of responsibilities from the USAID contractor team to the Swazis being trained to replace them.

Progress was constrained for a time by problems in deciding whether the new priorities for work to be done by LUPS and LDS were appropriate. (Soon after the project got underway, more demands began to be made for homesite leveling and domestic water and roads and less for conservation structures.) Eventually, these problems were reconciled.

G. Responsiveness of the Project to the Needs of the Target Beneficiaries

The original project design was attuned to the needs which the land use experts of the time believed were critical. While the evaluation team was not able to determine what the homesteaders perceived as their strategic needs at the time, there is reason to believe their priorities were not in total agreement with the experts. When it was learned that erosion was not as critical a problem as had been anticipated, the will of the people began to be expressed more forcefully in the RDA Program, and the work program of both LUPS and LDS was altered. Today, the project is responding to both the perceived needs of the people and the revised priorities of experts in land use and conservation. The people's priorities for LUPS and LDS are safe domestic water, access roads, homesite leveling, and fencing. These represent some 60 to 80 percent of LUPS and LDS activities at the present time. The project is doing an excellent job of responding to the high priority needs of the target beneficiaries.

Infrastructure is badly needed if the standard of living is to be increased for people on the Swazi Nation Land.

## VI. RDA Infrastructure Support Project, National Environmental Conservation Education (NECE) Program: An Evaluation

### A. Background

The National Environmental Conservation Education (NECE) Program was added to the Infrastructure Support Project (645-0068) as an amendment signed on July 1, 1980. The purposes of the NECE Program, often called the Mlilwane effort, were the same as for the overall project, namely:

1. To develop, install, and maintain conservation works in RDAs designated for intensive development; and
2. To strengthen the RDA Program's land use planning and development capability.

The Pro Ag amendment outlines additional expectations of this educational program as follows: "The capacity and capability of the Mlilwane Trust to implement and expand the NECE Program will be increased." RDA field staff will be trained in a series of 40-day sessions on soil conservation and environmental management practices through outreach programs, and Swazi science teachers will be given field courses in conservation. The institutional capability of Mlilwane will be built up by increasing the Swazi trained staff and the physical capacity to carry out its program.

Funding for the NECE Program was at the level of \$390,000.

### B. Program Review

The various parts of the NECE Program have not moved ahead at an even pace. Some things have gone well; others are lagging far behind schedule.

1. The major successes to report are in the training of teachers and students in environmental education. Output indicators are: (1) 355 teachers from MOE have completed 1- to 5-day field courses; (2) 620 university students completed a 1-day field site education tour; (3) 34,500 students have attended educational tours of Mlilwane; and (4) 25,600 students and adults have viewed outreach programs.

2. A 30-minute national resources 16mm. film has been produced, and a number of curriculum materials, i.e., leaflets and study guides have been produced and distributed. Numerous resource education programs have been broadcast by television and radio. Extensive contacts with Ministry of Education (MOE) officials, the teachers' college, and school principals has resulted in the development of pre- and in-service environmental education training programs.

3. The NECE is behind schedule in the expansion of its conservation education program with RDA personnel. The RDA conservation program is almost non-existent, and it was to be the major thrust of the project, since NECE is being funded as part of the RDA Program. Since so little has been done, it must be concluded this part of the program is almost 3 years behind schedule. The revised implementation and training schedules have not yet been developed,

4. All of the major planned construction has been completed, and most of the commodities have been purchased.

5. As of August 4, 1983, a total of \$112,201 remained in the budget (see page 77). A total of \$37,400 remains in the training budget. (This money should be used for developing curriculum materials for the RDA outreach program.) A total of \$61,028 remains in the operating budget. (A portion of these funds should be used to support the RDA outreach program.) Construction costs have overrun by \$16,575, and contingency funds may have to be utilized.

6. A major constraint to program progress has been the lack of a coordinator for the outreach program. The evaluation team believes this problem was resolved with the hiring of a qualified wildlife park and conservation professional on May 1, 1983.

7. NECE is at a potential "take-off" point. The facilities are ready and a qualified professional project coordinator is in place. The environmental education programs have reached a number of Swazis in different ways, and the NECE's efforts with the MOE and educational institutions has gained broad acceptance.

8. While the evaluation team was very favorably impressed with the work of people at Mlilwane and wishes to encourage them in their effort, it found it difficult to see a very strong connecting link between much of the NECE Program to date and the RDA Program's purposes. One useful output may be that the NECE outreach programs will give rural people a better understanding of the importance of conservation and conservation practices. Also, the NECE Program has raised the general public's awareness of conservation issues, and this is of general concern to the RDA Program. However, there appears to be limited causal linkages between the NECE's outputs and the RDA Program purposes.

### C. Recommendations

1. USAID should continue to assist the NECE Program in conservation education, training, and outreach until the job originally intended in the Pro Ag amendment is completed. (The infrastructure is now in place, and, with the leadership of the newly-recruited program coordinator, NECE is in position to develop training programs rapidly for RDA and extension staff.)

2. The project coordinator should move quickly to develop an RDA conservation education program. Strategies need to be developed to involve MOAC, extension, and RDA staff. The conservation education programs for the balance of the current project should stress the clearly identified needs and interests of the RDA homesteaders.

3. A revised implementation and annual training plan should be completed as soon as possible.

4. NECE personnel should work with RDA Program and other MOAC personnel to prepare a strategy for the institutionalization of conservation education into both the RDA Program and the Extension Service. (The assignment of an extension conservation coordinator at the national level might provide the leadership needed. He/she could help: (a) Develop joint programs with the NECE Program coordinator; (b) organize an RDA and extension staff training program; (c) develop curriculum and training materials, and (d) evaluate program outcomes.)

5. Since interest has been expressed in conservation education by agricultural teachers participating in the environmental education program and basic curriculum materials have already been developed, contacts should be initiated by NECE personnel and the USAID project officer through the MOAC and school principals to schedule 4-day training sessions for the agricultural teachers. Pre-service and in-service training could also be planned.

6. USAID should continue to give serious consideration to environmental issues in all projects and, wherever possible, provide for improvement in the environment as an integral part of each project's plan.

7. USAID should assess the general state of environmental education in Swaziland and, should assistance be merited, develop a specific project to meet the need.

RDA INFRASTRUCTURE SUPPORT, NECE BUDGET  
(645-0068)  
August 1983

PIOK or PIL # DESCRIPTION	OBLIGATED PRO-AG AMOUNT \$	AMOUNT EAR- MARKED \$	AMOUNT EXPENDED AS OF 8/4/83 \$	E
<u>COMMODITIES</u>				
80249 Ford 3/4 pickup	64,400	6,480	6,480	
80251 Toyota Hilux 4WD		9,538	9,538	
80248 10-seater bus		10,135	10,135	
18 A.V. Equip		15,705	13,990	11,562
80266 Plaques		609	609	
<u>Total Commodities</u>		42,467	40,752	
<u>TRAINING MATERIALS</u>				
28 Films		33,500		
<u>OPERATING COSTS</u>				
21 Budget Support	69,000	69,000	7,972	7,740
<u>CONSTRUCTION</u>				
15 Houses, etc.	134,000	156,500	133,761	
23 W & W Supply	156,500	4,500		
17 Elec. Services	4,500	20,640	15,877	
24 Comp. of Elec.	20,640	13,935	15,050*	
<u>Total Construction</u>	13,935	191,075	164,688*	
<u>CONTINGENCY</u>				
	51,700			
<u>TOTAL:</u>	390,000	340,542	239,799	168,94**

\*Not spent through NECE budget.

\*\*Total E expenditures do not include those outside NECE budget.

## VII. Contractual Scope of Work Review

The contract between USAID and CID provides a detailed scope of work for the evaluation team. Appendix E is a copy of the contractual scope of work. In this section of the report, each item in the contractual scope of work is reviewed and/or references provided showing where it is covered in the report. Part A covers item 1 in the Scope of Work, part B covers item 2, etc.

### A. Description and Background of the Project

Section II, pages 3 to 10, and Section III provide the required information.

### B. Review of Timeliness and Quality of USAID, Other Donors, and GOS Inputs: The Validity of Assumptions; Reasons for Shortcomings

This subject is discussed in detail in Section V, parts C, D, E, and F. To summarize, many of the USAID contractor and GOS inputs were not delivered on time and the project is, therefore, behind schedule. Also, many of the assumptions were not met and many of the logical framework's objectively verifiable indicators for program goal, project goal, and project purpose were inadequate and too ambitious. With the possible exception of some of the personnel provided by a USAID contractor early in the project, the quality of inputs has been very good. The project is a good one and properly stated goals and verifiable indicators can be attained. Causes for problems in input delivery are discussed in Section V, parts D, E, and F, and in Lessons Learned in the Summary (PES, Part II, #22, pages 6-7).

### C. Review of Project Outputs As Stated in the Logical Framework and Progress Towards Reaching Verifiable Indicators, Relationship between Inputs and Outputs, Validity of Output Assumptions, and an Explanation to Reasons for Output Shortcomings

With the possible exception of the relationship between inputs and outputs, all of the above are covered in Section V, Parts C and D.

The relationship between the delivery of the inputs and production of the outputs listed in the logical framework is sound. In almost all instances, timely delivery of quality inputs would cause the outputs to be produced. Output #2 was not stated properly, and it should be revised as soon as possible.

### D. Review of Project Purpose

The logical framework lists two project purposes. They are discussed in detail in Section III, entitled, "The Project Setting: 1983," and Section V, Parts B and C. The first listed

purpose is "to develop, install, and maintain conservation works in RDAs designated for intensive development," and many of the works are underway. However, much of the work of LUPS and LDS is now devoted to non-conservation type activities such as construction of access roads, domestic water systems, homesite leveling, and fencing.

While more work needs to be done in the area of conservation, it has now been determined that soil conservation is not the crisis situation it was believed to be by the project design team, and other infrastructure such as domestic water supplies and access roads are probably more important. Most of the arable land needing terracing has been terraced. Grass strips cost less and do the job. Some grazing land is subject to erosion as a result of overgrazing, and there are some gully washing problems as a result of the concentration of animals caused by the location of water sources and dipping tanks, but proper range management and destocking will solve the problem much more effectively than will the large scale construction of conservation works.

