Unclassified

Department of State
Agency for International Development
Washington, D. C. 20523

Annexes

KENYA: Agricultural Systems Support
Project (615-0169)

ANNEXES

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* III. 611(e) Determination

* IV. Request for Assistance

* V. Draft Authorization

VI. PID Approval

VII. Economic Analysis
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* VIII. Initial Environmental Examination and Addendum

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b. Detailed Description of Capital Component for Egerton
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X. Range Research-Background

XI. Summary Recommendations of the AFC Management Study and the Agricultural Credit Project Evaluation

XII. Cooperative Systems-Background

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XIV. Waivers
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* Contained in Project Paper

AID 1020-24 (1-78)
SUPPLEMENT 1

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

(INSTRUCTION: THIS IS AN OPTIONAL FORM WHICH CAN BE USED AS AN AID TO ORGANIZING DATA FOR THE PAR REPORT. IT NEED NOT BE RETAINED OR SUBMITTED.)

Project Title & Number: Agricultural Systems Support Project(615-0169)

Life of Project:
From FY 1978 to FY 1984
Total U.S. Funding $49,800,000
Date Prepared: May 1978

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: The broader objective to which this project contributes: (A-1)	Measures of Goal Achievement: (A-2)	(A-3)	Assumptions for achieving goal targets: (A-4)
Increase smallholders and pastoralists real incomes.	1. Crop production increases	1. IRS data	1. Revised curricula & better pre-service training for MOA, MOCD, CBK, AFC, etc. staff is a valid means for upgrading their performance and orientating them toward serving smallholders.
	2. Livestock offtake increases	2. KREMU/ILCA data	2. Technology appropriate to increased smallholder production available, and disseminated to smallholders.
	3. Net farmgate prices increase as percentage of posted prices.	3. USAID in-depth evaluations.	3. Technology delivered by extension service adopted by smallholders.
			4. Range research results in production technologies appropriate to pastoral production system.
			5. Range research results adopted by pastoralists.
			6. Research findings transmitted to extension service.
			7. Increased use of institutional credit results in increased use of production related inputs.
	/N.B.-Given the systems support approach of this PP, goal achievement cannot be realistically qualitative/		8. Appropriate inputs available for smallholder use.
			9. Cooperative marketing services results in increased real receipts from production for the smallholder farmer.
			10. Storage practice improvements result in increased real in-farm receipts for the small-

AID 1020-20 (1-79)
SUPPLEMENT I

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY _____ to FY _____
Total U.S. Funding _____
Date Prepared: _____

Project Title & Number: Agricultural Systems Support Project (615-0169)

NARRATIVE SUMMARY Project Purpose: (B-1)	OBJECTIVELY VERIFIABLE INDICATORS Conditions that will indicate purpose has been achieved: End-of-Project status. (B-2)	MEANS OF VERIFICATION (B-3)	IMPORTANT ASSUMPTIONS Assumptions for achieving purpose: (B-4)
Increase smallholder and pastoralist access to agricultural services (extension research, credit, inputs, storage, and marketing)	1. MOA extension contacts with smallholder farmers increases 10% by FY 85, 40% by FY 90	1.a IRS Survey data b. MOA records c. AID indepth evaluations	1a. MOA posts Egerton/certificate graduates into field positions following current placement patterns. b. Egerton/certificate graduates and training for MOA in-service staff (training fund) will provide managerial administrative and technical support to extension service improving effectiveness and efficiency of extension service. c. Effective and efficient extension service able to increase number of farmer contacts.
	2. Range extension contacts increase by 15% by FY 85	2. a. IRS Survey data b. MOA records c. AID in-depth evaluations	2. Bi-annual training programs for range extension staff improves technical knowledge and efficiency of range extension staff.
	3. AFC smallholder loan portfolio increases by 25% by FY 85	3. AFC records	3. Technical advise and in-service training increases efficiency with which AFC processes smallholder loans and softens conditions under which AFC grants smallholder loans.
	4. Smallholder loan portfolio in cooperative banking system increases 15% by FY 85	4. CBK records	4. Staff training and management improvements will increase cooperative banking systems ability to solicit and process smallholder loans.

AID 1020-28 (1-78)
SUPPLEMENT I

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY ____ to FY ____
Total U.S. Funding ____
Date Prepared: ____

Project Title & Number: Agricultural Systems Support Project (615-0169)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Project Purpose: (B-1)	Conditions that will indicate purpose has been achieved: End-of-Project status. (B-2)	(B-3)	Assumptions for achieving purpose: (B-4)
	5, Cooperative smallholder membership increases by 15% by FY 85.	5. MOCD records	5. Improved cooperative education system and information dissemination system increases cooperative membership.
	6. Volume of cooperative smallholder marketing (and input) transactions increase 20% by FY 85.	6. MOCD records	6. Trained MOCD staff increases effectiveness and efficiency of cooperative system service including marketing, inputs, and credit.
	7. Grain storage related extension contacts with smallholder farmers increase 15% by FY 85.	7. a. MOA records b. AID in-depth evaluations	7. Trained grain storage extension workers will increase effectiveness and efficiency of grain storage element of MOA extension service.
			8. GOK reviews and /or implements agricultural products pricing policies which are consistent with smallholder agricultural development.

AID 1020-25 (1-73)
SUPPLEMENT I

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY _____ to FY _____
Total U.S. Funding _____
Date Prepared: _____

Project Title & Number: Agricultural Systems Support Project (615-0169)

NARRATIVE SUMMARY Project Outputs: (C-1)	OBJECTIVELY VERIFIABLE INDICATORS Magnitude of Outputs: (C-2)	MEANS OF VERIFICATION (C-3)	IMPORTANT ASSUMPTIONS Assumptions for achieving outputs: (C-4)
.Increased Agricultural Training Capacity	1.	1.	1.
a.Egerton College Expansion completed.	a.i. Student enrollment 1632 by 1986. a.ii. 76 Kenyan lecturers in residence by 1985 a.iii. All proposed construction completed, equipment in place, by 1984.	a.i. Egerton College records a.ii. AID disbursement records. a.iii. USAID evaluations	a.i. Egerton College hires additional staff required for expansion. a.ii. GOK sponsors additional students. a.iii. Contract work completed in time and according to specifications. a.iv. Consortium contractor able to supply required U.S. teaching staff and to provide required training for Egerton staff.
b. Coast Institute designed.	b.i. Academic feasibility study completed by FY 80. b.ii. Technical feasibility study completed by FY 80	b. Study documents bii. Future project design	b.i. Contractor capable of completing work on time and at required standard b.ii. GOK counterpart team provided.
c.University Nairobi Expansion designed.	c.i. Academic feasibility study completed by FY 80. c.ii. Technical feasibility study completed by FY80.	c. Study documents cii. Future project design	c.i. Contractor capable of completing work on time and at required standard. c.ii. GOK counterpart team provided.
1. MOA Training Fund Operational	d.i. Annual training plans submitted by MOA to AID. d.ii. 100 returned participants, through FY 84 working in positions for which trained.	d.i. Training plans d.ii. USAID training records	d.i. MOA prepares Annual Training Plan on time, in required detail, and nominates individuals. d.ii. AID provides MOA with details on available non-academic training programs.

AID 1020-2A (1-73)
SUPPLEMENT I

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY _____ to FY _____
Total U.S. Funding _____
Date Prepared: _____

Project Title & Number: Agricultural Systems Support Project (615-0169)

PAGE 3 B

NARRATIVE SUMMARY Project Outputs: (C-1)	OBJECTIVELY VERIFIABLE INDICATORS Magnitude of Outputs: (C-2)	MEANS OF VERIFICATION (C-3)	IMPORTANT ASSUMPTIONS Assumptions for achieving outputs: (C-4)
2. Functioning range research program at Kiboko.	2. a. 18 trained Kenyan research officers in place by FY 85. b. 6 range research activities fully operational by FY 82. c. Annual research reports prepared by Kiboko Station. d. Research facilities to accomodate staff of 18 in place. e. Bi-annual training program for extension workers underway by FY 82.	2. a. MOA records b. Kiboko annual report c. USAID evaluations	2. a. MOW constructs required facilities at Kiboko. b. MOA hires additional research staff. c. Range Research Council meets and approves research plan. d. Contractor able to supply required U.S. technicians and to provide training for station staff.
3. AFC operations upgraded and staff trained.	3. a. 35 Kenyan Loan Officers, Financial Managers, and Agricultural loan officers completed U.S. academic training by FY 84. b. 44 managers and trainers complete non-academic training by FY 84. c. In-country training for AFC staff in financial management, internal audit, credit review, loan appraisal, administration, training, and data processing underway by FY80.	3. a. AFC records b. AID training records c. USAID evaluations	3. a. Contractor able to supply required technicians in timely manner. b. AFC individiduals for academic and non-academic training nominated.

AID 1320-25 (11-79)
SUPPLEMENT B

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Project Title & Number: Agricultural Systems Support Project (615-0169)

Life of Project:
From FY _____ to FY _____
Total U.S. Funding _____
Date Prepared _____

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NARRATIVE SUMMARY Project Outputs: (C-1)	OBJECTIVELY VERIFIABLE INDICATORS Magnitude of Outputs: (C-2)	MEANS OF VERIFICATION (C-3)	IMPORTANT ASSUMPTIONS Assumptions for achieving outputs: (C-4)
3. cont'd	3. d. AFC internal audit, credit review, financial management and data processing procedures in place.		
4. Improved Cooperative Systems Support	4.	4.	4.
a. Cooperative staff training and cooperative movement training improved.	a.i. Cooperative Education and Training Evaluation report completed by FY 80.	a.i. Report document	a. MOCD nominates individuals for training programs.
	aii. 50 MOCD participants complete academic training by FY 84.	a.ii. AID training records	
	aiii. 40 MOCD participants complete non-academic training by 1984.	a.iii. AID training records	
		a.iv. USAID evaluations	
b. Cooperative College expansion design completed.	b.i Cooperative Manpower Study completed by FY81	b.i. Report document b.ii. Study Documents	b. MOCD provides counterpart team for manpower and feasibility studies.
	biii. Technical feasibility Study completed by FY 81	biii. Future project design	
c. Cooperative Banking Sector Evaluated	c. Cooperative banking sector for management study completed by FY 81	c. Study document	C. MOCD provides counterpart team for banking study.
			d. MOCD accepts and implements reports' recommendations
5. Improved grain storage extension and services.	5.	5.	5.
a. Grain storage extension and research staff trained.	a.i. 7 participants complete US academic training by FY 84.	a.i. AID training records	a. MOA nominates participants for training.
	aii. 5 participants complete non-acedemit training by FY 84.	aii. AID training records	

AID 1020-28 (1-73)
IMPLEMENT 1

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY _____ to FY _____
Total U.S. Funding _____
Date Prepared: _____

Project Title & Number: Agricultural Systems Support Project (615-0169)

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NARRATIVE SUMMARY Project Outputs: (C-1)	OBJECTIVELY VERIFIABLE INDICATORS Magnitude of Outputs: (C-2)	MEANS OF VERIFICATION (C-3)	IMPORTANT ASSUMPTIONS Assumptions for achieving outputs: (C-4)
5. Cont'd			
b. Grain storage assistance activity designed.	b. National grain storage study completed by FY 81.	b. Study document	b. Training reflected in extension work performed.
		c. Future project design	c. MOA counterpart team available for storage study.
			d. Study accepted and findings implemented.

AID 1020-28 (1-73)
SUPPLEMENT I

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY _____ to FY _____
Total U.S. Funding _____
Date Prepared: _____

Project Title & Number: Agricultural Systems Support Project (615-0169)

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NARRATIVE SUMMARY Project Inputs: (D-1)	OBJECTIVELY VERIFIABLE INDICATORS Implementation Target (Type and Quantity) (D-2)	MEANS OF VERIFICATION (D-3)	IMPORTANT ASSUMPTIONS Assumptions for providing inputs: (D-4)
AID			
1. Agricultural Manpower System Support			
a. Egerton College			
i Capital construction/ equipment	i. Construction/procurement contracts, $23.6 million	AID obligation documents AID disbursement documents	Timely negotiations of contracts
ii. U.S. Faculty	ii. 91 W.Y. 28 technicians for $7.9 million		
iii. Residential furnishings for long-term TA	iii. $504,000		
iv. Academic training	iv. 139 W.Y. (43 Kenyans) for $2.4 million		
b. Coast Institute Establishment - Academic and technical feasibility study	b. 16 wm for $150,000		
c. University Nairobi Expansion - Academic and technical feasibility study	c. 7 wm for $66,000		
d. Ministry of Agriculture Training Fund - Participant Training	d. 2,400 participant months (100 participants - 25 per year X 4 years) for $3.46 m.		
2. Range Research			
a. U.S. research experts	a. 372 wm (six consultants) for $3.15 million		
b. Short-term consultants	b. 84 wm for $608,400		
c. Commodities, equipment & procurement services	c. $266,000		
d. Training - academic (18 participants) and non-academic (18 participants)	d. 684 wm for $1.04 million		

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AID 1020-23 (1-73)
SUPPLEMENT 1

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY _____ to FY _____
Total U.S. Funding _____
Date Prepared: _____

Project Title & Number: Agricultural Systems Support Project (615-0169)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Project Inputs: (D-1)	Implementation Target (Type and Quantity) (D-2)	(D-3)	Assumptions for providing inputs: (D-4)
3. Agricultural Credit System Support	3.		
a. U.S. technical experts	a. 168 wm for $1.28 milli		
b. Training - U.S. academic and non-academic (participant)	b. 744 wm for $1.26 milli		
c. In-country training	c. $130,000		
4. Cooperative System Support	4.		
a. U.S. technical experts	a. 61 wm for $509,700		
b. Banking Sections Study	b. 9.5 wm for $82,000		
c. Cooperative Education	c. 3 wm for $28,000		
d. Cooperative Manpower Study	d. 3 wm for $21,800		
e. Cooperative College feasibility studies	e. 5 wm for $45,000		
f. Training - U.S. academic and non-academic	f. 1450 wm for $2.4 milli		
5. Storage and Marketing	5.		
a. Grain storage study	a. 25 wm for $204,000		
b. Training - academic & non-academic	b. 125 wm for $215,250		
6. Three comprehensive project-wide evaluation	6. 45 wm for $465,000		
GOK Contribution			
1. Agricultural Manpower Egerton College Expansion - See Part IV - Financial Plan - Section II.A	1. $11,378,400	GOK budgets	GOK provides funds, technicians and other inputs in timely manner

AID 1020-2A (1-77)
SUPPLEMENT 1

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Project Title & Number: Agricultural Systems Support Project (615-0169)

Life of Project:
From FY _____ to FY _____
Total U.S. Funding _____
Date Prepared: _____

PAGE 4C

NARRATIVE SUMMARY Project Inputs: (D-1)	OBJECTIVELY VERIFIABLE INDICATORS Implementation Target (Type and Quantity) (D-2)	MEANS OF VERIFICATION (D-3)	IMPORTANT ASSUMPTIONS Assumptions for providing inputs: (D-4)
GOK Contribution con't			
l.			
). Coast Institute Expansion	b. $21,750		
Counterparts & consultant support.			
:. University of Nairobi Expansion	c. $10,200		
Counterpart & consultant support			
l. MOA Training Fund	d.		
i. Participant Salary Support	i. $1.0 million		
ii. Participant Travel	ii. $100,000		
• Range Research			
• Recurrent costs - Kiboko	a. $3.8 million		
• Participant Travel	b. $36,000		
• Construction of houses - Kiboko	c. $216,320		
• Agricultural Credit System:	3.		
• U.S. technician support	a. $206,080		
• Academic/non-academic participant training	b. $363,000		
In-country travel	c. $306,500		
Cooperative System Support	4.		
U.S. technician support/studies	a. $69,7000		
Academic/non-academic part. training	b. $397,000		
In-country training	c. $115,000		
Storage and Marketing	5.		
U.S. technicians study support	a. $39,000		
Participant training	b. $12,000		
Three comprehensive project-wide evaluation	6. $22,050		

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CONT;CHRON;RF

DEPARTMENT OF STATE

TELEGRAM

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Annex VI
Page 1 of 5

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No action necessary: _____

(Initials) 10/7/77 (Date)

AIDAC

E.O. 11652: N/A

TAGS:

SUBJECT: KENYA PID REVIEWS FY 79 ABS

1. KENYA PID REVIEWS HELD JUNE 14 (ASL II, RURAL HEALTH, HUMAN RESOURCES) AND JUNE 16 (MARGINAL/SEMI-ARID LANDS.)

2. ALL PIDS, EXCEPT HUMAN RESOURCES, APPROVED.

3. FOLLOWING ARE SPECIFIC COMMENTS RELATIVE TO THE STUDIES LEADING TO, AND THE EVENTUAL PROJECT PAPERS.

A. BENEFICIARY INCIDENCE NEEDS BE ANALYZED AND MAJOR PROJECT EMPHASIS NEEDS BE IN RURAL POOR CATEGORY.

B. ANALYSIS NEEDS BE MADE OF GOK PLANS FOR FINANCING RECURRENT COSTS ASSOCIATED WITH UNDERTAKING AND CONTINUATION OF DEVELOPMENT PROJECTS TO FLOW FROM PIDS. SPECIFICALLY, AND PARTICULARLY IF AID IS TO CONSIDER SHAPE OF RECURRENT COSTS DURING PROJECT IMPLEMENTATION, GOK PLANNING SHOULD CLEARLY SHOW INTENT TO ASSUME THESE COSTS AND MAINTAIN PROJECT MOMENTUM AS U.S. ASSISTANCE ELEMENT PHASES OUT.

C. GOK DEVELOPMENT PRIORITIES SHOULD BE SUCH THAT ADEQUATE RESOURCES (IN ADDITION TO RECURRENT SUPPORT NOTED ABOVE) ARE TO BE COMMITTED IN SUPPORT OF EACH PROJECT. THIS COMMITMENT INCLUDES CRITICAL MANPOWER COMPONENT WHICH SHOULD SHOW BOTH ADEQUATE NUMBERS OF PERSONNEL AVAILABLE AND THAT PERSONNEL ARE/WILL BE ADEQUATELY TRAINED FOR POSITIONS THEY WILL OCCUPY.

D. CONSIDERATION OF EFFORTS AND INTENTIONS OF OTHER DONORS WILL BE IMPORTANT IN MOVING TOWARD INTENSIFIED NEW AID INTERVENTIONS.

E. ENVIRONMENTAL/SOCIAL IMPACT - NEW PID GUIDELINES
Classification

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REQUIRE INITIAL ENVIRONMENTAL EXAMINATION (IEE) BE SUBMITTED WITH PID. THIS REQUIREMENT EXISTS AND SERVES AS BASIS FOR DETERMINATION OF WHETHER OR NOT TO REQUIRE ENVIRONMENTAL IMPACT STATEMENT (EIS) OR ENVIRONMENTAL ASSESSMENT (EA). THEREFORE, REQUEST MISSION SUBMIT IEE FOR EACH OF THREE APPROVED PIDS ASAP AND, IN ANY CASE, PRIOR TO DECEMBER 1, 1977. OF COURSE, CONTINUING INTEGRATION OF ENVIRONMENTAL CONCERNS IN THE PP DESIGN PROCESS SHOULD ALSO BE PURSUED.

F. THE TWO-PAPER SYSTEM (PID, PP) IS INTENDED TO INCREASE FIELD RESPONSIBILITY FOR PROJECT DESIGN AND DECREASE THE PAPERWORK REQUISITE FOR PROJECT APPROVAL. FULL AND FREQUENT INFORMAL FIELD-AID/W INTERCHANGE OF INFORMATION DURING PP PREPARATION IS ESSENTIAL TO AVOID SERIOUS DELAYS OR AID/W DISAPPROVAL OF PP. CONCERNING THREE KENYA PIDS, PROJECT PLANNING INITIATIVES NATURALLY NEED BE SUCCESSFULLY ACCOMPLISHED PRIOR TO PROCEEDING WITH THE PP. IT IS SUGGESTED THAT STUDIES LEADING TO PP(S) COULD PRESENT OPPORTUNITY FOR MISSION TO INITIATE MID-STREAM REVIEW(S) OF PROPABLE PARTICULAR CONTENT OF PP(S). REQUEST MISSION'S THOUGHTS RE THIS APPROACH TO SOLIDIFYING PROJECTS NOW ILLUSTRATIVELY SKETCHED IN PIDS.

4. COMMENT ON EACH PID FOLLOWS:

A. ASLI II

1. GENERAL: REVIEW OF THIS PID ACKNOWLEDGED THAT ACTUAL ELEMENTS OF ASL II IN EITHER FY 78 OR 79 WILL BE DETERMINED AS STUDIES NOW UNDERWAY OR SOON TO BEGIN ARE CONCLUDED. REVIEW COMMENTARY THEREFORE DEALT PRIMARILY WITH ADVISABLE AREAS OF EMPHASIS OF THESE STUDIES.

2. CREDIT COMPONENT: IT IS ANTICIPATED THAT THE RESULTS OF THE EVALUATION OF ASL I WILL BE MOST USEFUL IN ARRIVING AT THE CONTENT OF THE CREDIT ELEMENT OF AN ASL II. IT EXPECTED THAT FOLLOWING ASPECTS OF THIS EVALUATION WOULD BE ESPECIALLY SIGNIFICANT IN PREPARATION OF PP.

- PORTFOLIO ANALYSIS WITH BREAKDOWN BY CLASS OF BORROWER (I.E. LARGE, MEDIUM AND SMALL LANDHOLDERS), AND TYPE OF CROP.