The people are demanding access roads, safe water supplies, and other infrastructure discussed in the PP but not listed in the logical framework. Since conservation is not critical, LUPS and LDS are responding to the demands. The evaluation team agrees with the new priorities, and recommends that the Pro Ag be amended to legitimize the current work programs and to plan similar activities for the remainder of the project. The team feels that the current activities should have received more attention in the original logical framework.

The second listed project purpose is to strengthen the RDA Program's land use planning and development capability. Progress has been made, and both LUPS and LDS are now functioning reasonably effectively. However, much more progress is needed.

The major reason for not making more progress in these areas is the lack of timeliness of input delivery, both by USAID and GOS.

The project inputs and outputs are leading to the achievements of the project purposes, but they need revision and cannot be accomplished by EOP for reasons discussed above.

The progress made by Swazi staff and the adequacy of plans for assuring the institutions will be viable at the end of the project have been discussed in detail in Section V, Parts B and C. LUPS and LDS will not be ready to "stand alone" by EOP in August 1984.

E. Review of the Project Goal and the Extent to Which the Activities Are or Are Not Leading to Its Achievements

The goal of the project is to develop and protect the productivity of the land resource base in the "intensive" RDAs.

This is a very limited goal and the evaluation team is very critical of the project design team for accepting an unrealistically narrow and restricted goal. The stated goal in the log frame is not consistent with what is said about it in the balance of the PP and elsewhere. At the present time, less than half of the effort of LUPS and LDS is contributing directly toward the goal. The evaluation team feels very strongly that the current project priorities are correct, and it is unfortunate they are not well reflected in the project paper. The issues are discussed in detail in Sections III, IV and V, parts B and C. Even though many of the current LDS and LUPS activities are not those planned in the PP, the intent of the project goal is very close to being accomplished. Erosion is not a problem on the arable land and it is not in a crisis situation on grazing land. There is some conservation construction that should be done, but most of the effort in conservation should be directed toward improved range management and proper training of homesteaders in conservation practices. The LUPS range management personnel have developed a good strategy for dealing with overstocking and other range management problems. It will take several years to test the strategy and demonstrate its validity to the people. It would be good if progress in range management could be accelerated, but there are no readily available programs which have been found to be more effective in developing countries.

F. Findings and Recommendations for Improving Project Activities, Especially in Terms of Better Coordination Between LDS and LUPS, and a Revised Implementation Plan for the Remainder of Project

Findings and recommendations have been presented throughout the report, and especially in Section V, Parts B and C. A revised implementation plan which would go into great detail is premature at this time because it will vary greatly, depending upon whether the evaluation team's recommendations are followed concerning the role of LUPS. The decision on LUPS is clearly for GOS, and the team members feel they would be impertinent if they developed a detailed plan prior to the decision. Furthermore, it is believed a detailed revised plan should be developed by personnel in LUPS and LDS over a period of several months, possibly with the assistance of a TDY. The current contractors' personnel, the Senior Land Use Planning Officer and the Land Development Officer should be very deeply involved in the preparation of the revised plan. The major emphasis during the remainder of the project, whether it is extended or not, should be on institution building, including continued training of Swazi staff.

G. Utilization of Equipment

The greatest constraint to full utilization of the project equipment is the scaled back level of activity of the LDS due to the budget crisis. A secure parking area has been established at the central RDA, and about 25 units (many new) are mothballed

there. The May report on utilization of equipment in the six operating field units averages out to a crude utilization rate of around 30 percent. This is 10 percent below a year ago. With the reduced input of spare parts (down 55 percent in July 1983 from 1 year earlier), the amount of deadlined equipment has risen dramatically and the figure will go higher. In August 1983, the equipment deadlined ran as high as 25 percent for several lines.

Downtime reached the targeted low of 10 percent in 1981-82 (see Section V, Part C). LDS is capable of achieving adequate levels of utilization if it has the money needed to do the job. The financial crisis has brought about a situation where costly spare parts cannot be purchased, and many repair jobs are not done. Downtime is up and will remain high until the financial crisis is solved.

The LDO has done everything within his power to improve the repair facilities and maintenance. Four regional maintenance workshops are being constructed, and service and simple repairs will be done in the regional facilities. Commuting time will be reduced, and costs should be lower.

Better management and supervision, combined with better trained mechanics and operators, will eventually reduce downtime and increase utilization. Training of mechanics is on-going and management is improving.

It is the team's understanding that the LDO will arrange for several items of obsolete equipment to be put up for a Board of Survey review and sold or transferred as soon as spare part stocks are inadequate to keep them running. It may be possible to transfer this equipment to the Central Transport Authority for disposition. Whatever disposition method is utilized, the depreciation charge against the MOAC budget should be stopped immediately because the equipment is not worth the charge. Equipment under consideration are as follows:

- Drawn Scrapers (cable controlled), unusable
- Wright Motor Graders, model 120G acquired in 1970
- International Trucks, acquired in 1970
- D6C Tracked Tractor (bulldozer), latest model built in 1967
- D7E Tracked Tractor (bulldozer), latest model built in 1968
- D4D Tracked Tractor (bulldozer), latest model built in 1968
- Komatsu Tracked Tractors (bulldozer), acquired in 1970

Removal of the above units from the fleet will improve the "paper" deadline and utilization rate.

The LDO has plans to stock components in the central workshop which can be sent to the field as needed for installation. The defective units will be returned, repaired, and restocked. This system will reduce hauling equipment to and from the central workshop, and no duplicate diagnostic testing

and inspection equipment will be required. The most experienced personnel will make the repairs in the central workshop and downtime will be minimized.

The evaluation team has recommended consideration be given to making the LDS a parastatal organization (see Section V, Part B). There are many ideas concerning how a parastatal would work. At minimum, if LDS goes the parastatal route, it should have greater flexibility in hiring and firing personnel. A parastatal will require working capital, and it should have greater control over its finances. One concept of a parastatal would permit it to compete with private contractors, but other concepts would limit it to doing force account activities for GOS. Consideration should be given to combining LDS with the farm machinery hire service.

#### H. The RDA Program and Extension

The Swaziland RDA Program constitutes the hard core of the government's effort to promote comprehensive rural development. The RDA Program is supposed to generate improvements in the productivity, income, and standard of living of the people residing on the Swazi Nation Land. The program was initiated in order to further the government's efforts to limit and reduce the scope of the dichotomy between the subsistence-oriented farming of the traditional subsector and the modern commercial farms in the modern subsector. The GOS intends for the RDA Program to increase the share of the nation's development prosperity going to the traditional small-scale homesteader.

It is generally believed that agricultural production in the RDAs is not increasing very rapidly; however, lack of knowledge concerning the impact from the drought and unavailability of certain data, such as income from vegetable production, make it impossible to speak with precision. While agricultural production is probably increasing slowly, if at all, there is evidence the general level of living has substantially increased for many homesteaders in the RDAs. This includes increased income, although it probably is a result of more off-the-farm employment. Thus, in the long view, the RDA approach appears to be accomplishing many of the broad development goals envisioned, although some of the benefits cannot be measured by narrowly-focused economic cost-benefit formulas.

The RDA Program is under the jurisdiction of the MOAC, and, at the present time, there are 18 RDAs. RDAs cover almost 51 percent of the Swazi Nation Land. More than 227,000 people residing on almost 30,000 homesteads are included in the RDAs. The GOS is dedicated to the RDA approach, and it is planning to expand the RDA concept to other areas.

The basic RDA approach consists of a combination of physical reorganization, rationalization of land use, and the provision of improved inputs and services to farmers. This includes the

delineation of arable and grazing areas, fencing of grazing lands and pastures, development of feeder and access roads, land consolidation and household resettlement, small scale dam construction for irrigation and the development of potable water supplies for human and livestock use, grass strip installation, terracing, and construction of soil conservation works.

A project center is established in each RDA from which the project and management staff operate. The project center serves as a locus for the delivery of all inputs that a homesteader requires to operate efficiently. Facilities include: (1) A tractor hire service pool to serve homesteaders, (2) a cooperative to distribute inputs such as fertilizer, seeds, etc., (3) office buildings for RDA Program and extension personnel, and (4) living quarters for staff. GOS ministries other than MOAC are involved in establishing schools and providing badly needed health services.

The key to current and future success for the RDAs is the involvement of the people in the planning and development process. Participation of people in the decision-making process is a traditional part of Swazi culture. The RDA planning mechanism bridges the traditional culture and the modern economy.

The document which identifies the people's needs and desires is called the People's Plan. Its preparation involves the chiefs, a Village Development Committee, and the homesteaders working with RDA officials. The plan is based on available data about the area, and its preparation is always with the full participation of the people in the area. The extension agents in the area act in an advisory capacity to insure the development of a plan that will be reasonably consistent with the soil and fertility characteristics of the area. The plan will indicate land to be farmed, land to be grazed, the location of roads, etc. At the conclusion of the exercise, the homesteaders must express agreement in designating their area as an RDA.

LUPS may or may not have been involved in the process discussed above. At this point, LUPS must become involved. Using the broad plan of the community (people's plan) as a starting point, LUPS produces a detailed land-use plan. LUPS takes into consideration not only physical and topographic features of the area, but also other technical factors. LUPS plans cover the location of homesites, the location of roads, delineation of arable and grazing areas, location of domestic water supplies, plans for irrigation facilities and other things which the community did not have the necessary expertise to incorporate into the initial plan. These detailed plans are then submitted to the chiefs and people to ask for their approval or revision of the plan. Concurrent with the development of the detailed land use plan, the MOAC introduces a limited number of inputs and personnel into the area.

Once a detailed plan has been considered and approved by the local community and the traditional leadership, it is then submitted to the Central Rural Development Board (CRDB) for consideration. The CRDB, after consulting with Rural Development Officers (RDOs), project managers, and LUPS staff who have worked on the plan, meets with the chiefs and homesteaders of the area to determine their response and agreement with the proposed developments. The people may accept or reject the proposal. If the people approve the plan, the area chiefs are required to sign a document binding them to its full and timely implementation. The CRDB, through the RDO, retains the prerogative to monitor the implementation of the program. Significant changes in the plan must be approved by CRDB.

The time consuming planning process has been criticized by some technicians as a constraint toward "speedy" development. However, there is substantial testimony from RDA officials that involvement and agreement by the people is an absolute necessity for the success of the program.