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CN: 29856

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- SIZE OF REFLOWS BY CLASS OF BORROWER WITH SPECIAL ATTENTION TO DISTRIBUTION OF REFLOWS BETWEEN ASAL I'S CLASS B AND CLASS C FARMERS.

- ANALYSIS OF SMALL LANDHOLDERS EFFECTIVE DEMAND FOR CREDIT AND PROJECTION OF FUTURE DEMAND.

- AGING OF DELINQUENT LOANS IN EACH OF THE THREE CATEGORIES.

- ESTIMATED RATE OF DECAPITALIZATION.

3. AGRICULTURE MANPOWER COMPONENT AND AGRICULTURE RESEARCH COMPONENTS: IT ANTICIPATED THAT LINKAGE TO RURAL POOR OF AID ASSISTANCE WILL BE OF SPECIAL IMPORTANCE, IN THESE TWO BROAD CATEGORIES, ALTHOUGH NOT EASILY MEASURED. FOR THIS REASON, I.E. QUANTIFICATION DIFFICULTY, GOK POLICY CONSIDERATIONS INCLUDING EITHER REDIRECTION OR MORE DEFINITIVE DIRECTION OF AGRICULTURE MANPOWER AND RESEARCH PROGRAMS TO RURAL POOR POPULATION WILL BE IMPORTANT ELEMENT OF ANALYSIS. RECURRENT BUDGET IMPLICATIONS ALSO EXPECTED TO BE IMPORTANT MISSION CONSIDERATION IN PREPARING PP.

4. RURAL HEALTH DELIVERY

- LOOK FORWARD TO COMPLETION OF SECTOR ASSESSMENT FOR THE FY 73 DAP PARTICULARLY IN TERMS OF POSSIBLE RURAL HEALTH ASSISTANCE SUPPORTIVE OF GOK HEALTH STRATEGY AND OTHER DONOR ACTIVITIES.

- WOULD ANTICIPATE SPECIAL PP CONSIDERATION OF OVERALL GOK RURAL HEALTH PLANNING AND OBJECTIVES, INCLUDING MANPOWER, RECURRENT AND DEVELOPMENT BUDGET RESOURCES, AND RESEARCH.

- BELIEVE MULTI-DONOR EVALUATION OF THE FAMILY PLANNING PROJECT INDICATING THE POSSIBILITY ABSORBING THIS ACTIVITY INTO A BROADER RURAL HEALTH PROJECT WILL BE IMPORTANT.

- ALSO OF IMPORTANCE WILL BE AN ANALYSIS OF THE RELATIONSHIP OF THIS PROPOSED PROJECT TO OTHER U.S. - FINANCED HEALTH ACTIVITIES IN KENYA, I.E. IBP, AMPP, CODEL (PROPOSAL), POPULATION STUDIES AND RESEARCH

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CENTER.

4. MARGINAL/SEMI-ARID LANDS: IT UNDERSTOOD THAT MORE SPECIFIC CONTENT OF PP(S) IS TO FOLLOW FROM CID STUDIES. FOLLOWING, HOWEVER, SHOULD BE CONSIDERED IN TERMS CONTENT OF EVENTUAL PPS.

- ANTICIPATE THAT AID FINANCED ACTIVITIES WILL FLOW FROM A RELATIVELY BROAD RANGE RESOURCE PLANNING AND MANAGEMENT PROGRAM FOR AREAS NOW OR TO BE INVESTIGATED BY CID TEAM.

- SOCIOLOGICAL ANALYSIS SHOULD BE SIGNIFICANT ASPECT PP(S) INCLUDING, FOR EXAMPLE, PRESENT AND ANTICIPATED MIGRATION PATTERNS, IMPACT OF INCREASED INCOMES AND LAND UNDER CULTIVATION, AND CHANGING FAMILY PATTERNS.

- BELIEVE MATTER OF LAND TENURE (E.G. REDISTRIBUTION OF PUBLIC LANDS, AND PERHAPS IN-MIGRATION OF RURAL POPULATION) WILL BE IMPORTANT ASPECT IN ARRIVING AT PP PROPOSALS. ?

- GIVEN PROBABILITY OF A FRAGILE SOCIO/ECONOMIC/PHYSICAL ENVIRONMENT IN ARID AREAS, PP WILL REQUIRE AN ENVIRONMENTAL ASSESSMENT PER A.I.D. REGULATION 16.

- SMALL FARMER CREDIT ASPECT OF PROJECT MAY PRESENT DIFFICULTY GIVEN PROBABILITY OF LOW CROP YIELDS, THE POSSIBLE NEED FOR HIGHLY SUBSIDIZED SMALL PRODUCER PROGRAMS IN EARLY YEARS OF PROJECT, AND PROBABILITY OF HEAVY INITIAL EMPHASIS ON TRANS-FARM BOUNDARY INFRASTRUCTURE INVESTMENT NEEDS WHICH PERHAPS FIRST WILL BE AIMED AT STABILIZING DEGRADATION RATHER THAN INCREASING PRODUCTIVE CAPACITY.

- IN CONNECTION TECHNICAL ASSISTANCE ASPECT OF PP(S) CONSIDERATION SUGGESTED FOR INCLUSION OF HORTICULTURALIST TO INVESTIGATE AND DEVELOP BOTH OPERATIONAL AND RESEARCH PROGRAMS ON APPROPRIATE NEW OR IMPROVED PLANT TYPES FOR ARID AREAS. RE ANIMALS, IT SUGGESTED THAT INQUIRY BE MADE INTO APPROPRIATENESS RESEARCH AND UTILIZATION GUINEA FOWL, AND OF COURSE SMALL RUMINANT (GOAT/SHEEP) POSSIBILITIES. ALSO SUGGESTED THAT IT MIGHT BE ADVISABLE EMPHASIZE IMPROVEMENT OF ANIMAL NUTRITION RATHER OR SIMULTANEOUS WITH INTRODUCTION OF

ABC II

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ADDITIONAL ANIMALS EITHER EXISTING OR NEW VARIETIES.
- MALI RURAL WORKS PP POUCHED TO MISSION AS ONE POTENTIAL MODEL/OUTLINE FOR PROPOSED MARGINAL LANDS PROJECT.

D. HUMAN RESOURCES: KENYA PID CONSIDERED SIMULTANEOUSLY WITH SIMILAR BROAD-BREADTH TRAINING PROJECTS FROM ELSEWHERE. CONCLUSION OF REVIEW OF PROPOSALS IN PRINCIPAL WAS THAT AFRICA REGIONAL MANPOWER DEVELOPMENT PROJECT COULD SUFFICE TO SATISFY TRAINING NEEDS NOT DIRECTLY FUNDABLE BY BILATERAL PROJECTS. POUCHING SEPARATELY USAID/TANZANIA FY 77 TRAINING PLAN FOR AMDP WHICH SHOULD BE USEFUL IN DEVELOPING KENYA SUBMISSION.

5. OTHER ITEMS TO BE CONSIDERED/ADDRESSED:

A. PID APPROVAL OF A PROPOSED PROJECT BY AA/AFR DOES NOT REPRESENT AGENCY COMMITMENT TO UNDERTAKE THAT PROJECT.

B. SEPARATE GUIDANCE BEING PREPARED FOR CONGRESSIONAL PRESENTATION. FIELD MISSIONS WILL HAVE A PRIMARY ROLE IN PREPARING THE CP ACTIVITY SHEETS. SINCE CP ACTIVITY SHEETS NOT LINKED TO PPPS, BECOMES PARTICULARLY IMPORTANT THAT PROJECT INPUTS, OUTPUTS, AND AID COST DATA BE CLEARLY DEFINED AS EARLY AND AS ACCURATELY AS POSSIBLE AND PREFERABLY BY NOVEMBER 1, 1977.

C. IN RESPONSE TO THIS CABLE, MISSION PROVIDE FOLLOWING TO AID/W:

1. NAME OF OFFICE(S) AND MEMBERS OF FIELD PROJECT COMMITTEE RESPONSIBLE FOR PROJECT DESIGN AND MANAGEMENT

2. ANY CHANGES IN SCHEDULE AND DESIGN PROCEDURES FORESEEN FOR DEVELOPMENT OF PP.

3. WHEN PP PROPOSED FOR SUBMISSION. CHRISTOPHER

EDC

UNCLASSIFIED
Classification

A. Economic Analysis

1. Project Overview

A cost-effective analysis of this project demonstrates that it is a best-cost alternative with reasonable quantifiable costs associated with the expected, but non-quantifiable, benefits. An assessment of Kenya's ability to service the debt accruing from this project and the relationship of defense to development expenditures is made in Annex VII; it is concluded that Kenya should experience no debt servicing problems and that Kenya is not funding defense costs at the expense of development programs.

The components of the ASSP do not lend themselves to a rigorous quantification of social costs and benefits necessary for a comprehensive and meaningful cost-benefit and internal-rate-of-return analysis. Where departures from more traditional methodologies are taken, a full explanation is provided in the relevant methodological section.

Each component analysis provides clearly outlined linkage between project inputs and the expected impact on the ultimate target beneficiary group: the smallholder farmer and the pastoralists. A quantitative relationship between project inputs and ultimate target group benefits requires extension service and research production functions; however, they are not available for Kenya or similar LDCs; the level of the agricultural production generated by smallholders suggests the magnitude of benefits which could be expected to accrue from the project.

In 1974/75, 1.5 million smallholder households generated approximately $330 per household of crop and livestock production, or roughly $495 million per annum for the smallholder sector.[1/] Concentrated area-specific multi-component agricultural development projects, such as the Integrated Agricultural Development Program, anticipate incremental production of between 40 to 50 percent of the pre-project production level. The introduction of hybrid maize into western Kenya, for example, is estimated to have increased yields by 50 percent.[2/] "A considerable potential for intensification of agriculture exists; in the case of almost every crop, average yields are less than half those obtained on the best small farms, husbandry is poor, planting materials can be

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1/ Central Bureau of Statistics. Integrated Rural Survey, 1974-1975.

2/ J. Gerhart. The Diffusion of Hybrid Maize in Western Kenya. CIMMYT. 1975.

further improved, and the use of commercial inputs is at extremely low levels."[1/] The GOK's agricultural development strategy is based on intensifying production through improving the agricultural support delivery systems.

Based on current output levels, the potential for incremental smallholder agricultural production could realistically range between $200 million and $400 million per annum. While the ASSP does not claim to provide all the inputs required to effect such an increase, the project will provide inputs which are directed at assisting the GOK's efforts to achieve increased production of this magnitude. Overall, the GOK is expecting that the non-monetary sector of the Gross National Product will grow at approximately 3.2 percent per annum from 1979 through 1984. Applying this rate to the agricultural and forestry portion of the non-monetary sector implies increased annual production of $147 million between 1979 and 1984. The inputs from the ASSP will directly support the GOK's efforts to support such a production increase. The interrelationships between project inputs, increased production, and increased real income are discussed in detail in Part II.A.

A component-specific recurrent cost discussion is presented in each component section of this analysis. When summing the project components the implications for incremental GOK recurrent expenditures are considerable, most notably for the educational institutions and the research station. The agricultural credit, cooperative sector, and storage and marketing support activities imply quality improvements to the existing institutions but not a massive increase in staff. Therefore, recurrent costs in these areas should not increase dramatically as a result of this PP. The agricultural educational institutions, however, require incremental operating funds to accommodate the new student levels proposed, as well as incremental salary expenses for hiring the graduates generated by these project components.

Over the 1979-83 period it is expected that the GOK budget will experience annual revenue-expenditure gaps of $250 million.[2/] This estimate is well below the $543 million deficit for FY 1977/78 or the $386 million deficit experienced in FY 1976/77. The Ministry of Finance and Planning is expecting to finance about 72 percent of the anticipated future deficits from concessional foreign donor assistance with the remainder being obtained from long-term foreign borrowings. This budget financing structure compares favorably to the situation experienced in Kenya over the last few years and actually represents an

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1/ J. Gerhart. ibid. pg. 1.

2/ Based on public statements of senior officials of the Ministry of Finance and Planning.

improvement of the revenue-expenditure gap and the foreign/domestic financing ratio.[1/] At the same time it may well be that GOK projections of the total revenue-expenditure gap are overly optimistic. The 1977/78 supplemental appropriations represent a 25 percent increase in expenditures (of the total increase 36 percent is for the Ministry of Defense). The supplemental appropriations have resulted in a significant increase in the deficit, with the revenue/expenditure ratio falling from .85 to .71 and the domestic/total deficit ratio rising from .38 to .73. The new expenditures are generally not for revenue generating activities and are not tied to specific foreign assistance funds. With defense-related expenditures dominating the supplemental appropriations and so much uncertainty surrounding the future in the Horn of Africa, it is difficult to predict what the net effects on the budget will be. To date, however, military expenditures have not resulted in decreases in development related activities. Agriculture's 1977/78 budget has been increased 12 percent due to the supplemental appropriations.

On the other hand, the GOK has made a commitment to expand agricultural education and to increase the delivery of agriculture supporting services to the smallholder farm population. With the next Five Year Plan currently in the draft stage, it is not possible to state firmly the planned sectoral distribution of recurrent costs, but from numerous statements made by high-level GOK officials, a major emphasis will be placed on smallholder agricultural development. It is expected, based on similar statements but without the Plan unproven, that the agricultural sector will receive an even larger portion of the budget than is currently the case, and that agriculture spending during 1979-83 will double. The USAID has directly called the GOK's attention to the recurrent cost implications associated with this project and has been advised that the costs will be met. From an examination of recent budgets, GOK statements about the budgets expected during the next Plan Period, and the GOK's stated commitment to increased emphasis on the agricultural sector, it is expected that the GOK will be capable of managing the recurrent costs associated with this project.

Actual performance will need to be the subject of review during annual and in-depth evaluations and, also, part of annual reviews by the USAID Program Economist of GOK budgets as they are approved by Parliament and published. Finally, AID/W's attention is directed to the covenants on recurrent financing included in Part V.E.

1/ See "GOK 1977/78 Budget. An Economic Analysis". Nairobi TOAID A-122. October 1977.

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2. Agricultural Manpower System Support

a. Component Overview

Agricultural manpower training seeks to address several constraints crucial to the effective and efficient operation of the agricultural extension service and to the GOK's provision of agricultural support systems for the nation's 11 million smallholder farmers. These constraints are: inadequate administrative, management, and technical support, insufficient staff numbers in the extension service and research system, inadequate pre-service training, inadequate in-service training.

Through increased agricultural manpower training, combined with training which is geared towards serving the needs of the smallholder farmers and training which is sensitive to the management requirements of the extension service, significant constraints within the extension service can be alleviated. As discussed in Part II.B.1., aggregate efforts of the GOK, AID, and other donors are addressing the other constraints facing the extension service, including the administrative factors which prevent an optimal utilization of the existing extension resources and in-service training. Together with the inputs of the ASSP these efforts represent a major GOK and donor commitment to address the problems of the extension service in order to support the planned increase in smallholder agricultural production and real income.

b. Methodology

The objectives of an economic analysis of education have traditionally been to establish the private and social rates of return to a specific investment in education such that public investment in education continues up to the point where the marginal social net product returns between various sectors of the economy are equated. The ideal measure of social returns to education is derived from an education production function. Lacking specification of such a function, economists have used incremental earnings as a proxy for incremental production resulting from further education.[1/] The collective work in this area falls under the heading of Human Capital Theory.

1/ IBRD. Cost-Benefit Approaches to Education Planning in Developing Countries 1967. EC-157

IBRD. Cost-Benefit Analysis in Education. A Case Study in Kenya 1969. EC-173.

In recent years, economists have raised serious objections to Human Capital Theory and particularly to proxy variables for the education production function.[1/] To summarize the argument, the principal weakness of the traditional Human Capital Theory approach to estimating the benefits of education include:

(1) Incremental earnings (the standard proxy for incremental output) are a function of many variables, not just schooling, including an individual's socio-cultural background and other "ability" differences not related to schooling. It has proven exceedingly difficult to assign impact coefficients to the numerous variables associated with incremental earnings.[2/]

(2) The earnings differential proxy overlooks the impact of unemployment in the case where not all graduates are employed.

(3) The earnings differential proxy assumes that wages measure productivity whereas serious wage distortions are common in LDCs, most particularly in the monopsonistic public sector.

(4) The current wage differentials between someone with a certain level of training as opposed to someone without that training may not be a valid measure of future wage differentials.

1/ Mark Blaug, "Human Capital Theory: A Slightly Jaundiced Survey", Journal of Economic Literature, September 1976.

Samuel Bowles and Herbert Gintis, "The Problem With Human Capital Theory", American Econmic Review, May 1975.

George Psacharopoulos, "Schooling, Experience and Earnings. The Case of an LDC", Journal of Development Economics, March 1975.

Wallace E. Huffman, "Allocative Efficiency: The Role of Human Capital", Quarterly Journal of Economics, February 1977.

W. J. House and H. Rempel, "The Determinants of and Changes in the Structure of Wages and Employment in the Manufacturing Sector of the Kenyan Economy", Journal of Development Economics, March 1976.

John Sheenan. The Economics of Education: George Allen and Unwin 1973.

2/ IBRD Report EC-173, op.cit. devotes 223 pages (not including annexes) to an attempt to generate a broadly based educational production function for Kenya. The exercise is of dubious practical value.

(5) The indirect benefits of education as a consumer and political good need to be considered.

Rather than to attempt a cost-benefit analysis based on dubious proxies of an educational production function, the preferable economic analysis is one of cost-effectiveness or internal efficiency. The test then becomes one of assessing whether the main objectives have been achieved at a reasonable cost (least-cost alternative) and whether the knowledge, skills and understanding gained from the educational program are put to use to derive expected benefits (feasible education approach).

c. Egerton College Expansion

(1) Background

Egerton College is the principal training ground for the middle-level officers in the MOA's extension service. Of those graduating from Egerton between 1963 and 1968, 94 percent were (as of 1976) in the extension service while of the 1969-1972 graduates, 64 percent were so employed (as of 1976). This shift is attributed to an expansion of diploma streams offered. Of the 1978 graduating class of Egerton College 82 percent are entering the Ministry of Agriculture, and of that total 81 percent have been assigned to the extension service (see Table B-5).

Egerton graduates enter positions requiring considerable administrative and supervisory responsibilities as well as technical skills in particular technical fields of agriculture. Overcoming some of the extension service's constraints, including inadequate management, and insufficient numbers of qualified staff, will require an increase in the type of individual being trained by Egerton College.

The ATAC manpower survey analyzed the demand for trained agricultural manpower and the supply of manpower being generated by the existing training institutions.1/ In order to meet the demand for diploma holders ATAC recommended a significant expansion of Egerton College from a student capacity of 690 up to approximately 1,550 students. An academic space utilization study, combined with an analysis of graduates required in each diploma stream, concluded that the College should be expanded to a student capacity of 1632.2/ That capacity level is the recommendation of this PP.

1/ ATAC. op.cit. pp. 49 and 77-84.

2/ Mutiso Menezes, op.cit.

This economic analysis focuses on the relationship between the future demand and supply of Egerton graduates, the cost-effectiveness of the proposed activity, the recurrent cost implications of the proposed Egerton expansion, and the benefits expected from the increased output of diploma holders.

While highly sophisticated education planning models are currently in vogue, these models require a degree of data and coefficient accuracy which is simply lacking in Kenya.[1/] Application of optimal control techniques to decision models, with their control exogenous, state, and output variables conveys a level of precision that does not match-up with Kenyan conditions. The recommendations presented in this component of the PP are based on (1) an identification of problems within the agricultural support delivery systems, (2) an investigation into the amount of additional manpower required to address identified problems, and (3) a technical study of the most cost-effective means of producing the required manpower.

(2) Diploma Graduates: Future Demand and Supply

The demand for trained agricultural manpower is fully detailed in the ATAC Manpower Study. Without repeating discussions on the survey methodology and the means by which gross demand was constrained to obtain effective demand estimates the ATAC study has demonstrated the magnitude of the manpower gap which the Kenyan agriculture sector will face during the remainder of the century. The supply of trained manpower is constrained by the capacity of existing training facilities. On the diploma level, the constraint is the capacity of Egerton College.

Table C-1 summarizes the demand and supply situation through the year 2000. It should be noted that reliable manpower demand projections over a 25-year time horizon are not even possible in the U.S., let alone in Kenya. The figures are, however, a best estimate based on current conditions and what is currently known about future development activities. The last major agricultural manpower analysis in Kenya, conducted in 1967, grossly underestimated manpower demand; Ministry of Agriculture officials consider the ATAC demand estimates to be on the conservative side.

As Table C-1 shows, without the project the shortfall of diplomates is estimated to range between 1,475 and 2,400 by 1990, and 3,470 to 6,830 by the year 2000. With the projected expansion of Egerton

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1/ J. Ritzen and J. Balderston, Methodology for Planning Technical Education. Praeger, 1975.

Table C-1

Supply and Demand for Egerton Graduates

(All figures are Cumulative)[1/]

Year	Supply of Graduates		Demand		Shortfall			
					Without Project		With Project	
	Without Project	With Project	8.5% Budget	7.0% Budget	8.5% Budget	7% Budget	8.5% Budget	7% Budget
1983	1,320	1,320	2,100	1,782	(780)	(462)	(780)	(462)
1988	2,420	3,536	4,468	3,876	(2,048)	(1,456)	(932)	(340)
1990	2,860	4,568	5,260	4,335	(2,400)	(1,475)	(692)	233
1995	3,960	7,148	7,910	6,080	(3,950)	(2,120)	(762)	1,068
2000	5,060	9,728	11,892	8,528	(6,832)	(3,468)	(2,164)	1,200

NB - 8.5 percent constraint in growth of real personnel budget
7.0 percent constraint in growth of real personnel budget
( ) denotes shortfall, demand exceeds supply

1/ Cumulative from 1977

College from 686 to 1,632 students, the demand for diplomates will more nearly match the supply. If sector wide demand for diplomates grows at the rate of 8.5 percent per annum after 1977, then the demand for Egerton graduates will continue to outstrip the supply, with a shortfall, after expansion, of 692 in 1990 and 2,164 in 2000.