The GOS has recognized that certain social and institutional factors "constrain the rate of progress" in the rural areas, and has chosen a development strategy that is based on, and does not run counter to, traditional leadership and authority. GOS recognizes that progressive development will come about only if traditional institutions are given a participatory role in the planning and implementation of the development strategies. Supporting this idea is the GOS's desire to preserve traditional institutions in the rural areas and a conviction that the rural development which occurs outside the framework of traditional leadership would have a destabilizing effect.

The basic rural development area approach was conceived and is being implemented on a realistic, pragmatic basis. Local decision-making by the people is the key. While there was some resistance to the RDAs in the beginning, people now want them and petition the government for their establishment.

Considerable progress has been achieved in raising the standard of living in the RDAs, and the base for moving more rapidly toward commercial agricultural production has been established if markets are developed for surplus production. The basic RDA approach is sound, and it deserves continued support.

#### 1. Extension in the RDAs

The Infrastructure PP recognized the Extension Service as the backbone of the RDA effort for crop, livestock, and conservation education (PP, 1978). Each RDA was to have its complement of extension personnel to improve farming, marketing, and domestic science. It was anticipated that the increased extension activity, coupled with consolidation of fragmented land holdings, would enable farmers to utilize their land more effectively, and that extension workers would assist homesteaders to move from a

subsistence to a partial commercial economy. General problems regarding extension in 1978 were: (1) Limited manpower, (2) inadequate linkages with research, (3) inadequate and outdated training, (4) lack of a well-defined extension rationale and program, (5) inadequate support, (6) out-of-date research information, and (7) duplicate lines of authority (Parrot, 1979).

While no direct inputs from the Infrastructure Project (645-0068) were envisioned to support the development of the Extension Service, it was anticipated other donors would help GOS in the effort. The PP says that "USAID looks forward to the strengthening of the Extension Service through (1) an increase in the number of field officers graduating from the certificate course at the Agricultural College and (2) an increase in the efficiency and effectiveness of the field staff through additional in-service training." Since 1979, the European Economic Community (EEC) has provided two extension training officers to assist in up-grading in-service training and establish a collection system for crop and livestock production data. In 1982, USAID began providing assistance to a Cropping System Research and Extension Training Project. It was anticipated that the latter project would generate relevant crop research information for Swazi homesteaders and strengthen the Extension Service's capability to encourage them to adopt new cropping technologies which would increase production. A major objective of the project is to strengthen the programming and training efforts of extension.

## 2. Extension Objectives

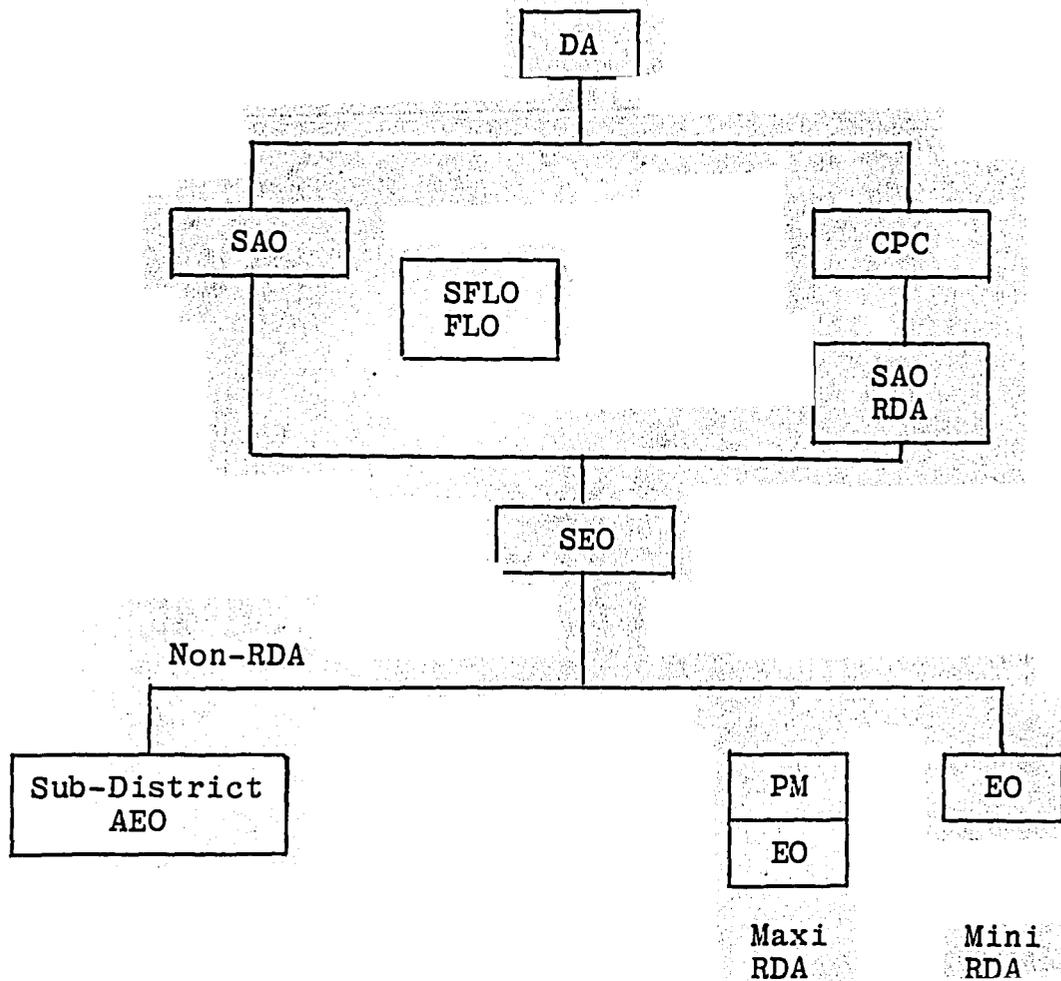
Extension in Swaziland is viewed as a systematic approach to delivering technical and sociological information to rural families so as to improve the quality of rural life through increased agricultural production. The basic mission of the service is to extend continuing and non-formal educational opportunities to rural people in both RDA and non-RDA areas. The objectives of educational programs are to improve the income producing skills and quality of life of rural people (Twala, Gaudin, and Easter, 1983).

## 3. Extension Organization

In 1982, the Principal Secretary (PS) of MOAC reorganized the Extension Service in order to create one Agricultural Extension Service. Prior to this time, extension activities were administered separately for RDA and non-RDA areas. A simplified organizational chart (Figure 1) illustrates the new structure.

The reorganization which took place in 1982 was expected to result in all Field Officers (FO) being directed in the same way, and closer linkages between specialists and the FOs being established. Extension workers interviewed by the evaluation team indicated that the new single, direct line of technical support and administrative control is an improvement over the old

Figure 1. Organizational Chart of the Swaziland Extension Service



- DA: Director of Agriculture
- SAO: Senior Agricultural Officer (responsible for coordinating all extension activities)
- CPC: Chief Project Coordinator, RDA responsible for coordinating all technical projects in the R A)
- SFLO: Senior Field Level Officer
- FLO: Field Level Officer
- SEO: Senior Extension Officer
- AEO: Agricultural Extension Officer
- PM: Project Manager
- EO: Extension Officer

system. For example, the livestock extension staff which was under the control of the Veterinary Section is now under the control of the Director of Agriculture. However, some FOs reported they still have difficulties getting cooperation from specialists. They indicated that specialists appear to still be operating to a dual line of authority--both to the Senior Extension Officer (SEO) and to their technical units.

An additional problem reported by some FOs is the feeling they have to report to several supervisors--for example, to both the SEO and the RDA manager. This is a common problem in extension services throughout the world. Organizationally, there is a direct line of authority in Swaziland; however, in actual operation, there appears to be some confusion in terms of to whom the FOs report. This applies to both Field Officers and specialists. It is suggested the newly-established, single, direct line of technical and administrative control be clarified and strengthened as soon as possible.

A number of organizational line charts have been developed to indicate the general lines of command and communication in MOAC (Easter, 1983). These charts are not official, and were developed as working charts to indicate line of command and information flow within the MOAC and to assist in the assessment of training needs. These charts are located in Appendix B. The charts may be helpful in identifying areas of administrative and supervisory confusion and providing guidance in preparing strategies to clarify and strengthen the unified line of authority system.

It was recognized in the 1978 PP that the Infrastructure Project and RDA Program were heavily dependent upon the MOAC Extension Service to make rural people aware of and understand the RDA Program. Concern was expressed about the weakness of extension. In 1978, there were only 85 FOs. The number and quality was to be increased. The goal by EOP was to have 200 extension personnel in the field in order to reach an agent/farmer ratio of 1:250 in the RDAs and 300 in the non-RDAs.

Significant progress has been made in meeting the original staffing goals as outlined in the 1978 PP. In December 1982, there were 122 FOs in the RDAs and 74 FOs in the non-RDAs. In addition, there were 73 specialists and approximately 20 supervisory personnel (1982 RDA Annual Report).

The number of specialists appears to be extremely high in relation to the number of agents--approximately one specialist to two agents. This high ratio indicates that the leadership for the Extension Service in Swaziland is utilizing a strategy which is somewhat different from the norm for the Third World. Bevor, in his publication on the Training and Visit System (1977), indicates that the greatest need is a well-trained cadre of generalist agents backed by well-trained specialists, who are usually located at the district level. In Swaziland, most

specialists were reported to be working directly with homesteaders. This practice needs to be considered very carefully because most extension experts with developing country experience believe the danger from too many specialists is that they become too specialized, i.e., pigs, dairy, tobacco, etc., and will work with so few people the increased productivity they generate will not cover their cost. The primary need in Swaziland appears to the evaluation team to be a cadre of personnel well trained in the broader aspects of crop and livestock production. While there may be a need for specialization in some specific commodities in certain areas, the trend toward specialization should be monitored very carefully. It may be necessary to assign a number of personnel who think of themselves as specialists to the still vacant FO positions. This will not be a popular decision among the specialists, but it may represent the best interests of the country.

The technical training of both FOs and specialists appears to be adequate. The Agricultural College has a strong, technically oriented curriculum. Diploma students are required to take several extension courses and participate in a summer extension practicum.