From 1960 through 1975 the Ministry of Agriculture's (MOA) personnel grew at the rate of 10.2 percent per annum to the point where the MOA's staff currently numbers approximately 16,000. The 8.5 percent constrained growth rate is based on anticipated budget limitations to be faced by the MOA and most likely understates the growth constraint of other Ministries.

Using the more stringent budget constraint of 7 percent per annum growth, supply exceeds demand by 233 in 1990 and 1,200 in the year 2000. Taking the mean between the two projected growth paths (8.5 percent and 7 percent), demand will exceed supply, with the expansion, by 230 in 1990 and 1,022 by the year 2000.

This exercise demonstrates that with a reasonable degree of confidence one can predict that the new expansion program for Egerton College will produce graduates who will be demanded by the public and private sector and that there is little likelihood of over-supplying diploma holders.

Demand analysis beyond the year 2000 is too unreliable for inclusion in this analysis. It should be pointed out that the facilities being constructed at Egerton are rather easily adaptable for alternative educational uses and, therefore, the facilities constructed under this project can be put to an alternative use as the GOK's manpower needs and educational programs evolve, should this be necessary.

A discussion of the ATAC survey and analysis methodologies may be found in Annex IX.E and the ATAC report, pages 1-64.

(3) Cost-Effectiveness

Egerton College is currently the only institute in Kenya offering a diploma in agriculture. The Egerton program currently provides for three years of course work (including classroom instruction, laboratory work, and on-farm instruction at the College's teaching and operating farms) and field work at relevant off-campus sites, such as the College's Chemeron range area. The College curriculum contains a considerable amount of laboratory work in such fields as Chemistry, Biology, Physics, Nutrition, and Engineering. All Egerton students are exposed to farm mechanics, tractor driving, and other basic mechanical skills.

Such courses are rather capital and labor intensive, as opposed to simple classroom lectures, and require laboratory facilities, specialized equipment and additional teaching staff and supplies. The Egerton curriculum has evolved over the years and is considered to be appropriate for the type of graduate being produced and the type of work the graduate is expected to undertake. Egerton graduates are highly prized within the MOA because of the very strong practical orientation which their program contains, making the graduate skilled, and not just knowledgeable, in basic farm operations, mechanics, crop production, and the like.

The Egerton curriculum has been the subject of numerous reviews, including those by the recent ATAC education team and two curriculum development specialists financed under the National Range-Ranch Development Project (615-0157).[1/] The curriculum has generally been found to be sound and appropriate to the needs of Kenya and the smallholder farmer and pastoralist. A major criticism of the Stringham and Dwyer evaluations has been the inadequate supply of necessary equipment and materials and the marginal quality of some existing facilities.

Cost-effectiveness analysis must answer the question whether, relative to known alternatives, the current (and proposed) educational program is financially reasonable. Cost-effectiveness analysis should also explore the possibility of alternative educational systems/programs which could achieve the same desired end product.

The annual recurrent costs, per student year, are approximately $3,600 at the Faculty of Agriculture, University of

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1/ ATAC. op.cit., pp. 84-89, and D. Dwyer, Range Management Curriculum Review (Draft), April 1978, and G. Stringham, Agricultural Engineering Expansion Program at Egerton College, March 1978.

Nairobi, $3,000 at Egerton College, and $900 at the certificate institutes. The fixed assets per student (at current book value) are about $13,000 at the University, $2,500 at Egerton, and $10,000 at the certificate institutes. The asset comparison is confused by the different book values for new and old structures. Although both structures may yield the same educational service, the newer structure has a higher book value. Note that some Egerton buildings date back to 1940 while most of the University and certificate institute structures were only built in the late 1960's. The point of the exercise is to indicate that the fixed assets and recurrent costs, per Egerton student, are not out of line with the other agricultural educational facilities in Kenya. On a unit cost basis, the World Bank has concluded that capital expenditures at the University and the certificate institutes compare favorably with similar institutions in other LDCs.1/

Reviews of Kenya's agricultural education system in general, and Egerton College in particular, have recommended that there be no radical alteration in the manner in which diplomates are trained.2/ While there has been some discussion of up-grading Egerton to the status of a University, granting B.Sc.'s rather than diplomas, such suggestions are quickly qualified by statements to the effect that it is hoped the

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1/ World Bank. Staff Appraisal Report: Fourth Education Project in the Republic of Kenya. February 1978. Report No. 1839A-KE.

2/ GOK Report of the Agricultural Education Commission. 1967.

GOK Report of the Training Review Committee. 1972.

ILO Employment, Income and Equality. A Strategy for Increasing Production Employment in Kenya. 1972.

J. Sheffield Education, Employment and Rural Development, East African Publishing House. 1967.

G. Hunter Education for a Developing Region: Study of East Africa. 1963.

S. Weeks Divergence in Educational Development: The Case of Kenya and Uganda. 1967.

ATAC. op.cit. 1977.

MOA "Egerton College Curriculum Workshop", September 1976.

World Bank Kenya Into the Second Decade.

training provided at Egerton will not be radically altered and the Egerton tradition of practical training will be continued. There is a considerable demand for the skills which Egerton imparts to its graduates and the value of the Egerton graduate to Kenya's agricultural development, and particularly the development of the smallholder, can be amply demonstrated (below). If the current education costs at Egerton are considered to be reasonable (and the above comparison with existing alternatives indicates that they are reasonable) and no significant alteration in the education of diplomates has been recommended, it can be concluded that the current educational program offered at Egerton College is cost-effective.

The second question is whether the proposed expansion is cost-effective. Given that there is an adequate demand for Egerton graduates (see section (2) above) and that the Egerton graduate can and does contribute to Kenya's agricultural development, cost-effectiveness analysis should consider the content and cost of the proposed expansion.

The proposed expansion design is based on:

(a) The type of trained agricultural manpower required in Kenya (ATAC).

(b) Manpower demand projections (ATAC).

(c) The demand for graduates by diploma stream (ATAC, MOA).

(d) An analysis of each diploma stream and new facilities and equipment required for each expanded stream (Mutiso, Miller, Stringham, Dwyer, Egerton College).

(e) An analysis of the common facilities and equipment required for an expanded College (Miller, Mutiso, Egerton College).

(f) An analysis of renovations required to existing structures (Mutiso).

(g) A review of items (a) through (f) (USAID/Kenya, Egerton College).

The facilities, equipment, and furnishings recommended to implement the Egerton expansion are considered to be essential and not merely desirable elements; a continual review and evaluation of all items proposed has kept the final list of proposed construction activities down to a minimum. Alternative approaches towards meeting specific campus requirements (such as additional library space) have been considered and the most cost-effective alternative selected and proposed for financing.

Cost reasonableness can be established by comparing the projected expansion costs to the cost of the existing facility. This can be undertaken by making the following adjustments: (1) all proposed construction costs are valued in 1978 prices in order to eliminate the inflation factor reflected in the final project cost figures; (2) the original construction cost of all existing facilities at Egerton has been estimated and adjustments made to reflect price changes between the time buildings were constructed and 1978; (3) all renovation costs to existing buildings are eliminated from the proposed construction costs in order to avoid double counting; an existing building is assumed to provide educational services in its present condition without repair to the roof or electrical systems (although, in fact, a leaking roof or poor lighting may reduce a building's educational value and in time, a leaking roof will pretty well destroy a building); (4) a further adjustment has been made to reflect housing for new staff (note that much of the existing subordinate staff housing has been condemned by the Ministry of Works).

Capital Cost Comparison

a.	**Existing Facilities**	
(i)	Current depreciation book value of existing fixed assets	$ 1,460,000
(ii)	Estimated 1978 value of fixed assets	$6,000,000 - $8,000,000
(iii)	Fixed assets per student (690 students)	$8,700 - $11,600
b.	**Proposed Facilities**	
(i)	Construction costs for proposed expansion (includes 11½ percent A&E fees and 15 percent contingency)	$17,054,000
(ii)	Less renovations to existing buildings	$ 937,000
(iii)	Less staff housing for existing staff	$ 2,874,000
(iv)	Adjusted construction costs	$13,243,000
(v)	Total incremental fixed assets per incremental student (942 incremental students)	$ 14,100

c. Existing and Proposed Facilities

(i) Total fixed assets, existing and proposed (1978 prices) $19,200,000 - $21,200,000

(ii) Total fixed assets per student (1,632 students) $11,700 - $13,000

When valuing all fixed assets in 1978 prices it is apparent that the proposed capital construction is not out of line with the existing assets. Existing assets range between $8,700 and $11,600 per student while the incremental assets are valued at $14,100 per incremental student. This comparison does not adjust for quality differences between the proposed and existing structures, does not adjust for maintenance differentials between the proposed and existing structures, nor does it adjust for the potential utility a new structure may offer as opposed to some existing structures which have been converted and renovated several times over the past 30 years.

Recurrent costs per student are currently $3,030. Drawing on the rather detailed budget prepared by Egerton (audited by a public accounting firm) and projections of new staffing and student enrollments, incremental operating expenses have been estimated through 1985 as detailed in Annex XVII. Translating 1985 prices into constant 1978 prices, the incremental recurrent cost, per incremental student, is estimated to be $2,480 by FY 1985. Anticipated incremental recurrent costs are therefore in line with recurrent costs currently being experienced. Incremental recurrent costs, per incremental student, are expected to be less than per student recurrent costs now being experienced due to economies of scale and the use of common facilities. Administrative, teaching staff, and common facilities are not a linear function of student numbers and, therefore, some cost savings are expected as enrollment increases. The unseen and unmeasurable cost is that of educational quality. This is not expected to be a problem at Egerton since this project is providing resources both for expansion and improvement of the current program.

An alternative approach to expanding the current facility is the construction of an entirely new campus. The duplication of overhead services and specialized facilities which a second campus would entail eliminates this option as a cost-effective approach. Expanding Egerton from 690 students to 1,632 should not result in a deterioration of the quality of education and the "education" experience. Were an expansion to 5,000 students proposed, then a second campus might be an option requiring serious attention as the benefits from scale economies decline in the face of increased congestion, a deterioration in student-faculty contacts and a potential overall decline in the quality of education offered.

In terms of alternative agricultural education programs in Kenya Egerton College program's costs are reasonable. The existing curriculum has been judged to be relevant to Kenya's needs and no radical restructuring of the Kenya's agricultural education process has been proposed. When adjustments are made for inflation and the replacement cost of existing facilities, the proposed construction costs are in line with the cost of the existing facilities; unit costs compare favorably with other LDCs. The proposed expansion program, is therefore, considered to be cost-effective.

(4) Recurrent Cost Implications

In 1978 prices the incremental recurrent costs per incremental student have been estimated to be $2,480, as opposed to the recurrent cost of $3,030 currently being expended per student.

Egerton recurrent costs are financed from two sources: The "economic" fee (tuition) and miscellaneous income from investments, the College farms, and a Government subvention (grant). As part of the loan agreement for this project, the GOK will convenant (1) to provide the requisite sponsorships for additional student positions above the present sponsorship level, and (2) to provide funding to meet the recurrent costs of Egerton College by means of a regularized adjustment of the economic fee, a Government subvention, or by such means as the GOK and AID may agree.

Table C-2

Egerton College Income for Year Ended June 1978

		Percent
Economic Fee	$1,416,600	68
Subvention	462,000	22
Investments	58,300	3
Miscellaneous	153,600	7
Total Income	$2,090,500	100
GOK Contribution to Income:		
Economic Fee	$1,216,700	
Subvention	462,000	
Total GOK Contribution	$1,678,700	80

In 1978 prices the Egerton expansion will require an additional $2,500 per student year, or an additional $2,355,000 per year, by FY 1985. The GOK's payment of the economic fees for Egerton College are channeled through the Directorate of Personnel Management's recurrent budget. In 1977/78 the Directorate budget provided $3,628,000 for tuition and allowances for students at Egerton, Embu, AHITI, and Bukura. The Egerton expansion will require the Directorate of Personnel Management (DPM) to increase this training budget by 65 percent. As a matter of administrative practicality the DPM (a sub-section of the Office of the President) has no difficulty obtaining additional funds from Parliament, should it so request. The DPM has indicated that if a strong case for additional Egerton graduates can be made then the DPM would be willing to supply the funds. The GOK has officially reviewed and accepted the ATAC manpower report; the DPM was represented at the lengthy review sessions held to discuss the ATAC report, and the DPM indicated its willingness to provide for the increased student positions recommended in the ATAC report.

The MOA's recurrent 1977/78 budget is $42,198,000 and the DPM recurrent budget is $5,908,815. The GOK has expressed a desire to expand Egerton College's enrollment and to hire the graduates produced by that expansion. The GOK is aware of the recurrent cost implications and is ready to meet them. As discussed in section III.A.1. above, it is believed that the GOK can meet these expenses within the resource limitations of the budget.

Table C-3 illustrates the portion of total MOA personnel costs which will be required to hire the incremental Egerton graduates produced under this project. The incremental graduates will represent approximately 6 percent of the MOA's 1995 personnel costs. Ideally, a recurrent cost analysis would also examine the incremental gross product and the incremental tax revenue generated by the new graduates as they enter and work their way through the MOA. However, there are no reasonable estimates available on which can be made of incremental production or revenue which can be attributed to an additional Egerton graduate serving in the MOA.

This analysis concludes that the GOK will be able to finance the additional students at Egerton and that the MOA, in particular, will be able to absorb the new graduates.

Table C-3

Recurrent Costs-Incremental Egerton Graduates Hired by MOA

		1978	1988	1995
1.	Incremental Egerton Graduates Hired by MOA[1/]	-0-	725	1,658
2.	MOA Personnel Emoluments Budget (1978 prices)			
	7.0% growth	$18,947,000	$37,271,000	$59,850,000
	8.5% growth	$18,947,000	$42,839,000	$75,830,000
3.	Emoluments for Incremental Egerton Graduates (1978 prices)[2/]	-0-	$ 1,903,000	$ 4,352,000
4.	Egerton Graduates' Emoluments as Percentage of total MOA Personnel Emoluments			
	7.0% growth	-0-	5.1	7.3
	8.5% growth	-0-	4.4	5.7

1/ Graduates with project less graduates without project, adjusted for estimated 65 percent MOA retention rate.

2/ At an average MOA salary per Egerton graduate of $2,625 per annum.

(5) Beneficiaries

The ultimate beneficiaries of the Egerton College expansion are the smallholder farmers who receive improved agricultural support services, particularly those offered by the MOA and the MOA's research and extension systems.

Agricultural output is the primary source of benefits which flow from the rural sector. While there is a strong presumption that increases in the development and transmittal of improved technology will lead to increases in agricultural output, it is extremely difficult to trace a direct cause and effect relationship between a single factor of production and a particular increase in output. While additional specialized manpower is necessary to develop and extend technology needed for expanding production, by itself it is not sufficient to increase production. Combining the agricultural sector support activities proposed under this project with the on-going and proposed donor and GOK programs for increasing smallholder agricultural production (such as ASL I, Part C and the Integrated Agricultural Development Program) one can assert, with greater authority, that the necessary and sufficient conditions for incremental agricultural production are being addressed.

Extension agents must not only reach their farmer clients but must also be effective in delivery of information. Individual agents cannot be expected to have the knowledge to advise a farmer on all the tasks of farming or even on all aspects of a given crop. Hence, there needs to be a continuous targeted flow of information to agents, geared to the level of farmers served and the type of crops to be planted. This information should be relevant to the farm situation, adapted to the characteristics of the farmers who will use it, and timely with respect to the crop. Development and maintenance of such a flow of information requires a technical support system which can identify the agricultural calendars and needs of each ecologic region and client group, develop technology, prepare it for transmittal, and orient and train agents in both the technology and in effective modes of its delivery to farmers.

The Ministry of Agriculture performs a broad array of functions in addition to the development and extension of technology, including production of seeds and planting stock, education of specialized agricultural staff, the operation of plant and animal quarantine and protection services, regulation of agricultural inputs, and provision of a number of other services to farmers. However, its most pervasive service and the one which directly affects the rural welfare is the agricultural extension function. (See following budget table.)

Table C-4

Ministry of Agriculture

1977/78 Budget

Category	Total Recurrent Budget (Net)[1]		Persons Employed	
	Shs. Mn	Percent Total	Number	Percent Total
Administrative Support	42.3	16.4	1144	7.2
Research Activities	40.1	15.5	2799	17.5
Services[2]	7.2	2.8	1081	6.8
Extension Services				
Production	(143.4)	(55.5)	(9817)	(61.0)
Education	(25.5)	(9.8)	(1244)	(7.8)
Sub-Total	168.9	65.3	11061	68.8
Total	258.5[3]	100	16,085	100

1/ Excludes appropriations-in-aid, which represent fees collected for services performed, and donor contributions. For example, the gross expenditures for livestock trading is Shs.27.6 million while the net expenditure, less fees collected for livestock trading, is negative Shs.19.6 million. Likewise, numerous research and extension services receive fees for some of the services provided so that the net expenditure (which represents the real GOK expenditure financed by the Treasury) is often considerably less than the gross expenditure. The net figure is of greater interest because it excludes expenditures which are self-financing. The "Persons Employed" column does not exclude persons whose salaries are covered by service fees, such disaggregated information is not available from the budget.

2/ Includes: tractor hire, livestock marketing, and meat inspection.

3/ Excludes K.Shs. 38,074,000 in supplemental appropriations.

The agricultural extension service is a mechanism for delivery of technology and other information to the farmer. As such, it should respond through its structure and approach to the particular production objectives and client groups it is intended to reach. No single, ideal type of extension service system should be expected to perform equally well in reaching the diverse client groups or in meeting such diverse objectives as production for domestic food, for exports, or for industrial raw materials.

The Ministry of Agriculture has a good structure for the performance of traditional extension activities, but low productivity. This is attributed to:

(a) Too much reliance on the general technical assistance role of the farmer contact agent, and not enough on his technical support, i.e., on preparation of specific packages of information for the contact agent, on programming him to deliver them effectively, and on in-service training.

(b) Too much reliance on pre-service academic preparation of staff and not enough stress on formulating and implementing the management framework which will assure a high level of productivity.

These deficiencies are mutually reinforcing since a person with an outdated education and poor work methods will be unable to effectively adapt new technical information that he receives for transmittal to his clients and inadequate technical support services hinder the delivery of new technology from the research divisions to the extension divisions. These are, however, problems that respond to effective planning, i.e., the identification of objectives and the programming of activities to achieve those objectives.

Raising the pre-service educational entrance requirement will have only a marginal effect on subsequent performance unless educational experience is focused on job objectives, is used as a base on which to systematically accumulate appropriate operating experience and is periodically updated through in-service training and technical support. High productivity does not come about haphazardly. It begins with the careful identification of objectives and targets, the specification of functions and responsibilities, the establishment of schedules and work norms, and the training of staff in each of these. Supervisors must be capable of defining the job which each staff member must do, instructing him in how to do it, helping him to accomplish it, and assuring that he does it well, on time, and with a definite number of farmers. The staff members must have appropriate incentives to perform, and be motivated to perform by effective leadership.

The role of the Egerton graduate in this extension system is discussed in the detailed component description. Graduates are assigned to the middle ranks of the extension service, usually posted as district level support officers and subsequently as Division Agricultural Officers. Their role is to advise and supervise the extension service contact agents. Egerton graduates estimate that administrative, supervisory, and planning responsibilities account for two-thirds of their work time, with about one-third of the time spent on direct "contact" agent services. As advisors Egerton graduates draw on their practically oriented training to solve agricultural problems as they arise and to translate newly published research results into terms which the contact agent and farmers can readily understand and apply. As a supervisor/administrator, the Egerton graduate plays an important role in improving the utilization of the MOA's extension service manpower, thereby making a direct contribution to increasing the productivity of the extension service.

As a suggestion of the magnitude of benefits accruing to the generation of incremental Egerton graduates, a "Human Capital" type benefit analysis has been undertaken. Given the very serious problems which accompany such an analysis (described in section III.A.2.b. above) this analysis is presented in abbreviated form and serves only to illustrate the order of magnitude of benefits. This methodology is not considered sufficiently realistic to permit its use as the sole criterion for a capital investment decision.

If one assumes that the economic value of an Egerton graduate (incremental agricultural production attributed to one graduate) is equal to the graduate's salary and that the incremental benefits generated by this component are represented by the difference between the incremental graduate's salary and the salary of a secondary school leaver (education level of entrants to Egerton College), then the accumulated component benefits from 1979 through the year 2000 are $101 million. Discounted at 10 percent, the present value of incremental benefits would be $19 million. Component costs, discounted at 10 percent, are estimated to be $29 million. The internal rate of return associated with this analysis is approximately 8 percent.

While ASSP manpower component costs are relatively easy to identify and quantify, the identification and quantification of benefits is only possible with the use of an educational production function, which, as previously stated, does not exist and cannot be constructed with any reasonable degree of accuracy. Benefits accruing to an Egerton graduate could well be in excess of the graduate's incremental salary, particularly since the graduate functions in a supervisory and planning capacity, directing the operations of other extension workers as well as providing direct extension services himself. Benefits

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double the level of the graduate's incremental salary are considered to be well within reason. In that case, the internal rate of return is approximately 13 percent. Given the serious conceptual problems associated with this methodology, the proper criterion for an investment decision should be based on cost-effectiveness analysis, and it is that basis on which this project is evaluated.

The extension service is supposed to reach all Kenyan farmers, with special emphasis on the 1.5 million smallholders. The MOA admits that performance to date has not resulted in contacts with all smallholders and that perhaps only one-half the smallholders are being reached. In an effort to improve the extension service's performance, the MOA is embarking on a major effort to improve utilization through improved administrative and technical support services (a role of the Egerton graduate) and up-grading the existing contact agent staff through in-service training and the gradual replacement of uneducated Junior Agricultural Assistants with certificate-holding Agricultural Assistants.

The September 1976 Egerton College Curriculum Workshop undertook an extensive review (1) of the needs of rural families; (2) of the job descriptions associated with Egerton graduates if the graduates were to satisfy the identified rural needs; (3) of the knowledge, skills and attitudes needed to carry out the responsibilities detailed in the job descriptions; (4) of the courses currently offered at Egerton and how they currently do or do not provide the required knowledge, skills and attitudes, and (5) of how the courses could be adjusted to provide missing items. The workshop resulted in a curriculum geared towards serving the needs of rural families, and particularly the smallholder, as well as sensitizing the Egerton faculty to the knowledge, skills and attitudes required in the courses they teach.

In order to insure that the Egerton curriculum remains responsive to the needs of the smallholder farmer, three in-depth evaluations of the overall ASSP will be conducted, with one objective being to review the curriculum in light of the skills required by Egerton graduates in the field. The technical assistance staff provided to Egerton will have, as one of their duties, the continual review and evaluation of the curriculum in the context of skills necessary for increasing smallholder production.

The value of the Egerton graduate has been subjectively assessed in numerous studies of Kenya's extension service.[1/] If the

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1/ S. Erozer. op.cit.
J. Ascroft, et al, op.cit.
S. Schonherr, E. Mbugua, op.cit.

extension service is to reach all the 1.5 million smallholder farmers, then the extension service's efficiency and effectiveness must be significantly improved. These studies indicate that the effectiveness and efficiency of the extension services can be improved by providing increased levels of technical and administrative support services to contact agents and the studies also indicate that the Egerton graduate is one of the best manpower sources for providing these increased levels of support.

(6) Summary

Based on cost-effective analysis, and the linkage between Egerton graduates, the incremental delivery of agricultural support services, and incremental smallholder agricultural production arising from these services, the proposed Egerton College expansion is considered to be an economically sound development assistance activity.

d. Coast Agricultural Institute

A fuller economic analysis of the proposed certificate-level institute will be made in the subsequent Project Paper Revision. It is important to note that the ATAC manpower projections indicated the greatest need for additional manpower (in numerical terms, not qualitative terms) was at the certificate level. The World Bank in its Fourth Education Loan will expand two of the existing institutes and construct a third. Additional expansion (beyond that proposed by the World Bank) does not appear feasible at those three sites. Furthermore, the ATAC education team argued that there might well be a significant trade-off between quantity and quality when certificate institutes exceeded the 660 student capacity point. From an educational quality and administrative feasibility standpoint the team recommended the construction of five additional certificate-level institutions.

Certificate-level institutions are currently located in central and western Kenya, Egerton College is located in the Rift Valley, and the Faculty of Agriculture University of Nairobi is located in central Kenya. The ATAC team recommended a geographical dispersion of certificate-level institutes to insure that sufficient training was provided in the crop and livestock production systems of each of Kenya's important ecological zones. To that end ATAC recommended the establishment of new certificate-level institutes in Coast Province, a drylands

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area (such as Eastern Province), and a range area (such as Kajiado District in Rift Valley Province). The GOK has reviewed these recommendations and concluded that work should go forward at this time with one new institute located in Coast Province.

Coast Province currently accounts for about one-fifth of Kenya's total small farm crop area and is one of the more fertile regions of Kenya. The crops, rainfall patterns, diseases and pests, and inputs required in Coast Province are unlike other portions of Kenya. Agricultural education in coastal matters currently consists of lectures (in central or western Kenya) and short field trips to Coast Province agricultural stations. Increasing smallholder production throughout Kenya will require the training and deployment of extension agents who are knowledgeable about and familiar with the agricultural production system of Kenya's various ecological zones. A Coast institute would provide special training in the agricultural production systems of the coastal ecological zone as well as providing the same well-rounded instruction and training found at the existing agricultural institutes. The institute would most likely be sited on GOK-owned land near Mtwapa although a site selection exercise has not yet been carried out.

The certificate holder occupies the Technical Assistant category within the extension service. In conjunction with the Junior Agricultural Assistants (JAA's), the TA is the principal farmer contact agent. As the MOA begins to replace JAA's with TA's, the importance of certificate holders in the extension service will increase beyond their present level of importance. The effective transmission of technical information from the research side and the MOA Technical Officer side depends upon the success with which the TA can understand and communicate.

Since this Project Paper is only requesting funds for a feasibility study of the new certificate institute, the details of the economic justification will be left to subsequent PP Revision at which point such a question can be more appropriately addressed. This analysis, therefore, has summarized the demand for certificate-level graduates, provides a general rationale (with reference to the details in the ATAC report) for the establishment of a new institute rather than further expanding upon the existing institutes, and establishes the function of the TA within the extension service.

e. Faculty of Agriculture, University of Nairobi-Expansion

A fuller economic analysis of the proposed expansion will be the subject of a subsequent Project Paper Revision along lines similar to the above.

The ATAC manpower survey indicated the need to expand the Faculty to a total student enrollment of 805 as opposed to the current capacity of 300. The World Bank under its Fourth Education Loan will provide loan funds for the expansion of the Faculty from 300 to 605 students. The GOK has requested that AID investigate financing an incremental expansion from 605 to 805 students. Stage I of the proposed AID activity would contain an academic and technical feasibility study aimed at reviewing (1) the need for the additional expansion, (2) the means by which the additional expansion is to be undertaken, (3) its cost and administrative effectiveness, etc.

University graduates enter the extension service as Agricultural Officers providing direct support to provincial and district-level agricultural services. Within the extension service degree holders occupy technical and management level positions and play a central role in improving the effective utilization of extension staff and the efficient delivery of agricultural services to the rural areas.

f. Training Fund-Ministry of Agriculture

The MOA training fund is designed to provide needed training opportunities for in-service MOA staff, training which is considered appropriate to the MOA and to the individual selected for training. It, therefore, complements the pre-service training provided also under this manpower component. The MOA will prepare annual training plans which AID will review and approve. The plans will include a description of the benefits the MOA expects to derive from the training and how the training relates to the MOA's objective of increasing smallholder farm production.

The fund will provide for local training where such training is available and where the funded training is in addition to on-going GOK training programs. The fund, thus, may be used for incremental local training, but not to substitute for training which the GOK currently provides. Where local training is not available, U.S. or eligible third-country training will be considered. The Kenyan education system is structured to provide training in basic fields with certain highly specialized training, or training for which there is a very limited demand, being provided overseas. Given the nature of the training required, overseas training is often the most cost-effective.

Participants selected for training under this program will be part of the MOA's current staff. The recurrent cost implications for the MOA will only be the salary and benefits paid to the employee while in training status.

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Approximately 65 percent of the MOA's recurrent budget is devoted to extension. The selection process for training programs financed under this grant will be sensitive to training which will impact on smallholder production. The direct impact will be through the extension service while training in areas of research, credit, administration, planning and the like will feed into and/or support the efforts of the extension service. Although impact will often be difficult to establish, a contribution to the effective delivery of agricultural services, management support, or the development of increased technical skills within the MOA will enhance the MOA's ability to carry out its functions.

The annual training plan allows the selection of training programs which are most cost-effective for the specific training desired. Where in-country training is available and is appropriate for the task, then in-country training will be selected. In a similar fashion, third-country or U.S. training will be considered, relative to the specific end-product desired. Preparation and review of the training plan will also focus on the type and length of training program selected to insure that long-term academic studies are only provided in those cases where such training is required and where it cannot be provided by a short-term course. This training program flexibility will allow the selection of the most cost-effective program for each participant.

3. Range Research

a. Methodology

Measurement of the benefits attributable to agricultural research requires the construction of an agricultural research production function; only where excellent data is available can one hope to construct a research production function having any validity. While such production functions have been estimated for the U.S., Canada, Western Europe and Japan, examination of such functions for India, where a relatively good data base exists, indicates the requirement to make several crucial, but unsupportable, assumptions concerning the inter-relationships between research, extension, and technology adoption.[1/] Where returns to research have been calculated, the estimated internal rates of return have often been very high. Rates of 80 percent, for example, were calculated for rice research in Columbia.[2/]

1/ For an example of research production functions and their complexity, see R. Evenson and Y. Kislev, Agricultural Research and Productivity, Yale University Press, 1975.

2/ T. Arndt, D. Dalrymple, V. Rutton (ed), Resource Allocation and Productivity in National and International Agricultural Research, Minnesota Press, 1977.

Economic analysis of research activities in Kenya is most appropriately based on a cost-effectiveness methodology. Benefits are evaluated on a with, or without, project basis; a determination must be made whether the research will (1) yield a net change in agricultural production, and (2) whether the target beneficiary group is reached. In addition to incremental agricultural production (which cannot be estimated to any reasonable degree of accuracy) there are numerous, non-physical, socio-economic benefits which may be associated with incremental production, new technologies, or new crops.

b. Analysis

Studies of Kenya's range and livestock production potential present a convincing case that there is under present range management practices and livestock genetic composition considerable potential for expanded production. The Chemonics Study makes the point that of the 50 million hectares available for grazing the actual number of livestock units on the grazing area is six million while the carrying capacity is almost 12 million. "In the Northern and Southern Range Regions and in the Coast Region the carrying capacity far exceeds the estimated number of livestock units being sustained."1/

Constraints to incremental livestock production have been examined in the Pratt Report and priority research areas have been identified.2/ While no reasonable estimates can be made of the incremental livestock production which is expected from the range research proposed in this project, a suggestion of the potential magnitude can be gleaned from combining the livestock unit potential identified by Chemonics with the research priorities outlined by Pratt and the livestock research experiences documented by Belshaw et. al.3/ The con-

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1/ Chemonics International. Livestock and Meat Industry Development Study, 1977.

2/ D. J. Pratt. Range Research in Kenya: A Technical and Organizational Plan for Future Research. March 1975. Prepared by the Ministry of Overseas Development.

3/ Belshaw, Hall, Musangi, and Jensen. "Applied Scientific Research for Crop and Livestock Development in Uganda: A Review", in Mbilinyi (Ed). Agricultural Research for Rural Development. East African Literature Bureau. 1973.

clusion drawn from such analysis indicates that range research would be able to make a considerable impact on livestock production provided that the appropriate research is undertaken and that the dissemination of results is achieved. The Pratt Report provides sufficient background to insure that the appropriate research will be undertaken. Inputs to in-service training proposed for extension workers in the range areas under the range research component will increase the dissemination and application of research results to the target beneficiary group.

The recently concluded livestock work under the Marginal/Semi-Arid Lands Pre-Investment Study confirms the potential for incremental livestock production and the need for considerable increases in the GOK's range research effort.1/

In order to increase the information transfer between the extension service and the research being carried out at the Kiboko Range Research Station the station will conduct in-service seminars for extension staff working in range areas. These seminars will provide the research officers an opportunity to discuss their findings with the extension staff as well as to allow the extension staff to state what they consider to be research priorities or areas where additional information is required. In addition to these seminars in-depth evaluation funded by AID of the range research program will focus on the content of the research program and how the program is addressing the needs of the pastoralists.

The ultimate target beneficiary group is the pastoralist and smallholder farmer operating mixed farming systems in the marginal and semi-arid areas. A full description of the socio-economic impact of range research on the target group is provided in the Social Soundness Analysis. The in-service training for extension workers and the in-depth evaluations represent means for insuring that research results are reaching extension staff and for monitoring the range research dissemination process.

The component design is based on the detailed range research report prepared by Pratt, on proposals prepared by the MOA, an examination of research activities undertaken by ATAC, and a review of the research activities at the Kiboko station conducted by AID technicians. To conduct the type of range research identified by the Pratt report and proposed in this project a research base-station must be utilized, in order to provide facilities for conducting controlled trials, facilities for analyzing data, and a central base point for the research team.

1/ R. Ottley. "Livestock Development and Range Management", Mid-Point Review, 1977.

The Kiboko research station currently exists and is located at the edge of a large range area. The station has several sub-stations, all located in different range areas. Expanded range research can be most effectively conducted from the existing station. Construction of a new station would be uneconomical and researchers agree that effective range research does require the utilization of a base station. The research proposal outlined in this Project Paper is considered modest but not in excess of the research station's or the MOA Research Division's absorptive capacity.

The research design, the technicians and training requested, and the equipment proposed are considered to be essential elements for the successful implementation of the range research program. The design is considered cost-effective, utilizing existing facilities at the Kiboko station as well as existing sub-stations.

4. Credit System Support

a. Methodology

Assistance to the Agricultural Finance Corporation (AFC) will consist of advisory services and technical training for AFC staff with the objective of enabling the organization to service existing clientele more effectively and to expand services to additional smallholder farmer borrowers. The assistance proposed under this component of the ASSP does not lend itself to a quantitative analysis; a cost-effective analysis and a description of AFC's importance within the agricultural credit field indicate that this component is an economically sound development assistance activity.

b. Analysis

Of the total loans approved by the AFC between 1970 and 1975, 27 percent (measured by loan value) were for small farm credit, and when judging by the number of loans granted 94 percent of the total were for small farm credit. Of the loan balances outstanding in 1976, 23 percent were for small farm loans while the 1978 estimated loan balance indicates 25 percent of the total outstanding will be for small farm credit.1/

Of the total agricultural credit supplied in Kenya in 1970 AFC provided approximately 37 percent (KE 8.9 million) of non-specialized agricultural credit (excluding, for example, loans from the Sugar

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1/ Source: RTI. Management Study, 1977.

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Authority, Coffee Planters Union, and Tea Authority). In 1976 AFC's portion dropped to 27 percent while the value of AFC's agricultural loans climbed to K£. 19.3 million. In 1972 the AFC granted approximately 10,000 loans to small farmers. By 1977 the figure had jumped to 30,000.

Proposed assistance to AFC builds upon and continues assistance activities initiated under a previous project, Agricultural Credit (615-0148). The purpose of that assistance was to increase the capability of the AFC central and field offices to implement and manage an effective credit program directed towards expanding credit available to Kenyan farmers, including a shift in emphasis to make more credit available to smallholder farmers. Objectives were stated in quantitative terms (e.g., increased numbers of small farmers receiving loans, reduced time in loan processing, decline in delinquency rates, increased number of branches with loan approval authority) but could not and cannot be analyzed economically. While it would be possible to conduct micro-economic analysis to determine the economic benefits derived, for example, from the additional loans and from reduced time in loan processing, making attribution of these benefits to project-provided advisory services and training would be conjectural at best. Although not the only input required for incremental agricultural production, credit is a necessary input, the provision of which is directly related to incremental production.1/

An economic measure of increased efficiency might be reduced overhead costs for each shilling loaned. This would be meaningful if new clientele had characteristics essentially similar to

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1/ The economic benefit which can be expected from an agricultural credit program, particularly among smallholder farmers, is discussed in:

ATAC. Evaluation of the Smallholder Production Services and Credit Program. 1977.

AID. Small Farm Credit in Kenya. Spring Review. 1973. "Vihiga Credit Program".

F. Wilson and V. Amann. Financing Rural Development. Makerere Institute of Social Research, 1975.

D. Hunt. Credit for Agricultural Development. East African Publishing House, 1975.

World Bank. Agricultural Credit, Sector Policy Paper. 1975.

FAO. Agricultural Credit Through Cooperatives and Other Institutions. 1965.

existing clientele. The project, however, seeks to help AFC move into higher-cost, higher-risk lending, i.e., to serve smaller borrowers or borrowers whose loans will have to be more thoroughly scrutinized as they will not be fully covered by real estate collateral or demonstrated loan repayment performance. Furthermore, AFC has not yet developed sufficient information on the costs of administering its various types of loans to form a basis for determining changes which may have occured as a result of previous, or new, assistance. Developing such cost information will be one aspect of the proposed new assistance.

External evaluation of the forerunner Agricultural Credit Project concluded that the project had generally met or surpassed the project's quantitative goals. While endorsing the advisory services/ technological training approach to institution building which characterized this project, the evaluations felt that the quantity of training provided in the assistance mix was inadequate. The evaluators recommended that the technical assistance employed in the project be continued but that greater emphasis be placed upon training and with consideration being given to developing an in-country training program and an in-country training capacity.

The proposed "second phase" assistance, outlined in this Project Paper, increases the emphasis on training AFC's staff with U.S. technical experts now focusing on head-office administrative, financial, and operations issues. AID has gradually withdrawn all U.S. area field managers, and they have been replaced by trained Kenyan counterparts. Training proposed under this project will focus on specialized head-office skills as well as more broadly based credit, administrative, and operations skills for AFC staff in general. The eventual strategy is to eliminate the need for U.S. experts and to leave a well trained, experienced Kenyan staff in place.

Alternative strategies were considered, i.e., a greatly expanded participant program versus bringing trainers to Kenya to conduct courses. The cost to USAID of providing an anticipated 600 person months of training via the short-term participant training route would exceed $1.5 million. Bringing trainers to Kenya to conduct the same levels of training will cost about $500,000. On the basis of cost-effectiveness the in-country training approach is clearly preferable. The in-country training approach offers the added advantage of institutionalizing training within the AFC, thereby diminishing the demand for external training.

Assistance to the AFC builds upon a successful program of streamlining AFC operations and redirecting efforts to provide credit to small farmers. The AID-financed inputs, therefore, are based on a model of proven success. Emphasis is shifting from high-cost U.S.

experts to participant training and the long-term returns which accrue to such training. The AFC is the predominant agricultural lending agency in Kenya and is actively involved in expanding its small farm credit portfolio. This assistance activity is considered to represent a cost-effective technical assistance package aimed at addressing one portion of the agricultural credit system; as such the component is considered to be an economically sound development assistance activity.

5. Cooperative System Support

a. Methodology

Assistance under this ASSP component is divided between assistance directly related to cooperative credit and assistance which focuses on the broader range of agricultural support services also provided by the cooperative system. The economic benefits expected from support to the total cooperative system are similar in nature to those discussed in Part III.A.4. above, "Credit System Support".

b. Cooperative Bank and Cooperative Union Banking Sections - Analysis

Between 1970 and 1976 the Cooperative Bank provided approximately 33 percent of the total agricultural credit supplied in Kenya, excluding the credit supplied by crop-specific boards and agencies (such as coffee, tea, sugar, etc.). The Dimpex Report[1/] singles out the cooperative movement as the system best suited for reaching the largest number of smallholder farmers. This is not to say that the AFC does not have an important contribution to make in the area of smallholder credit, but rather that on a national level, when considering 1.5 million smallholder farmers, the cooperative movement is best suited to reaching many of these smallholders and particularly those classed as "non-progressive".

Assistance to the cooperative banking institutions focuses upon a management study which will review the current operations and make recommendations for alternative strategies for their future development. Strengthening of cooperative credit institutions is critical to Government's strategy of providing the rural poor with increased access to institutional credit. The absence of the study inhibits the capabilities of Government to implement its strategies and of donors to support this highly desirable strategy. Such a study needs to be undertaken if donor assistance in the area of cooperative credit is to be efficiently channelled to Kenya's rural poor.

1/ Dimpex Associates. Kenya: Agricultural Credit Evaluation. 1977.

The Cooperative Bank management portion of the study will require about 2.5 work months of contractor services estimated to cost $24,000. The cooperative union banking section portion of the study will be both more intensive and extensive than the Cooperative Bank management portion. This study will be largely an MOCD initiative to which USAID contractors will provide leadership. USAID will provide about 7 work months of services, estimated to cost $58,000. The MOCD will, on the other hand, provide about 20 work months of professional services to this effort. The overall cost of $82,000 is felt to be a reasonable and prudent investment. The results of the study will serve as a guide to further assistance commitments in this area. The studies themselves are not expected to generate direct benefits but rather to lead the way toward significant development assistance which will make a major impact of the provision of credit to the smallholder farmer.

c. Ministry of Cooperative Development

Proposed assistance to the MOCD consists of studies, technical assistance and training. The studies include an assessment of manpower and training requirements for the sector and an evaluation of current cooperative education and training programs.

In the implementation of the GOK's Integrated Agricultural Development Program and ASL I the cooperative movement has been given major responsibilities in the areas of agricultural credit, the supply of inputs, produce marketing and the general monitoring of activities in the field. These responsibilities have radically altered the manpower requirements of the cooperative sector, both in terms of the quantity of manpower needed and the quality, or skills, which the cooperative field staff now must have. The GOK is placing considerable emphasis on such smallholder-oriented activities and intends a significant expansion throughout the country. The importance of the cooperative movement in the success of that expansion cannot be overstated. While a numerical computation of benefits which can be attributed to improvements in the cooperative sector cannot be made, the very central role of the cooperative movement in Kenya's major smallholder agricultural development efforts presents a sufficient argument for the economic value of AID's assistance to the cooperative system.

The lack of sufficient quantities and quality of cooperative manpower appears to be the primary constraint to efforts to expand the outreach of the cooperatives to enable them to serve increased numbers of small farmers. GOK and USAID agree that it would be imprudent to rely wholly upon piece-meal solutions to this important problem. It has been proposed, therefore, that a comprehensive study be undertaken to assess the magnitude of the manpower problem over the next decade as prelude to commiting resources to overcome the problem. The estimated

total cost of about $30,000 is derived from standard short-term personnel cost estimates.