#### 4. Programming

According to a report by Twala, Gaudin, and Easter (1983), extension program planning in Swaziland is done on an annual basis to provide direction and organization to extension work in the field. The planning process includes progress evaluation, and is based on a crop cycle. (A diagram of the Swazi Extension Program Planning Cycle is presented in Appendix C.) In addition to the annual planning thrust, extension programming is, of course, influenced by the 5-year National Development Plan. Broad goals and objectives appropriate to the agricultural sector are directed to the MOAC; these are then broken down by the Director of Agriculture to the district and local level in both the RDAs and non-RDA areas. The broad objectives for the national level provide the general planning guidelines throughout the system.

The SEO, FOs, AEOs, and specialists in each RDA study the general guidelines to help establish crop and livestock priorities within the RDAs. The FOs tentatively develop their plans of work based on their previous year's work and an assessment of the needs of the homesteaders in their areas. Needs assessment is a continuous process, including individual and group judgments. In many cases, the chief will be asked to call a general community meeting to discuss the annual workplans. In the meeting, the specialist, SEO, and FO will provide the people with a general outline of the crops and livestock program for the area and ask them to identify problems and the types of programs in which they would like to participate. In general,

extension planning is a dynamic process, which stresses local participation in program development, and is conditioned by national and RDA Program goals, objectives, and priorities.

The individual FO workplan helps him/her concentrate on specific priorities as they appear during the cropping and livestock season. Priorities for the local FO might include use of hybrid seeds, land preparation, fertilizer application, pesticides, fencing, etc. Educational programs are organized on a calendar basis, stressing the teaching of recommended practices to householders in terms of specific cropping or livestock practices being carried out during that month.

Each FO keeps a notebook reporting basic data for the various farms in his/her area of work. Information is recorded for each homestead on cultivated areas, inputs, yields, etc. Also, FOs keep detailed records from 20 to 30 representative homesteads in their areas. The aggregated data from the homesteads are compiled on an RDA and national basis, and they provide the Extension Service with yearly information regarding yields, trends, and changes in practices. In addition, each FO submits a monthly report and an annual report. The reports assist the individual FO to evaluate progress in relation to area objectives and priorities and extension at the national level to assess RDA extension progress and to identify constraints and problems.

The program planning process and organizational structure being used in Swaziland today closely follows the suggestion of David Benor and James Harrison (World Bank) in 1977. The system was designed to correct three major inadequacies in the extension program identified by Parrot in 1979. These were: (1) lack of coordinating and dilution of efforts, (2) objectives, priorities, and program not well defined, and (3) links between various levels in extension confused. With the assistance of two expatriate extension professionals funded by the EEC, the MOAC Extension Service has made considerable progress during the past 3 years in upgrading and strengthening its programming system.

Three problems needing attention at this time are: (1) confusion about lines of authority, (2) lack of understanding of the programming system, and (3) inexperienced supervisors. In-depth, in-service training regarding the programming system is needed on a regular and systematic basis at the national, district, and RDA levels for all personnel. The Cropping Systems Research and Extension Training Project is addressing some of the problems, but additional assistance in management and administration is needed for middle and upper level extension supervisors.

## 5. Research Linkages

While it appears that extension is making good headway in terms of getting a delivery system in place, there must be proven research information available for the FO to use if the system is

to succeed. Several of the people with whom the evaluation team interacted indicated that past agricultural research in Swaziland has been directed largely toward the needs of estates and commercial farmers. The research was of excellent quality and it made a good contribution in increasing productivity on the commercial farms, but it has been of very limited utility to homesteaders in the RDAs. Most of the research was directed toward specific commodities and it was not directed toward the perceived needs of many Swazi Nation Land homesteads. Some of the innovation and practice packages recommended by extension workers have not been scientifically tested. The extension workers seem to possess a considerable amount of conventional wisdom concerning the economic and sociological impacts from their recommendations, but hard evidence (research) on economic and social impacts is very scarce.

The linkage to research is improving. Today, several major efforts, including the Intercropping Research Project sponsored by the International Development Research Center and the Cropping Research Systems Project for which USAID is providing assistance, are in the process of developing a research program which is supposed to be aimed specifically at the needs of the Swazi homesteader. (Whether these projects achieve the goal of producing research directly responsive to homesteader needs remains to be seen. Few, if any, developing countries have to date been able to reorganize their research programs and make them very responsive to small scale subsistence farmer needs.) In addition to local research results, experimental station research results from countries with similar soil and climatic conditions should be considered, and extension and homesteader experiences must all be used as sources of information for the extension program.

It is impossible to have a good extension program without good research to support it, but good research does not necessarily mean the extension program will be successful. In Swaziland, another major constraint for extension is the shortage of resources and facilities to provide extension personnel with good educational materials. Many of the written publications which are available are out-of-date, and the research information in them is not appropriate to homesteaders. There is a corresponding lack of posters, slide sets, and movies. Visual aides and equipment for producing them are scarce. These are serious constraints limiting the field worker. The Agricultural Information Office (AIO) charged with the development of written materials has been seriously understaffed and underfunded. The Cropping Systems Research and Extension Training Project has a component to upgrade the AIO, and this will be very helpful in the future. It will take several years to establish a viable and fully staffed AIO.

## 6. Methodology

Extension activities in Swaziland are generally based on the Training and Visit (T&V) System developed by Benor. The T&V System relies heavily on the method demonstration. This approach is used to show a group of from five to ten farmers how to perform one technical skill or how to do one task step-by-step. The method demonstration generally lasts from 2 to 3 hours and is conducted at a suitable location near the homesteads of the five to ten farmers who are invited to attend.

A method demonstration is used to meet an identified homesteader need, and it provides a workable solution to the identified need/problem. The method demonstration is conducted under local conditions, and local materials are utilized. The approach encourages farmer participation, and normally farmers practice the task or technical skill during the demonstration. In Swaziland, both generalists and specialists use the method demonstration approach.

The T&V method uses a contact farmer to organize the remaining five to nine farmers that make up the group, and it employs group discussion. The contact farmer is referred to as an innovator. The approach uses the multiplier effect in reaching other farmers in each extension area.

From among the five to ten farmers attending a method demonstration meeting, one to two progressive farmers are used as key training resources. Generally, a mix of average or below average farmers--in terms of adopting new ideas--attend the demonstration. The method demonstration is repeated throughout each extension area, thus allowing many farmers to be trained. Key farmers teach other farmers.

Other techniques used in Swaziland are results demonstrations, individual visits, technical meetings, general meetings, field days, seminars, workshops, short courses, vocational courses, shows, and competition plots. Farmer Training Centers are utilized to provide specialized training for homesteaders. Mobile units with movie projectors, slide projectors, and films from the AIO occasionally assist generalists and specialists in conducting educational programs.

It is difficult to measure the results of extension activities. The goal is, of course, change. Rural people tend to be conservative and change their ways slowly. The adoption of recommended practices is dependent upon much more than extension. For example, if economic incentives are lacking, no amount of extension will overcome the problem. In the long run, the effectiveness of extension must be measured in terms of the change which occurs. In the short term, about all that can be done is to determine the level of the extension presence.

Counting visits and demonstrations is not an adequate way to evaluate extension; however, it is a measure of the general level of extension presence. The number of RDA Program farmers contacted by generalists and specialists during 1982 and the "output per month" are shown in Appendix D. A number of the contacts reported are multiple contacts with the same homesteader; therefore, the number of contacts and the number of different people contacted should be noted.

Several studies have indicated that only 14 to 18 percent of homesteaders reported getting technical advice from extension agents in 1981. These data do not take account of ideas one homesteader may have gotten from another who may have gotten the idea from an extension agent. Also, the results of the studies may be outdated since the number of extension agents and specialists has increased rapidly since 1981. Increased contacts were reported by agents in 1982 and 1983. RDA Program extension workers are reaching an ever increasing number of farmers and they are using a variety of techniques and methods.

## 7. Training

The lack of adequate training for extension workers has been recognized by a number of authorities; however, considerable progress has been achieved since 1978. At the present time, the certificate course at the Agricultural College is supplying extension workers with a strong technical background. The training at the college is adapted progressively as feedback from the field indicates the curriculum needs revision or strengthening.

In terms of training needs, the evaluation team's first concern is with applied economics and sociology. The current training does not appear to be as strong as is desired in these disciplines. Care must be taken to train future agents in those aspects of applied economics and sociology which will help them to understand people and how they are motivated. FOs are needed with a proper "sense" of how to work with people, rather than "telling them what to do."

The second priority concern is whether extension field officers and specialists have sufficient understanding of the basic concept of rural development. A mistake that planners of rural development projects frequently make is to assume agricultural development and rural development are the same thing. The national level leadership of the RDA Program in Swaziland have demonstrated they definitely are not oblivious to the real meaning of the rural development concept, but agricultural development has emerged as the major focus of many, perhaps most, extension personnel.

A number of authorities have dealt with the relationship between agricultural and rural development. Todaro (1977) indicates "rural development, while dependent primarily on small-

farmer progress, implies much more. It encompasses (1) improvement in 'levels of living' including income, employment, education, health, nutrition, housing, and a variety of social services; (2) a decreasing inequality in the distribution of rural income and urban-rural imbalances in incomes and economic opportunities; and (3) the capacity of the rural sector to sustain and accelerate the pace of these improvements over time." Rural development is a multi-sectoral phenomenon and involves the integration of a wide variety of disciplines and agencies within the host-country government.

It is important that an agreed upon concept and strategy for rural development be taught within the curriculum of the Agricultural College and in the in-service training programs for extension and other personnel working with the RDA Program. While the efforts of the extension generalists may still be primarily directed toward agricultural development, they must seek ways to effectively interact and support the broader rural development concept. Generalists are the frontline GOS representatives at the local level and their attitudes are crucial. They are in a logical position to help people identify their needs and establish priorities. They can serve as a conduit between the people and other RDA personnel and government agencies. Appropriate mechanisms are already in place in the RDAs; now, field workers need to refine the prerequisite skills and competencies to accelerate the process.

The third concern of the evaluation team is middle level management/administration. Extension personnel at both the national and RDA levels indicated they viewed management training for middle and upper level managers as a top priority need. Topics should include personnel management and administration. The fourth concern of the evaluation team in terms of training is program evaluation. Program evaluation has received some attention recently in the training program, and, as was noted elsewhere, within the past 2 years, an agricultural data base for each RDA has been established. Extension generalists now collect and report data on inputs, yields, and agricultural practices. These data are a good base upon which to build a more efficient evaluation system. Unfortunately, a number of the generalists interviewed indicated they often did not clearly understand the procedures and rationale for program evaluation. Several agents wondered whether the results should be shared with homesteaders.

The Extension Service prepares an annual in-service training plan, beginning with an analysis of the tasks and work of the extension worker. The approach is excellent; it is what is needed to increase the extension worker's level of knowledge and understanding of both technical and rural development concepts and practices. Within each RDA, a monthly or bi-weekly 1-day

training session is held for all extension personnel. Training generally covers both technical subject matter and program planning. The training approach is good, but more work needs to be done.

The continued support of extension professionals from the EEC and the Cropping Research Systems and Extension Training Project will provide some of the assistance needed to strengthen the overall training program. The addition of several advisors working with counterparts on a regional basis could further strengthen the program. The evaluation team recommends that USAID give consideration to providing technical assistance in this area.

## 8. Extension Summary

### Observations and Conclusions

- a. The Extension Service has made substantial progress in expanding its manpower base in the RDAs. Today, the number of FOs is 174, as compared with 85 in 1978, and there are 78 specialists.
- b. The ratio of extension specialists to generalists appears to be high. There are 78 specialists and only 174 generalists. The role of specialists needs to be reevaluated.
- c. The ratio of extension field officers to homesteaders is approximately 1:300. The ratio is about 1:170 if specialists are included. These are very respectable ratios.
- d. The technical training of both FOs and specialists at the Agricultural College appears adequate. Generalists are required to take several extension courses and participate in summer extension practicums. Training in applied economics, sociology, and rural development appears to need strengthening.
- e. The extension programming system is the T&V System developed by Benor. The system was designed to correct three major inadequacies identified in 1979. It is a good system, and considerable progress has been made during the past 3 years in upgrading and strengthening it.
- f. The Extension Service and RDA management are staffed by middle level administrators and supervisors who could benefit greatly from further training in management and administration.

- g. Two serious constraints limiting the efforts of extension to increase production on land now under cultivation and raise the farm income of homesteaders on the Swazi Nation Land are: Market uncertainty and lack of economic incentives; and lack of confidence on the part of homesteaders in the extension workers' recommendations. The latter constraint is a result of (1) poor linkages between agricultural research and extension, (2) much of the research information available was developed for commercial farms, and is not always appropriate for homesteader conditions, and (3) the research information that is available is not presented in a manner appropriate for the homesteader.
- h. Increased maize production, a major objective of extension, is seriously hampered by government price policies and the lack of suitable marketing facilities and policies. Extension educational efforts to increase production are not a substitute for a stable market and adequate price. Marketing and price policy need more attention from GOS.
- i. Various components of several projects are demonstrating the potential for utilizing improved technology to increase production. All of these projects are of great interest to extension, and every effort should be made to assure that all projects, whether assisted by USAID or other donors, are adequately coordinated and contribute fully to the extension program.
- j. The AIO charged with developing written materials and other aids for extension has been seriously understaffed and underfunded. Since AIO is the critical link in developing educational materials for extension use, it should be strengthened.
- k. The Swaziland Extension Service relies heavily on the method demonstration which is a critical component of the T&V System. In the T&V System, extension agents concentrate their efforts on key or contact farmers who attend training meetings sponsored by agents. These key farmers in turn are to teach groups of from five to ten other farmers. Several studies indicate that the extension program is not reaching more than 15 to 50 percent of their clientele. Extension workers may be concentrating too much of their time on key progressive farmers. The T&V System is not very effective unless there is considerable spin off.
- l. It was learned that field agents frequently use a prescriptive approach to working with farmers. This can be an unproductive approach in view of the high level of participation demanded by homesteaders in decisions that affect their way of life. Extension workers should use approaches that allow maximum homesteader participation.

- m. A better understanding of the rural development concept would assist field level extension agents to relate more effectively to the total rural development program. A broader understanding of rural development will make them better able to help homesteaders identify needs and set priorities. Extension agents can be effective facilitators for other RDA professionals and the representatives of other governmental agencies.
- n. FOs and specialists need additional training in program evaluation, and the evaluation system should be strengthened.
- o. Most of the progress of the extension program is due to the continued efforts of Swazi extension personnel, and the evaluation team commends them. The advice and counsel of M. Francois Gaudin, EEC, Alain Mallet, EEC, and Glen Easter of the Cropping Research Systems and Extension Training Project, are noteworthy.
- p. Extension is the hard core of the RDA Program. Whether the people residing on the Swazi Nation Land raise their standard of living or not depends in large degree upon the Extension Service.

#### 9. Recommendations for Extension

In order for Swaziland to increase agricultural production in the RDAs, raise the real income of people residing on the Swazi Nation Land, and more nearly achieve its full development potential, the following are recommended for the organization and operation of the Agricultural Extension Service:

- a. Agricultural research and extension programs should be coordinated and directed toward solving problems of direct interest to and impact on people on the Swazi Nation Land. (An Agricultural Research and Extension Task Force at the ministerial level should be considered to recommend ways to establish stronger linkages between the highly complementary organizations.)
- b. Consideration should be given to GOS requesting USAID or another aid donor to provide highly-qualified expatriate extension specialists to work with and assist extension and RDA personnel in the four districts. The effort should be directed toward (1) programming, (2) in-service and on-the-job training, and (3) strengthening extension-research linkages.
- c. The roles of generalists and specialists should be reconsidered. (The current ratio of approximately one specialist to two generalists seems inordinately high. Specialists in crop production should be able to cover a variety of crops, and livestock specialists should be

- able to handle, for example, both large and small animal production. With the exception of specialized commercial dairy farmers and selected vegetable and fruit producers, specialists probably should be working through the generalists.
- d. The current extension programming approach should continue to be utilized and strengthened. Additional training should be provided on how the system operates and on planning and evaluation.
  - e. The in-service training program should be expanded and strengthened. Appropriate resources and personnel of Malkerns Research Station and the Agricultural College should be utilized. Applied economics and sociology, rural development concepts, and extension program evaluation should be stressed.
  - f. Both the technical and extension courses at the Agricultural College should be reviewed and updated on a regular basis to make sure they meet the needs of extension. Additional emphasis should be given to applied economics and sociology. (Representatives from the Extension Office and the Agricultural College should coordinate this effort.)
  - g. Extension and RDA mid-level managers should receive on-the-job and other training in personnel management and administration.
  - h. The AIO should be strengthened to the point it is capable of developing and producing educational materials geared to the needs of Swazi homesteaders.
  - i. The method demonstration approach with key or contact farmers should be refined and fine tuned. (Teach the contact farmer how to teach other farmers. Extension workers should receive more training in the best use of result demonstrations, individual visits, group meetings, and other extension methods.)
  - j. Research should be conducted to identify agricultural and rural development information sources utilized by Swazi homesteads and to determine which are preferred. (This information will assist extension workers to more accurately target their programs.)
  - k. Extension programs should be developed on a participatory basis with homesteaders. (This should be a major principle underlying the entire program development and evaluation process.)

1. A conservation education program should be developed which includes: (1) Training of FOs in conservation education, and (2) development of a program geared to homesteaders' needs. (An extension conservation education coordinator at the national level to provide leadership in this area may be needed. Cooperation with the NECE Program and Mlilwane personnel is very desirable.)

I. RDA Infrastructure Support Project, National Environmental Conservation Education (NECE) Program

Section VI is an evaluation of the NECE Program, added as an amendment to the RDA Infrastructure Support Project in 1980.

Appendix A  
PROJECT DESIGN SUMMARY  
LOGICAL FRAMEWORK

Life of Project  
From FY 78 to FY 84  
Total U.S. Funding \$12,546,500  
Date Prepared: August 1978

Project Title: SWAZILAND RDA INFRASTRUCTURE SUPPORT PROJECT  
(Log Frame)  
(Evaluation Reference)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATIONS	IMPORTANT ASSUMPTIONS
Program Goal:			
To assist Swazi farmers in making the transition from subsistence to semi-commercial and commercial agriculture.	<ol style="list-style-type: none"> <li>1. Farm income of 4,050 homesteads in the Northern, Southern, Central, and Matlangatsha RDAs increases 100% from 4/78 to 3/83; farm income of 9,800 homesteads in six newly established RDAs increases 50% by 3/83.</li> <li>2. Subsistence farm hectareage for hybrid maize, cotton and tobacco increases from 22, 22 and 12 of total farm hectareage respectively to 132, 152, and 72 from 4/78 to 3/83</li> </ol>	<p>MOA RDAP Monitoring and Evaluation Unit</p> <p>MOA RDAP Monitoring and Evaluation survey.</p>	<ul style="list-style-type: none"> <li>-RDA will enhance rural living and encourage rural people remain in rural areas.</li> <li>-Rural farm households are receptive to change.</li> <li>-Improvement in productivity increased productivity result increased net income.</li> <li>-Climatic conditions will be favorable.</li> <li>-Farm inputs and credit will available when required.</li> <li>-GOS fills projected field extension positions and upgrades education/information delivery service to meet needs of expanded RDAP.</li> </ul>

**Project Goal:**

To develop and protect the productivity of the land resource base in the "intensive" RDAs.

3. Crop production per hectare farmed by traditional farmers in intensive RDAs increases 65%, 50% and 75% for hybrid maize, cotton and tobacco, respectively from 4/78 to 1/81.

MOA RDAP Monitoring and Evaluation Unit surveys.

-COS makes significant progress towards achieving targets set in Third Five-Year Plan to de-stock herds and improve range management.

4. Livestock off-take rate in intensive RDAs increases from 10% to 11% by 3/81.

Dip tank records, MOA Veterinary Services Division.

-Other donors continue to support RDAP.

**Project Purpose:**

1. To develop, install, and maintain conservation works in RDAs designated for intensive development.

5. Infrastructure works in place.

End of project evaluation; on-site inspection; MOA and project records.

-COS maintains commitment to project.