The proposed evaluation of current cooperative education and training programs will provide guidance for maximizing other training inputs under this project and will provide information needed for the above outlined manpower/training study. The estimated total cost is about $40,000, derived from standard short-term personnel cost estimates.

In addition to the proposed studies, both external and in-country training have been proposed. This training would directly address perceived constraints to the expansion of the cooperative movement. External training would be provided for skills not taught in Kenya, and advisory services will be provided to strengthen MOCD's capacity for in-house training. The least-cost rationale presented for in-country training in the AFC economic analysis is valid here also. The in-country training approach offers the added advantage of institutionalizing training within a Kenyan agency, thereby diminishing the demand for external training.

d. Cooperative College

Assistance to the college will be in the form of a technical feasibility study which will be undertaken following the development of manpower and training requirement projections and an evaluation of cooperative training and educational activities. The feasibility study will lead to an economic analysis of assistance to the Cooperative College. The goal of this activity is to generate information required for designing a Cooperative College assistance activity and for providing the necessary academic, engineering and economic analysis required to justify such assistance.

6. Grain Storage

a. Methodology

This Project Paper requests funds for the training of 12 Ministry of Agricultural officers working in crop storage as well as funds for a national food storage study leading to the design of grain storage assistance activities. Those activities will be the subject of a PP Revision. With AID funding for grain storage activities being the subject of a future PP Revision, the analysis in this paper will focus on the proposed training and the potential gains which might be achieved with improved food storage facilities and procedures.

b. Analysis

Grain storage in Kenya, particularly on-farm and village level storage, was the subject of a Kansas State Study Team.[1/] This analysis draws from the Team's report.

The two major problem areas in grain storage are the significant storage losses now being experienced at the farm-level and the marketing problems which prevent the farmers from obtaining the full benefit of the Maize and Produce Board price support levels. Farmers often sell their grain to private traders at prices substantially below the official Board price. The GOK has indicated that pricing policies, especially in Agriculture, and revisions thereto will be an important element in the 1979-83 Development Plan. While the specific policies and pricing changes are not yet known, it would be surprising, indeed, if the MPB's marketing role does not come under close scrutiny given the seriousness of the widely publicized storage problem now existing and the stated intention in the new Plan to implement programs directed toward "non-progressive" small farmers.

Of the estimated one million tons of maize marketed in Kenya in 1977 the Maize and Produce Board (MPB) purchased a little more than 50 percent. The other 50 percent went into private marketing channels where prices below the MPB level prevail. If farmers could sell their grain to a cooperative, which, in turn, could store with minimal losses, then the farmer could receive a price which more nearly approximates the MPB price. Private market prices soon after harvest have been reported to be up to 50 percent below the MPB prices. Farmers are often hard pressed for cash soon after harvest and sell at the lower prices. In order to suggest the national magnitude of this situation, assuming that the average margin between the MPB and private market price was only 15 Shillings per bag ($1.92 per 90 kilogram bag), then the total loss to farmers was nearly K.Shs. 83.3 million ($10.7 million).

If farm-level losses in storage are 15 percent (note that there is considerable controversy surrounding loss rates with much of the controversy focusing on which loss is measured, e.g., weight, grain nutrition value), the amount of marketable surplus maize would be reduced by 344,700 tons, an annual loss of K.Shs. 306 million ($39 million).

1/ D. Anderson and D. Pfost, "Smallholder Grain Storage in Kenya: Problems and Proposed Solutions", Report of a Kansas State University Study Team, March 1978.

As an immediate intervention activity the KSU team recommended the funding of training opportunities for Ministry of Agriculture officials involved in grain storage matters with a focus on extension teaching techniques and grain marketing and storage. These subjects are not being taught in Kenya, and there is clearly a need for additional manpower trained in these areas to improve the flow of technical information from Government to the farmer. The trained manpower is considered necessary for improved extension activities in the grain storage field.

While there appears to be considerable scope for decreasing the on-farm storage losses which now occur as well as losses sustained due to imperfections in the marketing system, the KSU team could only identify potential areas of intervention during their short study tour; the detailed investigation and design of activities will be undertaken by a design team funded under this PP. An economic analysis of the still-to-be identified assistance activities is not possible without the information generated by the design team. In the spirit of an identification exercise the following areas have been identified for further study and possible project design:

(1) Additional training, both in-country and the U.S., for MOA extension and research staff.

(2) Construction of demonstration food storage and drying facilities at Farmer Training Centers. The focus here is on improved demonstration materials and designs.

(3) Construction loans, channeled perhaps through cooperatives, to enable farmers to build improved food storage facilities. This activity would provide the resources farmers require for implementing the improved storage designs being demonstrated at the Farmer Training Centers and being promoted by extension agents.

(4) Construction loans for establishment of grain storage facilities at the cooperative and union level. Such facilities would permit cooperatives to store food until such time as it could be sold at MPB prices; the farmer would receive the MPB price, less handling costs.

The activities suggested for further study and design seek to address the two problem areas identified by the Kansas State Team.

MACRO-ECONOMIC OVERVIEW

Introduction

This overview briefly summarizes the salient features of the Kenya economy and outlines the nation's short and long-term economic problems and prospects. Detailed analyses of the Kenyan economy can be found in several works referenced below.[1/]

Between the time of Independence in 1963 and the devastating four-fold oil price increase of 1973, Kenya enjoyed a 6.6 percent per annum increase in real Gross Domestic Product (GDP), and 3.4 percent per annum growth in real per capita GDP. 1975 GDP per capita was $210 in current prices and $131 in 1972 prices.

While the third Development Plan projected a real GDP growth rate of 7.4 percent between 1974 and 1978, a revised plan, Sessional Paper No. 4 of 1975, set a new goal of 6.0 percent per annum for the plan period. Real GDP growth during the plan has been 4.4 percent through 1977 and at current rates could reach 4.9 percent for the plan period. Real per capita income was originally planned to grow at 3.7 percent, was revised downward in the Sessional Paper to 1.3 percent and has actually been about 0.9 percent through 1977. It is important to note, however, that growth rates in 1977 closely matched those targets originall set forth in the Development Plan.

GOK development expenditures during the plan period (when calculated in constant prices) have been about 5 percent above the estimates provided in the Sessional Paper while recurrent expenditures have been about 14 percent above the Sessional Paper guidelines. Behind the aggregate data lie numerous line items which represent the implementation of GOK policies to restructure the economy in order to decrease import dependency, promote exports, increase agricultural output, and raise employment levels.

Agriculture is the dominant sector of the economy, employing approximately 85 percent of the nation's labor force and contributing 29 percent of the total GDP (78 percent in the semi-monetary component

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1/ Current Economic Position and Prospects in Kenya. IBRD. 1976 No. 1284a-KE. Kenya into the Second Decade. World Bank Economic Report. 1975. "Kenya's Economy at Midyear," Annual Budget Submission, FY 1979, USAID/Kenya. "GOK 1977/1978 Budget. An Economic Analysis." Nairobi TOAID A-122. October 1977. IBRD. Economic Memorandum on Kenya. December 1977.

and 18 percent in the monetary component). In 1976 agricultural products represented 68 percent of the principal domestic exports. During the first half of 1977, agricultural products represented 86 percent of all domestic exports, with coffee accounting for 61 percent and tea producing another 19 percent. Note that in 1972, coffee represented only 32 percent of total domestic exports.

Approximately 80 percent of Kenyans belong to smallholder farm households, where the average holding is 2.3 hectares, with 30 percent of the holdings being less than one hectare and 60 percent less than 2 hectares. The mean annual 1975 smallholder family income was $443 ($63 per capita), with a median of $316 per family ($45 per capita).

The smallholder farmer share of gross marketed agricultural production has risen from approximately 20 percent in 1960 to 51 percent in 1976. Smallholders accounted for 49 percent of the 1976 national coffee production as opposed to 20 percent in 1960. During the same period smallholder tea production climbed from one percent to 31 percent of total production. In terms of total national production as opposed to simply recorded marketed production, smallholder farm production accounts for approximately 80 percent of national agricultural production.

Attempts to restructure the economy will be central to the development strategy and programs outlined in the forthcoming Fourth Development Plan, 1979 to 1983. The theme of the Plan will be the alleviation of poverty and the fulfillment of the basic needs of the majority of the population, including food and nutrition, health, education, water and housing. This implies an emphasis on rural development and on the more deprived geographic areas.

Balance of Payments

In the early 1970's Kenya's overall balance of payments was generally positive, but with the 1973 oil price increase, accompanied by a massive price increase for all imported products, the overall 1974 balance of payments plunged by over $70 million. Only massive borrowing from the IMF prevented a depletion of Kenya's foreign exchange reserves. International coffee prices began climbing in late 1975 and continued to do so through 1976 and into 1977. Skyrocketing coffee prices have brought with them a reversal of Kenya's trade balance to the point where the 1977 current account balance was positive for the first time in Kenya's post-Independence history.

Coffee exports are so vital to Kenya's balance of payments situation that if 1976 coffee exports were valued at early 1975 prices, rather than the much higher 1976 price levels, then the overall 1976 balance of payments would have recorded a $55 million deficit, rather than the $86 million surplus which was realized.

Over the next three years Kenya's foreign exchange earnings will be shaped by the international price of coffee and this price is expected to decline during 1978 and 1979. In addition to declining coffee revenues, uncertainty over the future of the now closed Kenya/Tanzania border and inter-East African trade threaten further deterioration in Kenya's external trade, Tanzania accounted for 10 percent of Kenya's total 1976 exports. The common border has been closed since early 1977 and virtually all trade between the two countries has ceased. The border closure has also disrupted Kenya's overland exports to Zambia and Kenya's tourist trade is subject to the whims of both the economic growth of the OECD countries and the potential tourist's external perceptions of Kenya's political tranquility.

Monetary Situation

The money supply (M_2) has increased 120 percent during the first six months of 1977, after growing by 28 percent during 1976. Massive inflows of coffee revenues have swollen the domestic money supply and raised the very real threat of domestically generated double digit inflation. Effective foreign exchange sterilization measures have not been implemented by the GOK due to the economic and political difficulties faced when trying to withhold coffee earnings from the growers[1/]. While inflation (measured by the Nairobi lower income index) was only 6.8 percent in 1976, it leaped to 17.2 percent in the first 10 months of 1977 (an annual rate of 21 percent).

During 1977 local bank liquidity reached all time highs, with the excess of actual over required liquid assets standing at 49 percent on June 30, 1977, as compared to 21 percent on December 31, 1975. The current high liquidity levels are a direct result of coffee revenues swelling commercial bank deposit accounts.

Public Finance

GOK recurrent and development expenditures have increased at an average rate of approximately 21 percent per annum from 1970/71 through 1977/78. Since 1974/75 the annual increase has been 26 percent, against the revised Five Year Plan target of 10 percent. When adjusting for inflation, however, the real growth rate of GOK expenditures since 1974/75 has been only 12 percent, basically in line with

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1/ A tax on coffee exports was introduced in June 1977 but it is relatively modest in comparison with the sterilization measures which appear to be necessary.

the revised target growth rates of 8 percent for development and 11 percent for recurrent expenditure1/.

Recurrent and development expenditures have maintained a steady relationship during the 1970's, with recurrent expenditures representing 65 percent of total planned 1977/78 expenditures.

GOK gross receipts, as a percentage of GDP, have ranged between 21 percent and 26 percent during the years 1972 and 1976.

The central dynamic element in the GOK's public finances has been the gradual decline in the revenue/expenditure relationship, with the figure dropping from .82 in 1972/73 to .66 for 1977/78. The portion of the Government budget deficit obtained from domestic sources, as opposed to international sources, has climbed from .29 in 1972/73 to .59 for 1977/78. At the same time, domestic bank borrowing, as a portion of total domestic borrowing, has climbed from .18 in 1972/73 to .70 in 1977/78. While there are a number of large and unusual external expenditures related to the 1977/78 budget (purchase of aircraft and locomotives to replace former East African Community assets and the redemption of significant quantities of external debt), the general budget trend is one of increased internal debt, increased domestic bank (commercial and central) borrowing and increased expansion of the money supply. The GOK is acutely aware of these factors and has attempted to restrict domestic borrowing, to increase taxation, and to seek additional external financial assistance. Foreign financing has been increasingly relied upon to meet development import requirements, with external loans and grants tripling in the period between 1972/73 and 1977/78. 2/

Debt Service

By LDC standards, Kenya's external debt has been carefully managed and controlled. The debt service ratio (debt service/exports) has remained steady over the last four years at 2.5 percent. It should be noted that these figures do not include Kenya's share of the former East African Community debt which has been traditionally allocated equally to each of the three member states. With the liquidation and allocation of Community-held assets and liabilities now subject to international arbitration it is incorrect to allocate to Kenya one-third of the Community debt. Not until arbitration is completed will it be possible to determine which percentage of total Community assets and

1/ As detailed in Sessional Paper No. 4, 1975.

2/ Supplemental appropriations have added 25 percent to the 1977/78 budget and raise the Domestic Deficit/Gross Deficit ratio to .73.

liabilities are allocated to Kenya, which assests can be liquidated, nor what Kenya's net liabilities will ultimately be. Furthermore, an economic assessment of net liabilities also requires an assessment of the nature of the assets allocated to Kenya, with debt on income producing assets being less of a budgetary drain than liabilities on non-income producing assets.

A portion of the recent foreign exchange inflows resulting from the coffee bonanza have been used to redeem outstanding short-term external debt which Kenya acquired from the international financial community during the 1974 and 1975 foreign exchange crunch.

Debt service as a percentage of GDP has been approximately one percent during 1974,1975, and 1976.

Kenya has demonstrated prudent management of external debt, including the conscious effort to restructure debt and undertake repurchases from the IMF as the country's external trade situation improved in 1976 and 1977.

Outlook

The short-run outlook for Kenya's economy has been considered bright although the picture may be changing and in a more rapid fashion than expected. High coffee and tea revenues have produced hefty foreign exchange earnings; the late 1976 and 1977 rains broke three years of drought, and agriculture production has been generally booming to the point where, for example,maize surpluses, including the strategic reserve of 2 million bags, have filled available storage space. Economic growth among the OECD nations is providing Kenya with good export markets and a regular flow of tourists.

Real GDP grew at the rate of 5.1 percent in 1976 and at an estimated rate of 6.5 percent in 1977. The forecast for 1978 is for continued economic growth at the 7 percent rate, provided there is no violent upsurge in world prices, Kenya can control domestic inflation, and the unusually heavy rains experienced in early 1978 on the storage situation do not have too adverse an impact on agriculture production. Serious doubts are now being expressed by the IMF's General Manager and the OECD about the ability of the industrialized nations to sustain the 1976-1977 economic recovery through the end of this decade.

Domestic inflation is perhaps the most serious immediate problem, the effects of which are already being felt, and which will plague Kenya into the next decade. During 1976 price increases were kept to around 7 percent, but during 1977 such increases have been estimated to approximate 21 percent and a similar rate is being forecast for 1978. Current inflationary pressures are primarily internal and are

a result of the rapidly expanding domestic money supply, fed by large earnings from coffee and a growing GOK budget deficit, which is largely being financed by domestic borrowing.

A particularly significant recent development has been approval of a second supplementary budget for K£92.6 million exclusive of appropriations-in-aid, as against an earlier supplemental of K£17.7 million and an original 1977/78 budget of K£422.3 million. About 68 percent of the new budget increase is for recurrent expenditure and is expected to carry over into future years. This increase is also to be financed by domestic borrowing, thus fueling inflation.

The domestic portion of the budget deficit has increased from 29 percent in 1972/73 to 73 percent in 1977/78. Domestic bank borrowing was 18 percent of total domestic borrowing in 1972/73 and was estimated to approximate 70 percent in 1977/78, prior to recent budget developments. Clearly, financing the budget deficit is placing increasing strains on Kenya's monetary structure which the recently announced 1.5 percent monthly growth rate for credit advances by commercial banks to the private sector (to be effective in July) will not remove.

The GOK is studying measures for keeping recurrent expenditures from getting out of hand. Recurrent expenditures represented 69 percent of total expenditures in 1972/73 and 52 percent of total expenditures in 1977/78. While the relative proportions appear to be decreasing, the absolute amount is increasing dramatically. A disaggregation of the recurrent budget indicates that salaries and wages represent an ever increasing share of the budget; current development activities, which stress delivery of basic services to the rural areas, contain a significantly larger personnel component than have some of the larger scale investment programs undertaken by Kenya in the past. While the Ministry of Finance and Planning is acutely aware of the potential recurrent budget explosion, the Ministry is also faced with the reality that achievement of Kenya's development objectives will require a significant increase in recurrent budget expenditures. More careful attention is now being paid to the revenue generating capacity of Kenya's development activities. Kenya's budget management has been prudent in the past and staggering deficits have been avoided. Preparation of the next Five Year Plan is forcing the budget experts to focus on future recurrent costs, tax buoyancy, and projected revenues. Until the new Plan is released, however, it is not possible to make an accurate assesment of Kenya's budget and budgetary problems over the next five years.

Coffee prices declined during 1977 and will continue to do so through 1978 if the commodity future markets can be relied upon as a consensus of learned opinion. At the same time coffee production is expected to drop 25 percent this year due to the heavy rains. Note that high coffee prices alone accounted for an additional $141 million in foreign enchange earnings in 1976, and coffee sales account for

35 percent of GOK revenues.

Declining coffee prices will place Kenya's balance of payments into deficit and increase the foreign exchange constraint. These trends may be exacerbated should tourism revenues decline as a result of rising prices for tourist services and facilities in Kenya, economic slump in the countries which are the source of Kenya's tourists, or other factors. External assistance will be of rising significance if the Kenyan economy is to be successfully restructured so that the external account will be in a long run equilibrium and the nation's basic domestic needs are addressed. Major efforts are now underway to promote Kenya exports, particularly in the Middle East. While the actual results of current trade promotion missions will only gradually make their appearance in the trade statistics, the GOK's current outward orientation is a major element of a policy to restructure the economy and to reduce the foreign exchange earnings risk associated with a two-crop agriculture export base.

On the import side, these have skyrocketed in 1977/78, largely due to coffee earnings. Customs revenues have consequently risen significantly and may keep the GOK deficit to a more manageable level than would otherwise be expected. However, controlling and reducing import demand will not be easy, and rumors of a pending devaluation already are circulating in Nairobi.

Ministry of Defense (MOD) expenditures ranged between four to six percent during 1966-1975, rising to 9.6 percent in 1976/77 and now 14 percent in 1977/78 as a direct result of border tensions with Uganda and Somalia and the situation in the Horn of Africa. The higher budget levels in 1977/78 (see tables at end of this Annex) can be expected to carry over into future years given their significant recurrent element. (Basically, the 1977/78 increases result from the decision to expand and modernize the military forces.) Defense-related expenditures, i.e. those security-related programs, such as roads, financed under other ministry budgets as opposed to MOD spending, may raise the proportion of GOK defense spending still higher although the exact amount will be difficult, if not impossible, to pinpoint. GOK policy in prior years has been since Independence to finance development and to minimize military spending. That priority may now be changing as a result of Kenya's evident weakness when compared to the size and more modern equipment of her neighbors' military establishments and when compared to Somalia's territorial ambitions as the GOK perceives them. At the same time Kenya in the 1977/78 budget appears to be following a policy of "development with defense". Certainly, no reductions in previously approved development spending have been announced with the second supplemental budget and the revised budget does include significant increases for development spending (K£32.4 million). At the same time Kenya is proposing a Development Plan for 1979-83 which, given its publicly announced themes, clearly will require significantly expanded development financing.

Senior GOK policy makers, reviewing the inflationary impact of this policy, have publicly suggested that Kenya cannot continue to pay for both and that something "must give". The 1978/79 budget is to be presented June 15 and may include some indicators of what policy may evolve. It may not give a full picture, however, since defense expenditures have been understated in the original budget estimates for the last several years at least. Publication of the New Plan o/a December may present a better picture. The relationship of defense to development needs along with recurrent budget and balance of payments financing constraints should be issues for consideration by the Consultative Group of donors next fall.

Summary

The basic picture which emerges from Kenya's economic history is one of a country which has made remarkable progress since Independence with revolutionary changes in land tenure and farming patterns, the gradual transfer of land from European to African ownership, the adaptation to peasant farms of crops normally only grown in plantations, and, through the reliance on capitalist market forces, Government encouragement of economic growth while at the same time enforcing a policy to Africanize the heirarchical structure of commerce, administration, and management. Kenya's economic strength is evident in the fact that Kenya is industrially the most developed country in East Africa and that foreign investment continues to flow into the country. While international or domestic upheavals may well seriously hamper Kenya's future economic development, the essential point is that Kenya has demonstrated the ability to utilize effectively domestic and foreign resources in order to produce a record of rather steady economic growth since Independence. From an aggregation of the historical data, speculation over Kenya's economic future, and application of standard debt evaluation methodologies, it is reasonable to conclude that the GOK will be able to service its debts, including the debt incurred under this project[1/].

1/Gershon Feder and Richard Just, "A Study in Debt Service Capacity Applying Logical Analysis", Journal of Development Economics. March, 1977.

Gross Domestic Product
Constant 1972 Prices
(K Shs Million)

	1972		1976
Semi-Monetary			
Agriculture	2314		2346
Others	575		651
Monetary			
Agriculture	1887		2057
Manufacturing	1559		2193
Wholesale/Retail	1326		1433
Others	5511		6611
Total	13172		15291
Per Capita (K Shs-Constant) Shs.	1092	Shs	1104
Per Capita (K Shs-Current Prices) Shs	1092	Shs	1810
Per Capita (Current Dollars) $	152	$	217
Agriculture/Total (percent)	.3?		.29

Gross Marketed Production: Small Farms/Tota

1960: 20.1 percent
1970: 51.7 percent
1972: 52.5 percent
1976: 50.6 percent

Source: Economic Survey. (various years)

Kenya
Balance of Payments
(Shs Million)

	1972	1974	1975	1976	1977 (6 months
1. Current Account					
Imports	3720	7678	7252	8158	4918
Exports	2410	4522	4758	6224	4755
Trade Balance	- 1310	- 3156	- 2494	- 1934	- 163
Invisible Balance	+ 824	+ 916	+ 882	+ 1094	N/A
Current Balance	- 436	- 2240	- 1612	- 840	
2. Capital Account					
Long Term	+ 612	+ 1420	+ 1158	+ 1461	
Short Term	+ 74	+ 296	+ 248	+ 104	
Capital Balance	+ 686	+ 1716	+ 1406	+ 1560	
3. Errors/Omissions	+ 14	+ 85	- 127	- 4	
4. Overall Balance	+ 186	- 439	- 333	+ 716	
5. Financing					
IMF	-0-	- 280	- 382	- 159	
Central Bank Reserves	+ 186	- 159	+ 49	+ 875	

Source: Economic Survey (1977) and Statistical Digest (September 1977)

Public Finance
(K Shs Million)

	Actual Expenditures			Budget	Estimate
	1972/73	Percent	1975/76 Percent	1977/78	Percent
Revenue					
Recurrent	2978		5386	7178	
A-I-A[1]	340		344	424	
Total	3318		5730	7602	
Expenditure					
Recurrent	2792		4908	7507	
Development	1236		2553	3940	
Total	4028		7461	11447	
Gross Deficit	- 710		1731	3845	
External Loans and Grants	504		1014	1577	
Domestic Deficit	- 206		717	2268	
Long Term Domestic Borrowing	426		1056	670	
Short Term Borrowing					
Treasury Bills	100		480	680	
Central Bank	-0-		-0-	500	
Non-Bank Borrowing	36		169	-0-	
Commercial Bank Borrowing	-0-		-0-	400	
Change in Cash	356		988	18	
Revenue/Expenditure		.82	.77		.66
Domestic/Gross Deficit		.29	.41		.59
Bank/Total Borrowing[2]		.18	.28		.70
Direct Taxes/Total Taxes		.36	.39		.37

[1] Appropriations-in-Aid

[2] Bank: Central Bank, Commercial Bank, Treasury Bills

Source: Computed from GOK Budgets and Accounts.

Macro Budget Analysis: Main Service

(Percent of Total)

	Recurrent and Development Budget (Structure)		
	1972/73	1976/77	1977/78
A. General Services			
1. Administration & Foreign Affairs	6.0	4.8	12.9
2. Law & Order	7.8	5.4	
3. Defense	5.9	9.6	6.1
4. Revenue collection	1.5	1.1	.4
5. Subtotal	21.2	20.9	19.4
B. Financial Obligations			
1. Public Debt	8.3	9.2	14.6
2. International Organizations	.1	.3	.3
3. Pensions	1.9	1.0	1.0
4. Passages	.3	.1	
5. Transfers	1.3	2.4	.5
6. Subtotal	12.0	13.0	16.6
C. Economic & Community Services			
1. Agriculture	7.1	8.5	8.5
2. Forestry	1.2	1.2	1.5
3. Game Parks	1.5	1.5	2.1
4. Transport & roads	14.4	11.5	9.0
5. Electricity & Petroleum	.6	1.7	.5
6. Banking	.2	.2	-
7. Water Works	2.0	4.4	7.1
8. Commerce & Industry	4.6	5.0	7.1
9. Other	1.3	1.2	.8
10. Subtotal	32.9	35.1	36.6
D. Social Services			
1. Education	20.0	18.8	16.0
2. Health	6.3	6.8	6.1
3. Other	4.7	2.9	5.4
4. Subtotal	31.1	28.5	27.6
E. Unallocated	2.8	2.5	
F. Total	100.0	100.00	100.00

Source: Calculated from Table 6.7, Economic Survey - 1977 and 1977/78 Budgets

Central Bank Balance Sheet
(K Shs Million)

Assets	Dec. 1972	Dec. 1974	Dec. 1975	June 1976	Dec. 1976	June 1977	Nov. 1977
Foreign Exchange	1180	1327	1383	1848	2258	4411	4371
SDR	130	16	36	5	28	45	120
Subtotal	1310	1343	1419	1853	2287	4459	4491
GOK Securities and Notes	312	526	978	1161	717	941	1034
Advances and Discounts	-0-	236	34	42	8	-0-	-0-
Other	101	286	47	205	106	230	196
Total	1723	2391	2478	3261	3118	5630	5721
Liabilities							
Currency	1005	1339	1408	1383	1830	1982	2373
Deposits - GOK	241	37	-0-	707	55	1139	1288
Deposits - Banks External	24	285	15	16	23	29	67
Deposits - IMF	167	254	668	592	823	693	461
Deposits - Other	260	450	204	351	171	1407	1229
Other	-	-	115	118	122	319	243
Reserves	26	26	67	94	94	61	60
Total	1723	2391	2478	3261	3118	5630	5721

Source: Central Bank of Kenya

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Debt Service
(K Shs Million)

(As of June 30)	Debt Service Charges On External Debt[1/]	Debt Service as Percentage GDP	Exports of Goods And Services	Debt Service Rate (Debt Service/Exports)
1972	144	1.1	4090	3.5
1974	172	0.9	7144	2.4
1975	202	1.0	7652	2.6
1976	240	1.0	9560	2.5
1977[2/]	376	NA	15240	2.5

1/ Interest and debt redemption.
Excludes East African Community debt and IMF interest payments

2/ Exports: Projected from available data

Source: Economic Survey and GOK Budget and Accounts

Price/Cost Indicies

	Percentage Changes				
	Nairobi Lower Income	Nairobi Middle Income	Nairobi Upper Income	Real Wages (Average Wages)	Civil Engineering Cost Index
Dec. 73 to Dec. 74	11.2	14.8	9.6	-5.6	28.8
Dec. 74 to Dec. 75	19.6	16.1	16.7	-2.5	13.3
Dec. 75 to Dec. 76	6.8	8.4	8.1	+5.6	6.7
Dec 76 to Oct. 77	17.2	10.9	11.4	NA	3.8 *
Dec. 73 to Oct. 77	68.2	60.3	54.1	NA	66.0

*Through June 1977

Source: Economic Survey. 1977
Statistical Digest. September 1977

Commercial Banks
Liquidity
(K Shs Million)

	Required Liquid Assets*	Excess of Actual As Percentage Required Liquid Assets
Dec. 1972	484	32
Dec. 1974	671	23
Dec. 1975	1030	21
Dec. 1976	1661	25
June 1977	3207	49

*Liquid Assets: Notes and Coin, Balance at Central Bank, inter-bank balances, Treasury Bills

Liquidity Ratio of 18 percent prescribed August 1976

Source: Central Bank of Kenya

BUDGET SUPPLEMENT

GOK 1977/78 BUDGET

(K £ Million)

Office/Ministry	Original Budget			Supplement No.1		Supplement No.2					
	Devel.	Recurrent 1/	Total	Devel.	Recurrent	Devel.	Recurrent	Total Devel.	Total Recurrent	Grand Total	Grand As % Increase over Original
Office of President	1.8	24.4	26.2	-	.06	1.1	8.6	2.9	33.06	35.96	37.3
Office-Vice Pres.	.3	8.0	8.3	-	-	-	1.7	.3	9.7	10.0	20.5
Finance & Planning	16.4	6.0	22.4	.9	3.4	5.2	-	22.5	9.4	31.9	42.4
Defense	4.2	29.2	33.4	-	-	3.1	44.7	7.3	73.9	81.2	143.1
Agriculture	27.9	18.8	46.7	.4	1.1	3.5	.8	31.8	20.7	52.5	12.4
Health	8.3	25.3	33.6	.3	.7	2.1	.8	10.7	26.8	37.5	11.6
Works	25.7	23.5	49.2	.3	1.1	5.0	.6	31.0	25.2	56.2	14.2
Power & Comm.	29.5	2.6	32.1	2.8	4.5	3.3	.4	35.6	7.5	43.1	34.3
Information	1.2	3.2	4.4	-	.02	1.0	.4	2.2	3.62	5.82	32.3
Water Development	33.6	5.3	38.9	-	-	3.1	-	36.7	5.3	42.0	8.0
Education	4.6	83.1	87.7	-	.7	.7	3.0	5.3	86.8	92.1	5.0
Others	43.6	38.8	82.4	.7	.72	4.3	3.4	48.6	42.92	91.42	10.9
Total	197.0	268.2	465.2	5.4	12.3	32.4	64.4	234.8	344.9	579.7	24.6

1/ Does not include Consolidated Fund

Supplement No. 1 - November 1977
Supplement No. 2 - May 1978

BUDGET SUPPLEMENT

GOK Budget Distribution

1977/78 Budget

(Percent)

Category/Ministry	Total Original Budget	Original plus Supplements No.1 and No.2
Office of the President	5.6	6.2
Office of the Vice-President	1.8	1.7
Finance & Planning	4.8	5.5
Defense	7.2	14.0
Agriculture	10.0	9.1
Health	7.2	6.5
Works	10.6	9.7
Power & Comm.	6.9	7.4
Information	.9	1.0
Water Development	8.4	7.2
Education	18.9	15.9
Others	17.7	15.8
Total	100.0	100.0

BUDGET SUPPLEMENTS

GOK 1977/78 BUDGET

(K £ million)

	Original 1977/78 Budget	Original plus Supplements No. 1 and No. 2
Total Expenditures[1/]	555.2	669.7
Revenues[2/]	427.7	427.7
Approp-In-Aid	42.9	47.7
Gross Deficit	84.6	194.5
External Loans/Grants[3/]	52.7	52.7
Domestic Deficit	31.9	141.8
Revenue/Expenditures	.85	.71
Domestic/Gross Deficit	.38	.73

1/ Recurrent, Development, Consolidated Fund

2/ Revised to reflect revenue pattern to date

3/ At current rate of receipts

EGERTON COLLEGE - BACKGROUND

1. Agricultural Education in Kenya - Historical Background

Government concern for agricultural education in Kenya can be traced back to the Colonial Office's 1925 publication "Education Policy in British Tropical Africa." Based on that report and the subsequent 1937 report, "Higher Education in East Africa", Egerton College was established in 1939 (initially as an institute, but raised to the status of a college in 1951), and Embu's Institute for Agriculture was founded in 1940.

The Hunter Report of 1963 formed the first comprehensive evaluation of higher level manpower requirements in Kenya and provided the basic agricultural manpower recommendations incorporated into Kenya's 1964-1970 Development Plan. That plan recommended the rapid expansion of Egerton College, the establishment of Farmer Training Centers (FTC's) and the retention of experienced expatriate staff in the agricultural sector until such time as suitable replacements could be found.

In 1966 the GOK published the revised 1966-1970 Development Plan which included revised training estimates based on a 1964 survey of high and middle-level manpower requirements in Kenya. This Plan assumed that the demand for skilled manpower would grow at the rate of slightly more than seven percent per annum through 1970. To meet the projected demand for agricultural manpower the Plan recommended an expansion of Egerton College capacity from 207 in 1964 to 350 by 1970. It was also suggested that Kenya establish its own university-level faculty of agriculture in order to overcome the input constraints being experienced at Makerere University of East Africa.

The training efforts of the 1960's were largely devoted to Kenyanization of the Civil Service. (By 1971 96.5 percent of the Civil Service positions were Kenyanized). The Kenyanization process involved training intended to compress knowledge, which normally requires long experience, into a few months of formal training.

The 1967 Report of the Agricultural Education Commission (commonly referred to as the Weir Commission Report) was the first comprehensive assessment of manpower and training requirements in the agricultural sector. As a result of adopting many of the recommendations of the

Weir Commission, the Ministry of Agriculture established both an extensive training program and a separate training structure that comprises a training division in the Ministry headquarters, a network of training institutions, and a cadre of training officers at the provincial level.

The 1970-1974 Development Plan drew heavily from the Weir Commission in recommending the expansion of the newly established Faculty of Agriculture at the University of Nairobi, the establishment of a new agricultural institute in Western Kenya (Bukura Institute), and expansion of Embu Institute and the Animal Health and Industry Training Institute (AHITI).

The 1972 Wamalwa Committee on Training examined training needs within Kenya and particularly within the agricultural sector. In addition to recommending some continued expansion of existing agricultural training institutions the committee added that:

> "Whilst we appreciate the difficulties involved in manpower projections, we nevertheless consider many of the projections to be too myopic as they do not look beyond 1971. We recommend strongly that categorized projections for Kenya's manpower requirements, at least up to the end of the decade, should be developed so that realistic overall manpower development plans for both the public and private sectors can be made."1/

During the 1970's the attention on agricultural manpower shifted from the goal of replacing experienced expatriates with Kenyan citizens to the general expansion of the pool of trained agricultural manpower necessary to undertake the goal of increasing agricultural production, especially among the smallholder producers. While currently still in preliminary draft stages, it is anticipated that the 1979-1983 Development Plan will recommend a considerable expansion of agricultural training institutions, upgrading the current extension staff, reducing the extension officer/farmer ratios, and providing significant additional inputs into the Farmer Training Centers.

2. Egerton - Historical Background

Egerton College was founded in 1939 at Njoro, in the heart of the high potential farming land of the Rift Valley, for the purpose of training farmers and their sons and daughters. In 1952 the College was raised to the status of an Agricultural College offering a one-year course

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1/ Government of Kenya Report of the Training Review Committee 1972. Page 4.

for the Certificate in Agriculture as well as a two-year course for the Diploma in Agriculture. This marked the beginning of an era of growth and expansion of the College.

In 1955 the Egerton Agricultural College Ordinance was promulgated, providing for the establishment of a Board of Governors for the College, in order that the College should function as a self-governing institution.

The College currently offers nine three-year diploma programs. Egerton's facilities include:

- Laboratories for the teaching of agricultural sciences such as Botany, Zoology, Microbiology, Entomology, Parasitology, Soil Science, and Nutrition.

- Agricultural machinery and equipment for training in agricultural mechanics, farm building design, and soil and water conservation.

- Audio-visual aids for training students to become teachers and extension workers.

- An agricultural library with a collection of 28,000 titles.

- Tatton demonstration farm (400 hectares) which serves as the main teaching and experimental farm.

- Ngong Ogeri farm (1,100 hectares). run on commercial lines for the purpose of generating college revenue and to provide practical training in farm management.

- A dairy factory, capable of manufacturing most dairy products, used for training in dairy technology.

EGERTON COLLEGE

ANALYSIS OF STUDENT ENROLLMENT

1975 CLASS

DIPLOMA PROGRAM	TOTAL	WOMEN	MOA SPONSOR	MOE SPONSOR	INTERNATIONAL SPONSOR
Agriculture	28	-0-	28	-	
Agricultural Education	40	7	5	33	2
Agricultural Engineering	26	-0-	26	-	
Animal Husbandry	40	5	38	-	2
Dairy Technology	7	-0-	3	-	4
Farm Management	31	1	31	-	
Agriculture and Home Economics	13	13	13	-	
Range Management	28	-0-	28	-	
TOTALS	227	31	186	33	8

Percent Women 13.7
Percent MOA Sponsor 81.9
Percent Foreign Student 3.6

Total Enrollment 686
Total Women 114

Source: Egerton College Enrollment Report August 1977.
NB - Classes are labeled by the year of intake, not year of graduation.

3. Diploma Programs-Egerton College

Diploma in Agriculture and Home Economics

The Home Economics Department was started in 1969 to meet one of Kenya's urgent needs for trained qualified officers in both Agriculture and Home Economics Extension. The training is designed to deal with women's problems both on the farm and in the home. Sixty percent of course time is coeducational.

Basic areas of study include:

Family life Education and Child Development.
Food and Nutrition
Clothing and Textiles
Housing and Home improvements
Home Management and Family Economics
Home Economics Extension Education
Basic Agriculture

Diploma in Animal Husbandry

The three-year course leading to the Diploma in Animal Husbandry is aimed at producing a competent extension officer who will bridge the gap between the research worker and the farmer in the field of Animal Production. The diplomates can also perform an effective role in training and research.

The first year starts with theoretical and practical instruction in basic sciences including agricultural zoology, botany and chemistry in preparation for more specialised training in the second and final years. Toward the end of the first year students take certain introductory courses in Animal Science and also take part in introductory practical exercises and demonstrations.

The second years starts with diversification and introduction of specialist courses in Animal Science relating to both health and production. Courses are also taken in crop husbandry and agricultural engineering. The student receives more intensive and specialised practicals, demonstrations and instruction in livestock. These include early morning and late evening practicals in the following areas:

Calf section
Pig section
Poultry section
Milking and milk recording

Sheep, Goat and Rabbits section
General Management

In the final year intensive courses are given in production (management, feeding and diseases and their control) of such farm animals as cattle, sheep, goats, pigs and poultry. Students are given lectures in Government procedures and responsibilities in order to acquaint them with practical field and administration problems. Other courses given in the final year include economics and extension, dairy, and agricultural engineering. Facilities for practical training within the College farms include:

Flock of wool sheep with handling and shearing facilities
Highland lamb section
Dairy herd
Modern milking shed for machine and hand milking, together with an equipped dairy factory.
Pig unit for bacon production
Flock of milk goats
Veal/calf unit
Rabbit unit
Poultry unit

Diploma in Agriculture

The three-year course leading to the Diploma in Agriculture is not intended to produce specialists in any branch of agriculture. It is expected, however, that after the completion of the course the student should be able to adapt quickly to any facet of agricultural enterprise, be it extension, farm management, research, teaching or working in an agricultural firm.

The first year is spent mainly on lectures on the basic sciences relevant to agriculture. In addition, the Department offers basic practicals in agriculture which may include growing vegetables or field crops.

In the second and third year, instruction and exercises relate particularly to agricultural practice and specific skills and knowledge. Farm walks are usually held on alternate weeks in the second year in order to familiarize the students with day to day operations. Students keep diaries of farm activities to be handed in for assessment at the end of the year.

During the third year, the students go on one week camping practicals to learn such skills as coffee and tea pruning and pyrethrum harvesting and drying. It is usual to have trips to the Coast to give students practical knowledge of Coast agriculture. Final year students are also given individual research projects during the last three terms.

The Crop Husbandry Department, which is responsible for the Agriculture course, runs a greenhouse, a crop museum and demonstration plots.

Diploma in Horticulture

The three-year course leading to the Diploma in Horticulture is also under the administration of the Crop Husbandry Department.

During the first year, students are given lectures on basic sciences relevant to horticulture, general agriculture and principles of crop production. There are basic practical exercises in horticulture and crop husbandry.

In the second and third years, lectures relate particularly to horticultural practice and practicals deal with specific skills and knowledge rather than routine manual work. The course includes intensive practical work at a horticultural research station for one month where students learn such skills as vegetative propagation and vegetable growing.

Diploma in Dairy Technology

Six months of practical training in a suitably sized dairy factory prior to the start of the course is desirable. A high degree of person-to-person teaching is achieved by restricting the intake in each year. Students spend eight months of well organized and supervised practical training in the Guildford Dairy Institute, five weeks in Mariakani Milk Scheme and two weeks at the Naivasha Dairy Training School. Two months of each vacation period are spent at commercial size dairy factories, owned by the Kenya Cooperative Creameries, to gain further factory experience.

The Dairy Technology curriculum is designed primarily to produce factory technicians, assistant managers and managers. However, as a result of requests by sponsors, the present curriculum has been designed to also emphasize the production, primary treatment and

collection of milk. Trainees are, therefore, also competent to assist in the initial stages of establishment of a dairy industry. (It should be noted, however, that if trainees are intended to engage in field work, the Animal Husbandry Diploma of the College may be more suitable).

Emphasis is placed on practical work, both on the farm, in collecting centres and in the dairy institute. The farm produces over 1,500 Kg. of milk, most of which is processed by the institute where full facilities exist for pasteurizing and packing whole milk and cream and for the manufacture of butter, anhydrous butter fat (ghee), cheese, fermented milks and dried, evaporated and condensed milk and ice cream.

Diploma in Agriculture and Farm Management

This course is designed to produce a sound understanding of agriculture including the cultural practices and a heavy emphasis on translation of the husbandry aspects into financial terms. After training at Egerton, a graduate of Farm Management is expected to have acquired knowledge of agriculture and related fields sufficient to enable him to serve as an Agriculture and Farm Management Extension Officer, Loans Officer, Farm Co-Operative Development Officer, Farm Manager or Farm Economics Teacher at Farmers' Training Centres or Agriculture Institutions.

The first two years of a student's training is similar to that of agriculture students. In the first year the student studies basic sciences, introductory statistics and elementary economics. The student is provided with practical experience in agriculture through development of individual plots and routine jobs in livestock husbandry. The second year student receives instruction in more applied subjects in agriculture, animal husbandry and farm machinery. More courses in economics are also offered.

In the final year the student is trained in advanced farm economics. He studies mainly applied subjects, including planning and budgeting techniques, labor management, farm records and accounting, marketing and economic development. For three consecutive terms the student visits diversified areas in Kenya, having different land and other resource use and farming patterns, e.g., heavy and light population areas, low and high potential areas, settlement and irrigation schemes, and credit schemes. In the second term he visits farms with the objective of carrying out planning and budgeting

exercises. In the final term the emphasis is on agri-business and visiting firms that supply inputs to the agricultural industry and process agricultural products. For all the visits the student is required to write reports and seminars are conducted in which the theoretical training is related to the practical (applied) experiences.