2. To strengthen the RDA Program's land use planning and development capability.

6. Qualified Swazi staff performing land planning, land development and equipment maintenance functions efficiently and effectively.

End of project evaluation; MOA and project records.

-Inter-departmental and inter-ministerial coordination and cooperation exists among all CC units concerned with land plan and development.

**Outputs:**

1. Construction of terraces, grass strips, dams, canals, diversions and access roads.

7. RDA Management Unit and project team to re-evaluate and determine magnitude of infrastructure outputs by 8/80.

On-site inspection; MOA and project records.

-Rural people will adopt recommended conservation infrastructure maintenance practices.

- |  |  |   |  |
|--|--|---|--|
| 2. Heavy equipment maintenance workshop.   | 8. Workshop employing good management practices and keeping equipment downtime at 10% by 8/81.   | Workshop records                              | -GOS will establish posts required and will provide all necessary counterparts and participants for training in a timely manner. |
| 1. Land use plans.   | 9. Plans initiated for all intensive and non-intensive RDAs and completed for all intensive RDAs by 8/86   | GOS-AID evaluations; MOA and project records. | -Trainees will be working in positions for which trained   |
| 4. Conservation works rehabilitation program.  | 10. Program established and implemented by 3/82  | On-site inspection; MOA and project records.  |  |
| 5. Improved management procedures for planning, designing, and constructing RDA physical infrastructure. | 11. Improved management procedures established and functioning by 3/80.  | MOA and project records.                      |  |
| 6. Trained Swazi personnel for key posts in the MOA.   | 12. Swazi personnel trained and on the job as follows:<br><br>9 Swazi technicians in established posts of LUPS, LDS, and LDS Workshop by 4/84;<br><br>158 heavy equipment operators and 42 light vehicle operators by 8/81;<br><br>60 mechanics by 8/84 and<br><br>8 land surveyors by 3/81. | GOS/MOA project records.                      |  |

Inputs:

USAID

Technical Assistance, Long-Term:

<sup>13</sup> 59.66 staff-years; \$5,910,000

GOS/AID, and project records.

GOS, AID, contractors and suppliers provide goods and services on time as required.

Land Planning Officer (Team Leader);  
Land Planning Officers (3 Civil Engineers - Hydro-Lics., Soil Mechanics, Structure Design);  
Resource Economist; Range Ecologist;  
Construction Engineers (2), Equipment Operator Training; Workshop Manager/Advisor; Workshop Foreman; Heavy Plant Mechanics (2); Parts Controller. Consultancies in Soil Science, Land Surveying, Cost Accounting, and others as required.

Training

Participants - land planning and land development -related disciplines/skills <sup>14</sup> 32 study-years; \$654,000

In-country courses - workshop-related 5 courses; \$ 6,000

Construction

<sup>15</sup> \$ 435,000

Senior technician housing (10),  
30' x 60' workshop parts warehouse

<u>Commodities</u>	<b>16.</b>	\$ 140,600
Vehicles, office, field, and training equipment and supplies, books and periodical subscriptions.		
<u>GOS</u>		
<u>Equipment Support and Replacement</u>	<b>17.</b>	\$12,238,600
Maintenance/repair and operating costs	<b>18.</b>	\$ 1,075,000
Sinking fund for equipment replacement	<b>19.</b>	\$ 5,152,700
<u>Salaries and Wages</u>	<b>20.</b>	\$ 660,700
For Swazi counterparts, secretaries, and daily hire personnel.		
<u>Vehicle Operation and Maintenance</u>	<b>21.</b>	\$ 126,000
For project vehicles		
<u>In-Country Per Diem</u>	<b>22.</b>	\$ 16,700
For overnight travel of project technicians.		
<u>Furnishings</u>	<b>23.</b>	\$ 91,000
For senior technician housing		

ROPS: Soil erosion a major problem due to the sloping nature of the land, the fragility of the soil base, the use of traditional cropping patterns, overgrazing and lack of conservation infrastructure. BDA lacks technical and equipment resources to achieve land planning and development targets of RDAP.

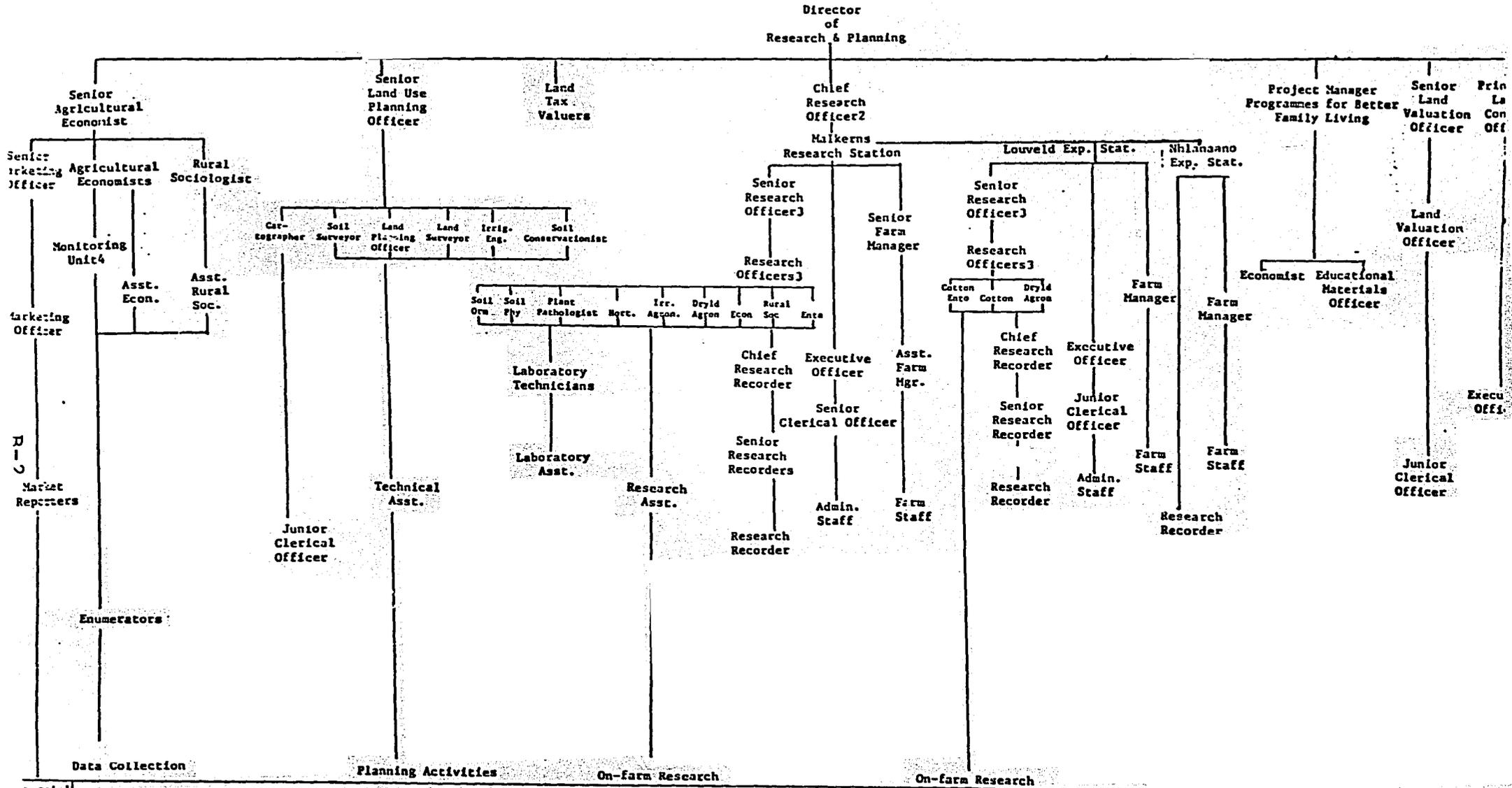
MINISTRY OF AGRICULTURE & CO-OPERATIVEORGANIZATIONAL LINE CHART

18/4/83

The attached Organizational Line Charts were developed by the Training Specialist to assist in assessing the training needs of the Ministry. It is meant to be a working chart and not an official document. It represents general lines of command and information flow. It can be used to give a person a general picture of the MDAC's structure. In general, Officers that are laterally across from one another are similar, but not necessarily equal, in grade. The Charts also show the general interaction points of the Ministry with the Public Sector.

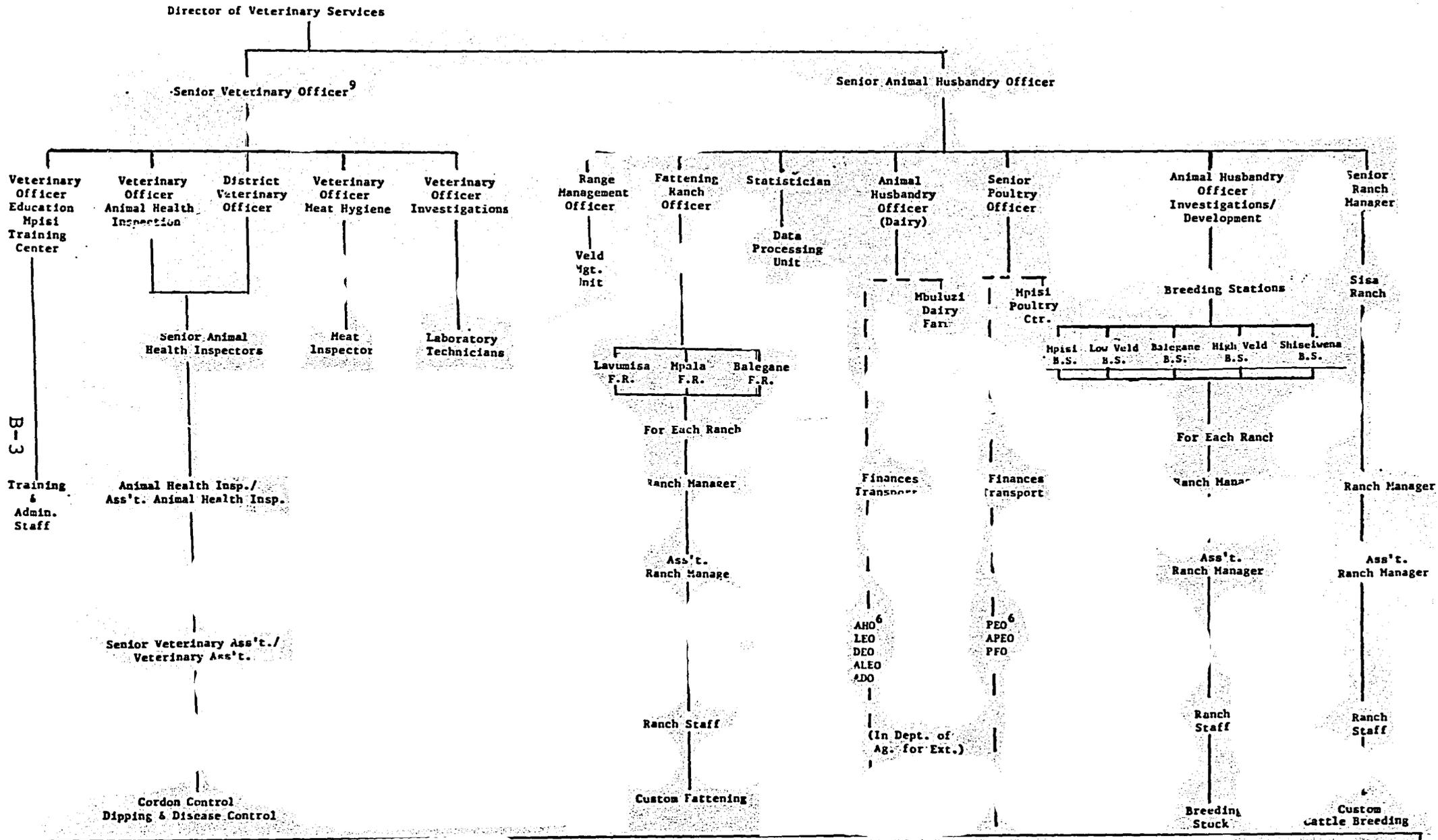
Glen Easter  
Glen Easter  
Extension Training Specialist

DEPARTMENT OF RESEARCH & PLANNING



Homestead Families<sup>1</sup>

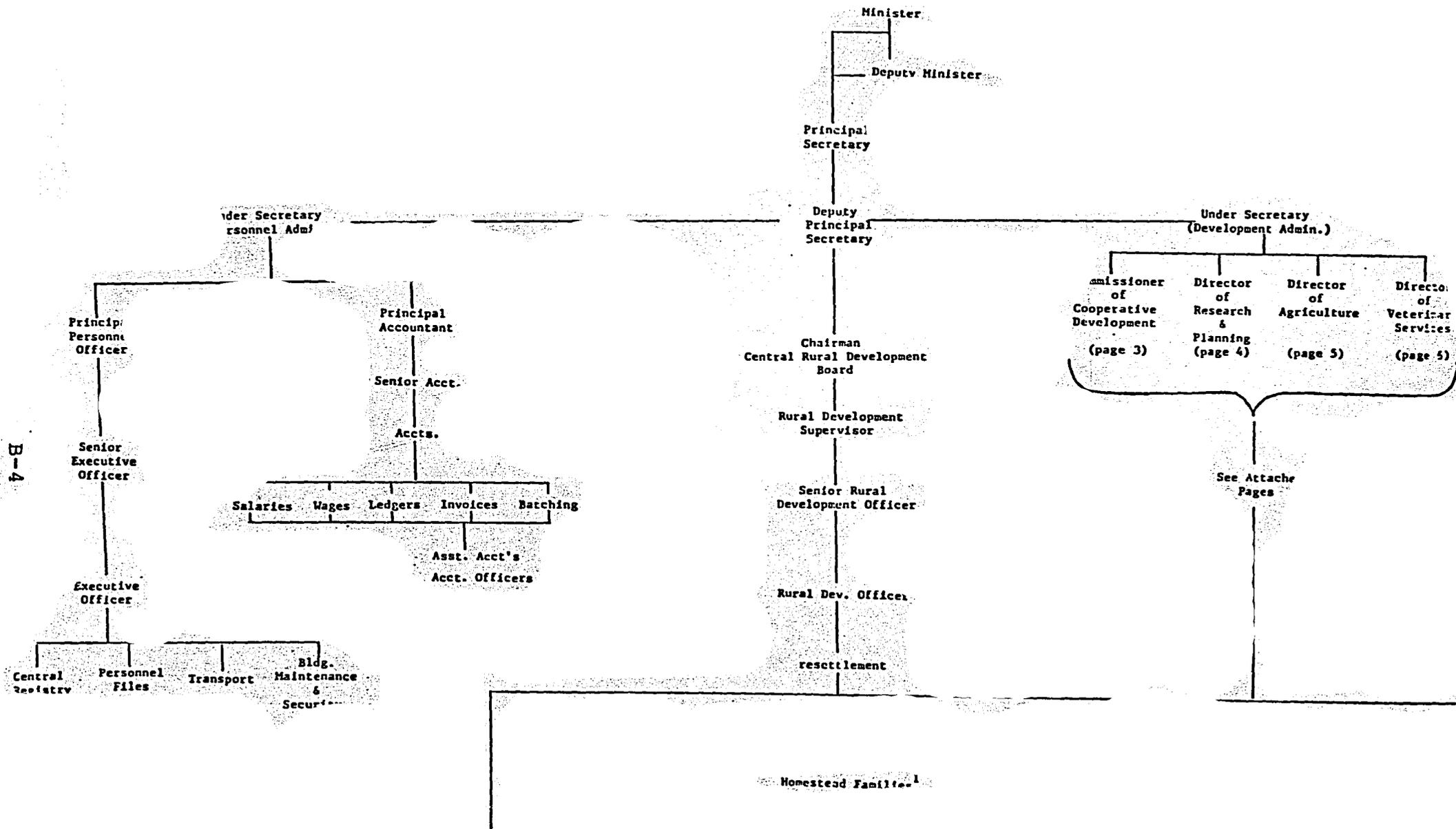
DEPARTMENT OF VETERINARY SERVICES



B-3

Homestead Livestock Producers

MINISTRY OF AGRICULTURE AND CO-OPERATIVES

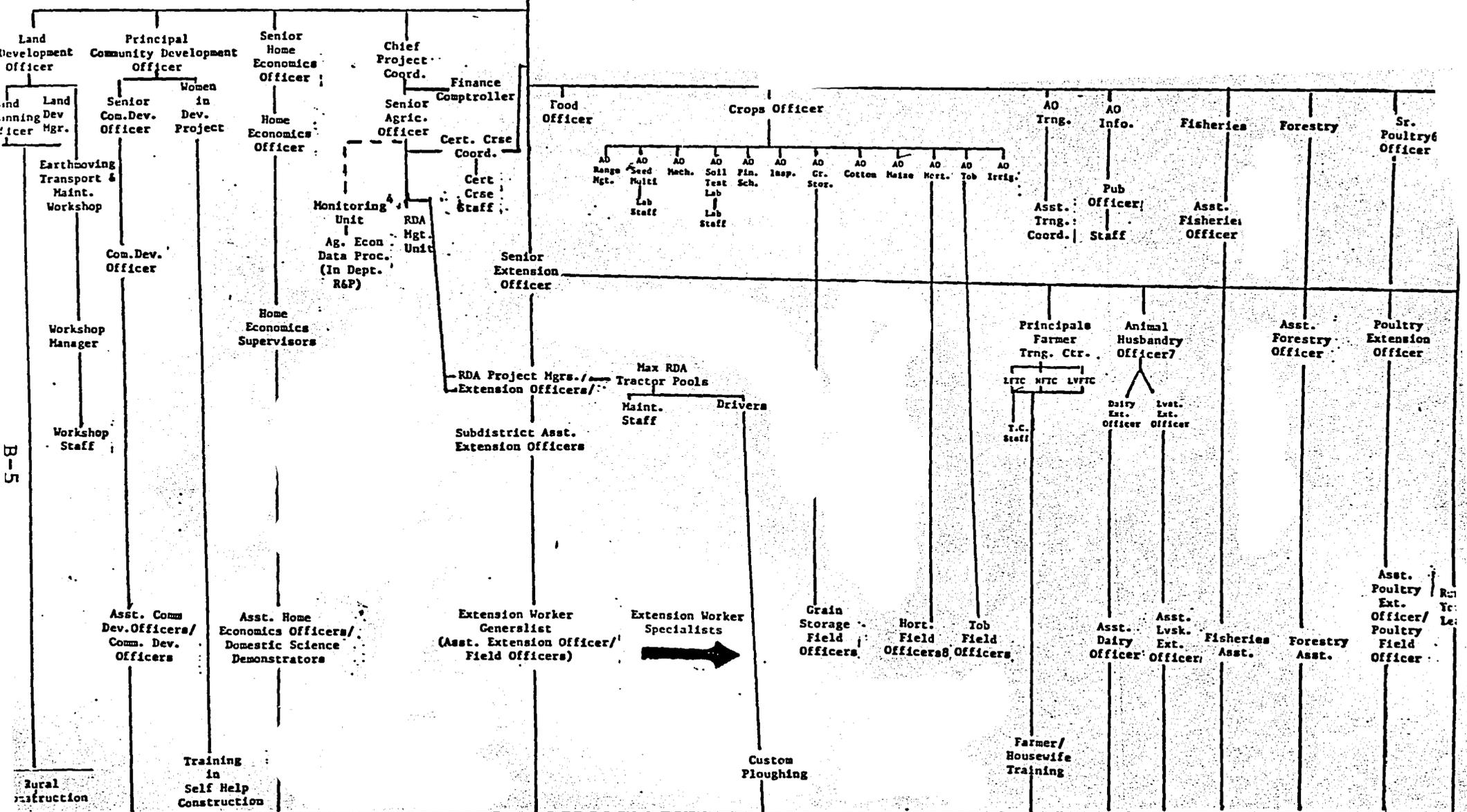


B-4

# Department of Agriculture

Director of Agriculture

Senior Agricultural Officer<sup>5</sup>



B-5

Homestead Families<sup>1</sup>

Department of Cooperative Development

Commissioner  
of  
Cooperative Development

Deputy  
Commissioner

Principal  
Cooperative Development  
Centre  
(CODEC)