The student carries out a practical management, planning and budgeting exercise during his final long vacation on either a large-scale farm, a small-scale farm or a number of farms and presents the results in a paper.

The Economics Department runs a 100-acre mixed farm in which the final year student undertakes management practices in both crops and livestock and helps in organizing labor. The Student Farm Project acts as a field laboratory for the final year students to practice the theoretical knowledge gained in the lecture room.

Diploma in Agriculture Education

The main effort of this program is directed towards encouraging and strengthening the teaching of agriculture in secondary schools as a way to broadening the base of education in areas most relevant to economic development of the country. Graduates are prepared to teach agricultural education courses in secondary schools and in agricultural institutions.

The objectives of the agricultural programs can be summarized as:

(a) To help develop the ability to communicate effectively with others, especially in English;

(b) To help develop awareness of the development of educational thought in relation to development policies and priorities;

(c) To understand management and organizational concepts, trends and problems associated with institutional management, with particular emphasis on schools in developing countries;

(d) To acquire professional understanding of human development, growth and learning which will enable graduates to guide learning experiences for both youth and adults;

(e) To acquire knowledge in methodology of teaching agriculture and allied subjects;

(f) To prepare students for teaching responsibilities in secondary schools, agricultural institutions and Farmer Training Centres by providing them with intellectual and practical skills in agriculture and allied subjects;

(g) To acquire both intellectual, social and practical abilities which can be used to provide leadership which can effect change in rural development in respective communities;

(h) To develop an understanding of agriculture and its specific contribution to the national economy.

Diploma in Agricultural Engineering

This diploma course is designed to teach the practical knowledge of Agricultural Engineering. Major emphasis throughout the three years is placed on workshop practice, farm power and machinery, soil and water conservation utilization, structures, crop husbandry and economic management. Vacation periods are used for additional practical training either at Government establishments or with private firms.

Throughout the curriculum, practical training work is conducted both in the field and in the workshop. Practical classes are kept small in order to allow students the maximum opportunity to participate in all types of work. The procedure allows the instructor maximum contact with each student.

Examples of practical training include learning to drive tractors and operate most of the commonly used farm machinery; maintenance of petrol and diesel engines and major repair up to and including fitting piston rings, bearings, and valve reconditioning; building terraces and repairing roads; building concrete bridges, pole type sheds and renovating stone and wooden buildings; complete overhauls of different types of farm machinery, and installing electrical power wiring and various types of control systems.

During the last term the students are taken on weekly field trips including visits to tea, sisal, coffee and sugar plantations, small manufacturing plants, settlement schemes, food processing plants, Kenya Polytechnic Laboratories, and Government Research Stations.

The Agricultural Engineering Diplomates are qualified to fill positions as workshop managers, tractor and machinery unit supervisors, soil conservation specialists, construction unit supervisors,

plantation factory managers, commercial farm machinery sales and service, and mechanization extension officers. Many of the diplomates are also entering teaching positions.

Diploma in Range Management

The Range Management diploma program is designed to teach the technology of grazing land management with special application to the dry areas of East Africa.

The Range Management curriculum is planned to prepare holders of the diploma to assume various duties. They may work as Assistant Range Officers, Extension Officers, Assistant Research Officers and as teachers in the Farmer Training Centres. The students of Range Management receive both classroom and field instruction with emphasis on field work. Weekly visits to nearby ranches and practice in range inventory techniques help verify the library and lecture learning. A two-week trip is undertaken by final year students to ranching schemes and research stations in order for them to get a picture of current practices and problems in pastoral lands. An introductory course in Wild Life Management is also offered to all Range Management Students.

EGERTON COLLEGE

U.S. TECHNICAL ASSISTANCE: TEACHING STAFF

DEPARTMENT TEACHING SPECIALITIES:

	Years of Service	Person Years
1. Animal Science		
a. Animal Breeding	1979 - 1980	2 PY
b. Veterinary Medicine	1979 - 1983	5 PY
c. Beekeeping	1981 - 1983	3 PY
	SUBTOTAL: 3 Technicians for	10PY
2. Biology		
a. Crop Protection(Entomologist)	1980 - 1982	3 PY
b. Parasitology	1980 - 1982	3 PY
c. Ecology	1981 - 1983	3 PY
	SUBTOTAL: 3 Technicians for	9 PY
3. Chemistry		
a. Soil Physics	1979 - 1982	4 PY
b. Biochemistry/Organic Chemistry	1979 - 1982	4 PY
	SUBTOTAL: 2 Technicians for	8 PY
4. Crops		
a. Horticulture	1979 - 1981	3 PY
b. Agronomy	1979 - 1981	3 PY
	SUBTOTAL: 2 Technicians for	6 PY
5. Economics		
a. Agricultural Economics	1979 - 1980	2 PY
	SUBTOTAL: 1 Technician for	2 PY

	Years of Service	Person Years
6. Education		
a. Extention Education	1979 - 1981	3 PY
b. Audio Visual Education	1979 - 1981	3 PY
c. Communications	1980 - 1983	4 PY
	SUBTOTAL: 3 Technicians for	10 PY
7. Home Economics		
a. Extension Education	1979 - 1982	4 PY
b. Clothing Construction	1980 - 1982	3 PY
c. Nutrition	1980 - 1981	2 PY
	SUBTOTAL: 3 Technicians for	9 PY
8. Range Management		
a. Range Management	1979 - 1980	2 PY
b. Range Ecology	1980 - 1981	2 PY
	SUBTOTAL: 2 Technicians for	4 PY
9. Agricultural Engineering		
a. Surveying	1979 - 1982	4 PY
b. Fluid Mechanics	1979 - 1982	4 PY
c. Woodworking	1982 - 1983	2 PY
d. Electrical Engineering	1979 - 1982	4 PY
e. Farm Machinery	1979 - 1982	4 PY
f. Soil and Water Conservation	1981 - 1983	3 PY
g. Irrigation	1981 - 1983	3 PY
h. Mechanical Engineering	1979 - 1982	4 PY
	SUBTOTAL: 8 Technicians for	28 PY
10. Administrative/Procurement Officer	1979- 1983	5 PY
TOTAL: 28 Technicians for 91 PY		

NB - Dairy Technology assistance being funded by DANIDA.

EGERTON COLLEGE

PARTICIPANT TRAINING

1. Animal Science

a.	Ph. D. - Genetics	1979 - 1980	2 PY
b.	M. Sc. - Genetics	1979 - 1981	3 PY
c.	M. Sc. - Veterinary Medicine	1979 - 1980	2 PY
d.	M. Sc. - Beekeeping	1981 - 1983	3 PY
e.	M. Sc. - Genetics	1980 - 1983	4 PY
f.	B. Sc. - Beekeeping	1980 - 1983	4 PY
		Subtotal: 6 Participants for	18 PY

2. Biology

a.	M. Sc. - Crop Protection	1980 - 1981	2 PY
b.	M. Sc. - Parasitology	1980 - 1981	2 PY
c.	M. Sc. - Ecology	1981 - 1983	3 PY
		Subtotal: 3 Participants for	7 PY

3. Chemistry

a.	Ph. D. - Chemistry	1979 - 1982	4 PY
b.	M. Sc. - Soil Science	1980 - 1982	3 PY
c.	M. Sc. - Biochemistry	1979 - 1982	4 PY
d.	M. Sc. - Organic Chemistry	1979 - 1982	4 PY
		Subtotal: 4 Participants for	15 PY

4. Crops

a.	Ph. D. - Plant Breeding	1979 - 1981	3 PY
b.	M. Sc. - Crop Production	1979 - 1981	3 PY
c.	M. Sc. - Crop Production	1979 - 1981	3 PY
d.	M. Sc. - Horticulture	1981 - 1983	3 PY
e.	B. Sc. - Horticulture	1981 - 1983	3 PY
		Subtotal: 5 Participants for	15 PY

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5. Economics

a.	Ph. D. - Agricultural Economics	1979 - 1980	2 PY
b.	M. Sc. - Production Economics	1980 - 1981	2 PY
c.	M. Sc. - Production Economics	1981 - 1982	2 PY
	Subtotal: 3 Participants for		6 PY

6. Education

a.	Ph. D. - Agricultural Education	1979 - 1981	3 PY
b.	M. Sc. - Extension Education	1979 - 1981	3 PY
c.	M. Sc. - Audio-Visual Materials	1979 - 1981	3 PY
d.	M. Sc. - Communications	1981 - 1983	3 PY
	Subtotal: 4 Participants for		12 PY

7. Home Economics

a.	Ph. D. Home Economics	1979 - 1981	3 PY
b.	M. Sc. Home Management	1980 - 1981	2 PY
c.	M. Sc. Nutrition	1980 - 1982	2 PY
d.	B. Sc. Clothing/Materials	1979 - 1982	4 PY
	Subtotal: 4 Participants for		11 PY

8. Range Management

a.	Ph. D. - Range Management	1980 - 1982	3 PY
b.	M. Sc. - Range Ecology	1979 - 1982	4 PY
	Subtotal: 2 Participants for		7 PY

9. Agricultural Engineering

a.	M. Sc. - Surveying (2)	1979 - 1982	8 PY
b.	M. Sc. - Mechanics (2)	1980 - 1983	8 PY
c.	M. Sc. - Electrical Engineering (2)	1979 - 1982	8 PY
d.	M. Sc. - Farm Machinery (2)	1979 - 1982	8 PY
e.	M. Sc. - Irrigation (2)	1980 - 1983	8 PY
f.	M. Sc. - Soil and Water Conservation	1980 - 1983	8 PY
	Subtotal: 12 Participants for		48 PY
	TOTAL: 43 Participants for		139 PY

Detailed Description of Capital Component of Project Activity at Egerton College

1. Site: Egerton College is situated approximately 10 miles west-south-west of Nakuru (headquarters for Rift Valley Province) on the foot hills of the Mau Escarpment, a fertile agricultural region of the Rift Valley. The altitude is approximately 7400 feet above sea level. The College controls nearly 4000 acres, most of which is agricultural land including Tatton and Ngong Ogeri Farms; the campus and residential areas occupying approximately 300 acres, containing a population of approximately 4,700 people, including 686 students, teaching staff with families, administration staff and services staff with their families. Tatton Farm, approximately 1,000 acres, serves as the main teaching and experimental farm. Ngong Ogeri farm, approximately 2,700 acres, is run on commercial lines to generate income for the College and is used for the purpose of additional student demonstrations. The College has also leased 1,200 acres of land at Chemeron, Baringo District. This land is used for research and the training of students in Animal Production and Ranch Management.

Water supply for the campus is from bore holes located on grounds controlled by the College. Waste water treatment is by oxidization ponds or septic tanks depending upon the location of buildings. Electric power is supplied by the East African Power & Lighting Company and telephone service is maintained by Kenya Posts and Telecommunications.

Access to the campus is from the main (bitumen surfaced) Njoro-Narok road. This road also provides access to Tatton Farm. Various bitumen surfaced and gravel roads link the old campus (teaching and administration buildings) with Halls of Residences, Dining Hall, Tatton Farm and the Engineering Department.

To avoid wasteful use of good arable and pasture land for building development, which would at the same time provide an undesirable extension of the campus area, an increase in the density of the established campus area is proposed. The close relationship between residential halls, the teaching facilities, and farmland is maintained. The design of new facilities includes provision of adequate water supply, waste water treatment, electrical supply, telephone services and roads.

2. Existing Facilities

A team of local consultants, engaged by the college, and Prof. H. James Miller, of the University of Illinois, Urbana, undertook a

detailed review of existing facilities.[1/] The majority of existing buildings are constructed of stone walls with pitched roofs of wood shingles, iron sheets, asbestos sheets or roofing felt. The description of existing facilities including recommendations for improvements/renovations, wherever applicable, is as follows:

A. Animal Science Department - (All areas in square meters)

One building, gross area 533 S.M. consisting of
1 Teaching arena(162.6)
1 Laboratory - (Net area 78.7);
1 Staff laboratory/preparation room (52.4);
2 Stores (19.3);
1 Head of Department Office (22.8)
1 Secretary's Office (10.6);
1 General Office (22.6) and
3 Staff Office (32.7)
Staff and Students Toilets (19.9)
Circulation Space & Walls (111.4)

The existing plumbing, gas supply, ventillation, fire fighting and electrical systems will be up-graded.

B. Agriculture Engineering Department:

(i) One building, gross area 1,000 S.M., consisting of

1 Welding workshop (111.8)
1 Woodwork workshop (111.8)
1 Farm machinery (231.7)
1 Tool store (19.9)
1 Workshop and stores (165.5)
1 Metal workshop (200.3)
1 Processing room (65.8)
1 Concrete Lab. (7.8)
3 Offices (26)
Circulation space and walls (59.4)

Relocate grain driers from the Processing room to Tatton Farm Barn and use the Processing room for other food processing e.g. coffee and maize meal. The layout of the metal workshop will be modified to add more equipment. The woodwork workshop will be upgraded to woodwork machine shop. The Farm Machnery workshop will be converted to woodwork workshop. The electrical, fire fighting and ventillation systems will be upgraded.

(ii) One building, gross area 1,112 S.M., consisting of

1 Physics and Electricity workshop (128)
1 Drawing room (128)
1 Soil and Water Conservation workshop (128)

1/ Mutiso Menezes International, under contract with Egerton College; J. Miller under Contract AID-615-170.

1 Lecture Theatar (82.4)
1 Lecture Theater (169.2)
1 Head of Department Office (20.6)
6 Offices (51)
2 Stores (15.6)
Toilets (7.1)
Circulation area and walls (382.1)

The existing drawing room will be connected to the soil water conservation workshop/laboratory and renovated as a water resources laboratory.

The electrical, plumbing, fire fighting and ventillation systems will be upgraded. Ceiling will be repaired.

C. Crop Production Department

(i) One building, gross area 555 S.M., consisting of

1 Lecture room (193.4)
1 Lecture room (46.3)
1 Balance room (3.5)
1 Head of Dept. Office (25.6)
1 Secretary's Office (13.9)
6 Offices (66.9)
1 Store (18.1)
Toilets (43.6)
Waiting room,cleaners' room,corridors, walls etc. (143.7)

The existing roof finish of the building will be repaired. Also plumbing, fire fighting and electrical systems will be upgraded.

(ii) Field Laboratory - 112 - S.M.

D. Biology Department

One building, gross area 828 S.M., consisting of
1 Lecture room/Laboratory (99.4)
1 Biology laboratory (259.8)
1 Preparation room (53.5)
1 Microbiology laboratory (69.7)
1 Microbiology lab. preparation room (27.8)
4 Offices (60)
1 Incubator room (18.1)
1 Store (9.7)
1 Dark room (17.8)
Circulation area and walls (212.2)

The plumbing, electrical, gas, and ventillation systems will be upgraded.

The biology laboratory will be converted into two botany laboratories.

E. Chemistry Department

One building, gross area 507 S.M., consisting of

1 Nutrition laboratory (51.4)
1 Chemistry laboratory (206.5)
1 Staff laboratory/preparation room (35.3)
1 Fume cupboards room (24.7)
1 Toilets (9.3)
1 Store (9.3)
1 Balance room (26.2)
3 Offices (38.9)
Circulation and walls (105.4)

The Chemistry laboratory will be partitioned to accommodate two classes of 32 students each. The plumbing, electrical, gas and ventillation systems will be upgraded.

F. Home Economics Department

One building, gross area 894 S.M., consisting of

1 Food laboratory (96)
1 Sewing room (96)
1 Laundry room (96)
1 Classroom used as demonstration dining room (87.3)
1 Seminar room (37.4)
1 Classroom (76.8)
1 Workshop (54)
7 Offices (80.9)
Reception area (11)
7 Stores (32.4)
Dressing room (4.8)
Toilets (33.8)
Circulation and walls (187.6)

G. Food Science and Technology Department

One building, gross area 1,227 S.M., consisting of

1 Classroom (69.6)
1 Classroom (62)
1 Microbiology Laboratory (91)
1 Chemical Laboratory (91)
1 Microbiology Lab. Preparation room (12.7)
1 Instrument room (7.8)

1 Chemical Preparation room (13.4)
1 Balance room (7.8)
1 Food Engineering (330)
1 Plant (Refrigeration) room (10.4)
1 Cold store (31.1)
1 Kitchen store (20.6)
1 Machinery store (20.6)
1 Office (Head of Dept.) (18.3)
1 Office Secretary (12.4)
3 Offices (37)
Toilets and Projection room (37)
Circulation space and walls (297.4)

Construction of this building is expected to start in June 1978.

H. Dairy Department

One building, gross area 524 S.M., consisting of

1 Cheese room (27.6)
1 Cheese store (11.2)
1 Reception (31.4)
1 Butter room (23)
1 Butter cold room (10.2)
1 Regrigeration rool (14.4)
1 Boiler House (30.4)
1 Laboratory (19.2)
1 Ingredients store (7.5)
1 Office staff (11.3)
1 Office staff (12.3)
1 Office general (18.4)
1 Processing room (91.8)
1 Finish goods store (12)
1 General store (11.9)
1 Students cloak (10.7)
Circulation space and walls (180.7)

I. Lecture Hall - Gross building area 538 S.M.

1 Classroom (221.5)
1 Classroom (58.2)
1 Classroom (58.2)
1 Audio-visual equipment store (87.2)
Toilets, circulation area and walls (112.9)

The plumbing, ventillation, and fire fighting systems will be upgraded. The existing roofing felt, including ceiling, will also be replaced.

J. Studies Department/General Classrooms

One building, gross area 624 S.M., consisting of

1 Classroom (192)
1 Classroom (77.4)
1 Audio-visual practice room (53)
1 Store (13.4)
1 Junior staff room (88.8)
1 Store (13.5)
1 Store (9.5.)
1 Store (10.9)
1 Canteen (24)
1 Kitchen (11.4)
Toilets, circulation and walls (130.1)

The plumbing, ventillation, fire fighting, and electrical systems will be upgraded. Approximately 50 percent of the roof, (wood-shingles) will be replaced.

K. Education Department and Extension Center for African Family Studies

One building, gross area 440 S.M., consisting of

Agriculture Resources Exhibition room (30.2)
2 Offices (183.7)
1 Store (7.3)
1 Laboratory (28.6)
Reception (9.4)
Circulation space and walls (180.8)

The plumbing, fire fighting and electrical systems will be upgraded. Approximately 50 percent of existing roof (wood shingles) will be replaced.

L. Assembly Hall, gross area 1,286 S.M.

One story auditorium capacity 1,200 people and toilets.

The plumbing, fire fighting and electrical systems will be upgraded. The existing roofing felt will be replaced.

M. Medical Unit (Sanatorium)/Dispensary

One building, gross area 553 S.M., (20 bed capacity) consisting of

1 Junior staff waiting room (27.8)
2 Treatment rooms (21)

1 Kitchen/store/boiler/linen (34.8)
1 Surgery (14.5)
1 Toilets/bath/sluice room (46.8)
3 Wards (1 bed each) (36.2)
1 Ward 6 beds (42.4)
1 Ward 4 beds (28)
4 Wards 2 beds each (68.4)
1 Duty Nurse (12.9)
1 Medical store (5.7)
1 Staff nurse (9.94)
1 Senior staff waiting room (11.8)
1 Hall (28.9)
Circulation space, walls and verandah (163.9)

N. Library - Gross area 620 S.M.

1 Reading and stack area (437.7)
1 Process room/store (24.7)
1 Receiving/lending area (27.8)
Toilets, circulation area and walls (129.8)

The building will be converted into staff canteen and meeting rooms.

O. Economics and Range Departments

One building, gross area 305 S.M., consisting of

12 Offices, 3 stores (183)
2 Seminar rooms (30.1)
Toilets, circulation area and walls (91.9)

The plumbing, electrical and fire fighting systems will be upgraded. The roofing (wood shingles) and ceiling will be replaced.

P. Administration Block

One building, gross area 454 S.M., consisting of

1 Board room (59.9)
1 Registry (39.0)
1 Principal's office (21)
1 Deputy principal's office (20.2)
1 Secretary's office (23.5)
1 Exam. Typing room (16.8)
1 Registrar's office (17.2)
6 Offices (105.3)
1 Printing room (19.6)
1 Switch board (7.4)
1 Entrance Hall (58.6)
1 Kitchen (6)
Toilets (27.8)
Circulation area and walls (31.7)

The electrical, plumbing and fire fighting systems will be upgraded

Q. Transport Workshop

One building, gross area 331 S.M., consisting of

2 Workshops (241.1)
1 Battery charging room (16.1)
1 Equipment store (18.3)
2 Offices (25.7)
Circulation area and walls (29.8)

The building will be remodelled to be used as Machine Workshop for the Agricultural Engineering Department.

R. Block "B" Dean's Office

One building, gross area 340 S.M., consisting of

14 Offices (169.8)
1 Living room (16.43)
1 Bedroom (16.6)
3 Bathrooms (34.4)
3 Stores (20.8)
Circulation area and walls (82)

The building will be fully renovated (plumbing, fire fighting, electrical, roofing, ceiling).

S. Junior Common Room

One building, gross area 503 S.M., consisting of
1. Common room (245.5)
1 Reading room (34.8)
1 Store and projection room (6.5)
1 Kitchenette and servery (17.3)
1 Games room (84.3)
Circulation area and walls (114.6)

The roofing felt and ceiling will be replaced. The floor and walls will be repaired as necessary.