Asst.  
Commissioner  
(Education)

Asst.  
Commissioner  
(Auditor)

Lectures

Admin.  
Staff

Senior  
Cooperative  
Officers

Cooperativ-  
Officers

District  
Marketing Officer

Cooperative  
Auditors

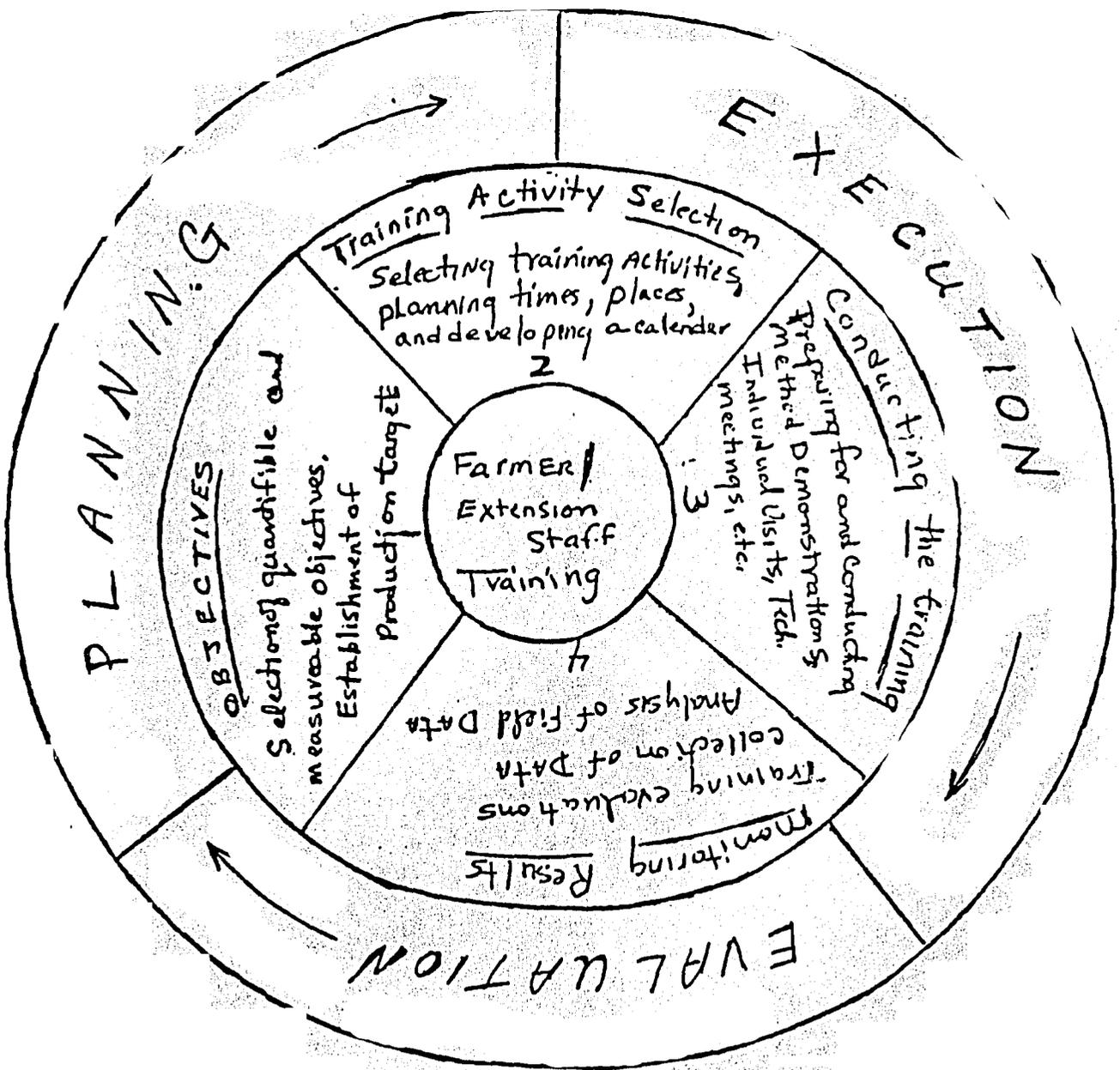
Asst.  
Cooperative  
Officers

Junior  
Clerical  
Officer

Local Cooperatives

Appendix C : MOAC EXTENSION PROGRAMME PLANNING CYCLE

Programme Planning: An activity that is conducted annually to provide direction, planning, and organisation to Extension Work in the field. Through Programme Planning, progress can be determined. It is composed of three distinct components: Planning; Execution and Evaluation. Programme Planning is based on Crop season.



Programme Planning Cycle

## Programme Planning Cycle

1. Taking the results of the analysis of field data, the Extension Supervisor and Extension Workers design programme objectives that are quantifiable, measurable, and attainable. The objectives set forth production targets that the Extension worker will strive to train his/her farmers to meet.
2. Planning the specific type of Extension training activity that will be used is an effort to accomplish the objective. This includes planning the date and time of the activity and the location of the event. A calendar displaying the timing of the different events is developed as a visual reminder and aid to personal time management.
3. Execution of the Extension Training activity involves the final preparations of the event plan. Resources to be used; training aids; refreshments; presentation outline; follow-up to be conducted; and means of evaluation of the Method Demonstration; Individual Visit; Technical Meeting; Result Demonstrations; Seminar; Field Day, etc. are all important elements of Execution.
4. Evaluation, Monitoring, or Controlling the events to allow for improved future events. Evaluation of training activities for farmers and Extension Staff; collection of production (field) data from exercises in Estimation of Yields; Crop records; Input Records; Agriculture Census; Monthly Reports, etc. and analysis of the collection information provides the results to the planned activities. The analysis also provides the new data to base the new objectives on. Hence restarting the Programme Planning Cycle.

Appendix D 1982 RDAP EXTENSION CONTACTS AND OUTPUT

RDAP Farmers Contacted During 1982  
(Figures in brackets for 1981)

	<u>EW Generalist</u>	<u>EW Specialist</u>	<u>Total</u>
Meetings organized	1,595 (1,252)	676 (556)	2,271 (1,808)
People involved	49,148 (40,536)	17,218 (14,128)	66,366 (54,664)
Method demonstrations	2,282 (1,397)	542 (387)	2,824 (1,784)
People involved	13,287 (11,210)	5,298 (4,216)	18,585 (15,426)
Individual visits to farmers	41,303 (33,613)	6,432 (4,929)	47,735 (38,542)
Total people contacted	103,738 (85,359)	28,948 (23,273)	132,686 (108,632)

Note: These figures may be broken further to show the results for the "average" extension worker. This is shown in the table below.

Output of RDAP Extension Workers Per Month During 1982  
(Figures in brackets for 1981)

	<u>EW Generalist</u>	<u>EW Specialist</u>	<u>Average for all the Basic Extension Staff of RD</u>
no. EW reporting	88,0 (89,0)	45,1 (51,0)	70,5 (74,2)
Ave. no. meetings per month	1,5 (1,5)	1,8 (1,8)	1,6 (1,6)
Ave. attendance per meeting	30,7 (32,4)	25,4 (25,4)	29,7 (30,2)
Ave. no. method demonstrations per month	2,2 (1,7)	1,5 (1,26)	2,0 (1,6)
Ave. attendance per method demonstration	58,0 (8,0)	9,7 (10,9)	6,6 (8,6)
No. individual visits	40,5 (46,6)	17,8 (16,1)	34,6 (33,7)
Ave. no. people contacted per month	101,9 (102,0)	80,4 (76,0)	96,3 (95,0)

From one year to another there were not many changes in the way by which the farmers were contacted:

	<u>1981/82</u>	<u>1980/81</u>
	(in percentage)	
People contacted by:		
EW generalist - meeting	47.4	47.4
- method demonstrations	12.8	13.1
- individual visits	39.8	39.3
EW specialist - meeting	59.5	60.7
- method demonstrations	18.3	18.1
- individual visits	22.2	21.1

## APPENDIX E

### ARTICLE III - SCOPE OF WORK

The evaluation team will thoroughly review all aspects of the project, using the project paper (Revision No. 2) Logical Framework, as a primary point of reference and the recently completed Audit Report No. 3-645-82-21 as the secondary point of reference. The team will prepare a written draft report prior to its departure. The report must contain a:

1. Brief description of the background of the project.
2. Review of the timeliness and quality of AID and host country inputs from both the loan and the grant; the validity of assumptions stated in the Logical Framework as they relate to inputs; and detailed explanation of reasons for shortcomings and recommendations for overcoming them.
3. Review of project outputs, as stated in the Logical Framework, and progress towards reaching outputs indicators, the relationship between inputs and outputs, outputs assumptions, and a detailed explanation of reasons for output shortcomings with recommendations for overcoming them.
4. Review of the project purpose and the extent to which project inputs and outputs are or are not leading to the achievement of project purposes by the Project Assistance Completion Date (PACD). The review must also contain a thorough examination of output to purpose assumptions. Since this is primarily an institution-building project, the team will be expected to assess the capacity of Swazis working in the Land Development Section (LDS) and the Land-Use Planning Section (LUPS), to carry out the key tasks associated with the institution. The primary focus in this section of the report will be to detail the progress made by Swazi staff in the LDS and the LUPS in acquiring skills necessary to carry out all aspects of their work, the adequacy of plans for assuring that the institutions will be viable by the end of the project, and, where shortcomings are noted, to make definite recommendations for achieving viable institutional capacity by the end of the project.
5. Review of the goal of the project and the extent to which the activities under the project are or are not leading to the achievement of the project and program goal. The review must also examine the validity of purpose to goal assumptions.
6. Detailed findings and recommendations for improving project activities, especially in terms of better coordination between LDS and LUPS, and a revised implementation plan which details what the GOS and AID should do over the remaining period

of the project to assure viable institutional capacity by the end of the project.

7. Review of the utilization of equipment purchased under the loan, and, in consultation with the LDC, make recommendations on what further procurement of equipment, if any, should be made.

8. Review of the effectiveness of the overall RDA program in meeting its ultimate purposes, examining in detail the efficacy of other donors' contributions and making recommendations as to the further direction of AID assistance to the RDA program.