T. Students' Dining Hall and Kitchen (Kennedy Hall), gross area 1,110 S.M.

Dining area (614.3)
Kitchen area (324.8)
Walls and circulation area (170.9)

This building will be renovated, and used as students' common room

U. Halls of Residences

(i) Men - One building Block "C", gross area 1,600 S.M., consisting of

55 rooms (1,144), 2 students per room
Toilets/bathrooms (58)
Laundry rooms (46)
Circulation area and walls (352)

The plumbing, fire fighting and electrical systems will be upgraded. Existing roof (wood shingles) and ceiling will be replaced.

(ii) One building - (Women), gross area 1,403 S.M., consisting of

52 Rooms (744), 2 students per room
1 Head student room (9.3)
4 Laundry and Ironing rooms (61.6)
4 Toilets/bathrooms blocks (98.3)
1 Common Room (70.3)
1 Reading room (51)
1 Warden's office (12)
2 Stores (21.3)
Circulation area, stairs, walls (335.2)

Fire fighting system will be upgraded.

(iii) Men - Three buildings, gross area 4,041 S.M., each building consisting of

64 Rooms (883.2), 2 students per room
6 Bath rooms/toilets (145.2)
1 Boiler room (9.1)
Stairs, balcony, circulation area, walls (309.5)

Fire fighting system will be upgraded.

(iv) One link block consisting of 16 rooms, 2 students per room. Total area = 334 S.M.

Total Accommodation = 631 students

V. Staff Housing - Total area 19,032 S.M. Standard senior staff house consists of

Living room (26.7)
Bedroom 1 (11.7)
Bedroom 2 (12)
Bedroom 3 (7.9)
Bath/WC (5.8)
Kitchen (11)

Total net area 75.1 S.M.

(i)	Senior Staff -	72	3-bedroom houses
		7	3-bedroom houses (under construction)
		4	Apartments
(ii)	Middle Staff	18	2-bedroom houses
(iii)	Junior Staff	44	2-bedroom houses
		28	2-bedroom houses without electricity
(iv)	Subordinate Staff	29	1-room temporary houses
		66	1-room houses
		*71	1-room (thatch roof)
		5	1-room

*71 houses to be demolished as they are considered unhygienic.

Electricity will be provided for 28, 2-bedroom houses. All houses will be repaired as necessary.

W. Tatton Farm: (Demonstration Farm)

Managers and Assistants offices (25)
1 Grain store (650)
Milking Parlour (100)
Piggeries (370)
Calf houses (185)

Rabbitary (100)
Cattle pens (150)
Workshop (150)
Store (125)
Chicken houses (420)
Covered open areas (100)

Total 2,415 S.M.

The above will be remodelled as necessary.

2. Proposed Facilities:

Based on a detailed analysis of space requirements for the instructional, administration and living facilities, for the proposed increased enrolment at the college to 1632, the consultants have recommended the construction of the following new facilities: ("Master Plan Study Report" by Mutiso Menezes International discusses fully the methodology used in determining the space requirements).

A. Animal Science Department: (All areas in square meter net)

(i) 1 Lecture Room for 64 students - 100 S.M.

(ii) 1 Animal Health complex - 381 S.M. (figures in parenthesis refer to approximate net area)

Post mortem room (25)
Covered seating for 64 (50)
Cold store (12)
2 Disinfecting lobbies (10)
Preparation laboratory (20)
Equipment store (15)
Equipment cleaning room (10)
Washroom & toilet (15)
Holding pen (25)
Incinerator
Plant room (20)
Treatment Room (20)
Examination Room (15)
Dispensary & Drug Store (15)
Reception Office & Records (12)
Holding Pens (Covered, open area) (25)
Demonstrator's Office (12)
Tech. Asst's Office (10)
Cage Room (20)
Small Animal pens (Covered open area) (20)

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General Store (8)
Toilets & Washroom (18)
Cleaners room (4)

(iii) Feed lot for 120 cattle (6 pens x 20 head) - 85 S.M.

Feed store & Mixing room (20)
Covered teaching area (65)
Cattle dip
Weighbridge

(iv) One Laboratory - 119 S.M. consisting of

Nutrition Lab (for 32 students) (96)
Prep Room (15)
Store (8)

(v) 9 Offices @ 12 m^2 ea - 108 S.M.

(vi) Methane Gas Unit (Treatment solid and liquid waste from freelot degested waste then suitable for fertilizer) - 30 S.M.

(vii) Butchery - 129 S.M. consisting of

Race from feedlot & holding pens and crush
Holding pens for 120 head (3 weeks kitchen supply)
Crush
Knocking Box (3)
Flaying & Dressing room (20)
Carcass Store (15)
Cold Room (12)
Offal Storage Area (10)
Office/Sales (12)
Washroom & toilets (incl. lockers) (18)
Equipment Store (10)
Plant Room (12)
Covered area Adj. Flaying Room (15)
Dispatch Area (12)
Allowance for circulation space and walls - 10% of net building area

Animal Health complex to be enclosed with two perimeter security fences, 2^m apart.

B. Agricultural Engineering Department - 672 S.M.

1. Lecture theater 64 seats (100)
1 Drawing office (140)
1 Office Head of Department (15)
19 Offices - Lecturers (228)
9 Offices - Demonstrators (3/Office) @ 12 (108)
1 Injection pump test room (12)
1 Soils & structures laboratory/workroom (96)
Allowance for circulation space and walls - (90)
Total area = 789 S.M.

C. Crop Production

(i) Field 3 Tool repair workshop (Add to Extg. field 3 Lab) (36)
Prep. Room & Store (Add to Extg. field 3 Lab) (16)
Water Pump Room (Add to Extg. field 3 Lab) (7)
Toilets (Add to Extg. field 3 Lab) (18)
Total Area = 77 S.M.

(ii) Field 7 Covered teaching area in Field 7 (96)
Store " " " " " (48)
Office 1 (12)
Toilets (18)

Total area 174 S.M.

(iii) 1 Green house 225 S.M.

D. Biology Department

(i) Extension to existing building consisting of

2 Zoology Labs ea for 32 students (192)
2 Prep. Rooms (50)
Herbarium (& Aquarium) (20)
Cold room (4)
Storage (15)
Plant room (10), Emergency generator room (11)

Total area including circulation = 350 S.M.

(ii) 2 Green houses, each 4x2.5 m, 20 S.M.

E. Chemistry

Extension to existing building consisting of

2 Laboratories each for 32 Students (200)
1 Prep. Room (36)
1 64 - seat Lecture Hall (100)
Storage (20)
Gas Bottle Store (5)

Dairy chem. lab. extension (18)
Toilets (12)
Cleaners room (4)

Circulation Area (65)

Total area 460 S.M.

F. Home Economics Department

(i) Extension to existing building - consisting of

Classroom (For 32 students (96)
Store (20)
(ii) Rural House - 24 S.M.
(iii) Urban House - 50 S.M.
Total area 190 S.M. including curcualation and wall

G. Dairy Technology Department

Enlarge existing cheese prepm. room - 15 S.M.
" " cold store - 6 S.M.

Total 21 S.M.

H. Sanitarium/Dispensary

Extension to existing building as follows:

Convert extg. waiting room to casualty waiting
Enlarge extg. treatment room by joining with adj. room
1 out patients waiting room (40)
2 New Consulting/Treatment rooms for DPD (36)
Students waiting room (36)
2 New Consulting/Treatment rooms for students (36)
2 new offices (24)
Enlarge Kitchen (15)
Toilets (18)
Laundry (15)
Circulation area (70)
Total building area = 290 S.M.

I. Studies Department/General Classrooms

One building consisting of

2No. 64 seat lecture rooms - 200 S.M.
1No. 32 seat lecture rooms - 50 S.M.

Total area = 250 S.M.

J. **Administration Building**

One building, two stories, consisting of

25 seat boardroom (60)
Principal's office (25)
Personal Assistant (15)
Secretary + Typist (15)

Deputy Principal (20)
4 Personal Assistants (25)
Secretary + 2 Typists (15)
Exam Prep Room incl. Sec. St. (20)
Printing Room (15)

Registrar's Office (20)
3 Senior Assist. (20)
3 Junior Assist. (15)
2 Secretaries + 1 Typist (18)

Mail Office (18)

Finance Officer (Head of Dept.) (18)
Asst. Finance Off. (15)
Cost Accountant (12)
Finance Accountant (12)
1 Secretary + 1 Typist (12)
Internal Auditor (12)
Asst. Internal Auditor & Clerk (12)
Salaries & Wages Section Head (15)
2 Salaries Clerks (12)
3 Accounting Machine Operators (20)
1 General Office (40)
1 Storekeeper's Office (12)
2 Cashiers (12)
Waiting Room (20)

2 Receptionists/Telephonists (20)
PABX Room (15)
Reception Hall (incorp. Faculty "Pigeon Holes) (60)
Sitting Area/Display Area (Agriculatural Resource Center for Display & Instruction) (100)

Toilets/Washrooms/Lockers (54)
Stationery Store (for Admin only) (20)
General Storage (30)
2 Cleaners Rooms (6)
Circulation and walls (433)

Total building Area = 1263 S.M.

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K. Education & Extension

Renovation of existing building to provide the following facilities:

32 Seat Lecture Room (with blackout facilities and 1 No. Lab Bench) (50)
Audio-Visual Studio (50)
Electronics Service Workshop (50)
Graphics Room/General Workroom (50)
Printing/Reprographic Room (36)
Litho Darkroom (36)
Offices Head of Dept. (15)
Lecturers (12)
Demonst. (12)
Secretary (12)

Total Area 419 S.M.

L. Library Building

Designed for 50,000 volumes and 1650 students

1 Reference Library (Shelves and seating areas) (380)
1 Lending Library (Shelves and seating areas) (460)
1 Seminar Room (13)
1 Text Book Store (120)
3 Offices (45)
1 Office (20)
1 Workroom (50)
2 Staff Research rooms (30)
Toilets (28)
Cleaner (3)
Reception (12)
Circulation and Exhibition Space (263)

Total Area 1424 S.M.

M. Transport Department

One building consisting of

3 Repair workshops (180)
1 Service bay (75)
1 Machines & Equipment Area (30)
1 Tool store (12)
1 Spares store (30)
1 Compressor room (9)

1 Battery & Trickle Charge Room (7)
1 Tyre Repair Bay (15)
1 Storekeeper & Clerks Office & Transport Managers Office (18)
Toilets (12)
Circulation Area for above (27)
Total Area = 415 S.M.

Covered Parking (& Working) Areas (792)

For 9 Buses
4 Cars
4 Minibuses
2 Landrovers
8 Pick-up Trucks
3 Lorries

N. Estates Department (Maintenance Department)

One building consisting of

1 Carpenter and Joinery workshop (120)
1 Carpenter and Joinery store (40)
1 Painting and Decorating workshop (80)
1 Painting and Decorating store (30)
1 Plumbing workshop (70)
1 Plumbing store (40)
1 Electrical workshop (40)
1 Electrical store (20)
1 Open covered working area (stonemason & others) (50)
1 Goods reception area (20)
1 Estates Managers office (12)
1 Storekeepers and Clerks office (12)
Toilets and Lockers (20)
Plant (20)

Total building area 574 S.M.

Allow for security fencing and gate around compound

O. Tatton Farm (Demonstration Farm)

(i) One Animal Handling Complex consisting of

1 Teaching area for 64 students (120)
Farrowing house for 10 sows (108)
Cattle pens for 150
Sheep & Goats pens for 100
Boar/Sow shed for 3 boars with 3 sow pens (45)

Boar/Sow paddocks
Sheep dip
Fencing around piggery area
Cattle dip and Cattle spray
No-grazing unit for 10 cows

(ii) Cold store (6)

(iii) Silos for grain store (incl. sun shades), each 3 meter diameter and 4 meter high.

P. Chemeron Range

(i) Open, covered teaching area (60)
Hostel for 32, (in 3 rooms, of 8 beds ea) (135)
2 Offices (24)
Store (15)
Dining room (42)
Kitchen (20)
Toilets (18)

(ii) Tuition staff hostel for 6 persons:

6 bedrooms @ $9m^2$ ea (54)
WC (2)
Shower (4)
Common room (20)
Circulation (12)

Total building area 415 S.M. including circulation

Q. Warehouse

2 Warehouse-type storage areas (900)
incl. 2 offices
incl. toilets

Total area 900 S.M.

R. Kitchen/Dining Building

One building consisting of

Dining room for 950 persons (1425)
Servery (50)
Wash up (50)
Cooking area (100)
Preparation (70)
3 Cold stores (24)
Stores & Offices (100)
Toilets and Lockers (Staff only) (28)
Toilets (Students) (36)
Circulation (50)
Linen Store (25)
Boiler and Plant (50)
Fuel Storage
Refuse etc. (Open covered area) (55)
Walls and circulation (103)

Total building area 2166 S.M.

S. Halls of Residence

9 No. total, each comprising in a two-storey building:

56 2-person study/bedrooms, 13.5 S.M. each (756)
8 W.C-shower rooms (144)
4 stairs and open corridors, circulation area, walls (484)
2 covered links to adjoining hall (80)
Total area per building 1465 S.M.

Total number of men students = 616
Total number of women students = 392

T. Staff Housing

(i) 54, three-bedroom housing with domestic staff quarters* comprising of

1 Living room/dining room/bedrooms (58)
1 Kitchen (10.5)
1 Bathroom (5)
1 W.C. (2)
Circulation area and walls (11.5)
Gross area/building = 87 S.M.
1 bedroom domestic staff quarter 15 S.M.

* Kenyan building practices, including existing faculty staff housing at Egerton, provide quarters for demostic staff along with the faculty residence. According to the GOK work codes, domestic staff must be provided with either live-in facilities, or the employer must pay a housing allowance.

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(ii) 72, Two-bedroom houses and 36 domestic staff quarters comprising of

1 living room/dining room/bedrooms (40)
1 kitchen (7.2)
1 bathrooms (5)
Circulation area and walls (7.8)
Gross area/building = 60 S.M.

1 room domestic staff quarter 15 S.M.

(iii) 97, Two-bedroom houses comparising of

1 living room/dining room/bedrooms (28)
1 kitchen (7.2)
1 Bathroom (4)

Circulation area and walls (5.8)

Gross area/building = 45 S.M.

(iv) 290 One-bedroom houses comparising of

1 Living room and bedroom (16)
1 kitchen (7.2)
1 Bathroom (4)
Circulation area and walls (4.3)

Gross area/building = 31.5

The total net area of living space (living room, dining room, and bed rooms) for the above houses is the minimum permitted by the Government of Kenya's Code of Practice for civil servants.

U. One Demonstration Nursery School* consisting of

4 classrooms (180)
2 Offices (24)
1 Toilet (18)
1 Cleaners' cupboard (4)
1 Store-workroom (12)
Covered, open play area (80)
Circulation area and walls (20)
Total building area 338 S.M.

*The purpose of the nursury school is to provide practice teaching and child care demonstration facilities for the Home Economics students.

4. Specification of Building Construction

(a) Renovation existing buildings: In addition to various building systems which will require upgrading as noted in Section 2 above, floors and walls of existing buildings will be repaired and re-finished as necessary.

(b) New Buildings: All new buildings are designed to blend with the existing buildings and will be limited to one and two story structures with pitched clay tile, corrugated iron sheet, or asbestos roofs. The designs are simple, insuring easy maintenance and the maximum utilization of locally available materials. Building materials which are not of local source and origin will be procured from eligible source countries.* The major building materials and equipment which will be procured from eligible source countries are: Sanitary fittings, light fittings, hardware, fire fighting equipment, generators, telephone equipment, water pumps, cold room equipment and water treatment equipment.

According to Kenya's seismic zoning map, the site is located in Zone VIII. The possible effects of an earthquake on buildings in this zone are as follows: "Damage slight in specially designed structures; considerable in ordinary buildings with partial collapse; great in poorly built structures."

To withstand likely earthquake tremors the following construction methods will be generally adopted: Mass concrete strip foundations and over-site slabs with nominal reinforcement; stone walls reinforced at each horizontal bed joint above slab level; continuous reinforced concrete ring beams incorporating any lintels required along the perimeter of the building, together with reinforced concrete tie beams over internal load bearing partition walls.

Specifications for new buildings are divided into three types as described below:

(i) Type 1: One-story load bearing walls for the classrooms, lecture rooms, staff houses, library, sanitorium, laboratories, animal health complex, butchery and estates building.

(a) Foundation: Nominally reinforced concrete strip footing, 230 mm (9 in.) thick stone sub-structure walls and broken stone hardcore, compacted and treated with anti-termite chemical spray for filling under the slab.

(b) Slab (Floor): Nominally reinforced over-site concrete slab finished with cement screed and woodblock or PVC tiles or quarry tiles.

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* AID Geographic Code 941

(c) External walls: Damp proof course on slab under dressed external stone walls with nominal reinforcement in each bed course.

(d) Ring beam: Reinforced concrete ring beam incorporating lintols around perimeter of building and over internal load-bearing walls.

(e) Internal walls: Non-load bearing walls to be 100 mm (4 in.) thick, lightweight concrete blocks and load bearing walls to be 150 mm (6 in.) thick concrete blocks.

(f) Internal wall finish: All walls to be rendered with cement-sand mortar and finished with gypsum setting coat. Walls to be painted with emulsion paint.

(g) Windows: Metal casement windows in timber subframe or adjustable glass panels. Window openings to have quarry tile sub-cill and rendered reveals externally.

(h) Doors: Flush wood doors, steel casement doors, or aluminium sliding doors.

(i) Roof structure: Timber trusses with battens and clay interlocking tiles. (One large span in the library to have steel trusses

(j) Ceiling: Timber joists and termite treated bevel-edge insultation board except for the library. The library will have acoustic ceilings.

(ii) Type 2: Two-story load bearing walls for the Halls of Residence and Administration building. Specifications are the same as Type 1 but with the following additional items:

(a) Second story floor: Precast concrete planks with nominal reinforcement and structural insitu concrete topping or in-situ reinforced concrete.

(b) Soffits of concrete floors: Painted with emulsion paint except in the Administration building where they are to be plastered and painted.

(c) Stairs: Precast or insitu reinforced concrete with granolithic or terrazo finish.

(iii) Type 3: One-story frame buildings for the dining hall, kitchen, transport department, and warehouses. Specifications same as Type 1 except for the following changes:

(a) Foundations: Reinforced concrete footings under columns with reinforced concrete ground beams under infill walls.

(b) Columns: Hollow section steel columns or reinforced concrete columns.

(c) External and internal walls: Non-load bearing external and internal walls of dressed stone and/or concrete blocks.

(d) Warehouses to have corrugated galvanized iron sheet walls and roof, and concrete floor finish.

(e) Transport building to have corrugated asbestors roof finish and concrete floor.

5. Equipment and Furnishings

Technical Consultants International (TCI), engaged by the College under the Mutiso Menezes contract, carried out a detailed survey of existing equipment and furnishings and in consultation with Department Heads, evaluated requirements for additional equipment and furnishings for the proposed increase in the student population at the College. Existing equipment and furnishings will continue to be used except where such items have been deemed to be unserviceable. A detailed list of equipment and furnishings recommended by TCI for all departments is included in the "Master Plan Study Report" prepared by Mutiso Menezes International. For the Agricultural Engineering Department, the equipment recommended by Prof. G.E. Stringham, "Agricultural Engineering Expansion Program," forms the basis of the procurement list.

The equipment list can be broken down into two major categories:

(a) Academic Use: Includes equipment required for instructional and demonstration purposes, such as microscopes for laboratories and farm tractors for agricultural production and engineering courses.

(b) Administration Use: Includes equipment required for the Administration Department, such as calculators, typewriters and other office equipment; the Transport Department, such as buses, cars and four-wheel drive vehicles; and maintenance equipment required by the Transport Department and Estates Department. The College depends upon its vehicles for transporting students to the more distant parts of Tatton Farm, Ngong Ogeri and Chemeron Range for demonstration and teaching purposes. Minor maintenance of vehicles will be carried out by the Transport Department and the cost estimate for vehicles makes allowance for the procurement of spares valued at 10 percent of the total cost of vehicles. Major repairs will have to be carried out by local agents of the manufacturers, either in Nairobi

or Nakuru. All equipment will be procured from eligible source countries, except for vehicles. Source and origin of vehicles financed with loan funds will be the U.S. Equipment for the Estates Department will be used for the maintenance of all buildings and infrastructures.

All furnishings, such as desks, chairs, tables, and mattresses, etc. for all proposed new buildings will be purchased locally by the College as part of the GOK contribution. In addition, the GOK will finance the cost of two saloon cars. AID will purchase with grant funds furnishings for U.S. technicians, and the title to the furnishings will be with the GOK. The AID financed furnishings will be purchased through a procurement agent, such as AAPC., Inc.

6. Infrastructures (External Works)

a. Water Supply System:

The four present water supply to the college, for human consumption, is from 4 boreholes equipped with electric submersible pumps. From the boreholes water is pumped into concrete storage tanks and an open PVC-lined reservoir. The yield of each borehole is as noted below:

(cubic meters per hour)

Borehole No. 1	3.6	
Borehole No. 2	8.2	
Borehole No. 3	10.9	
Borehole No. 4	18.2	(not operational, but expected to be in operation soon)
Total:	40.9	

If all boreholes were in operation and the pumps were running 16 hours a day, the yield of the existing system would be 655 c.m./day. The college population, consisting of students, teaching staff, administration and maintenance staff and their families, is estimated at 4,690 people. Based on an average consumption of 145 litres per person/day, the total water demand is approximately 680 c.m. per day. In addition, borehole No. 5, situated near a stone quarry, is used by the college in emergency cases only since the piston pump is driven by a diesel engine which is not reliable. Water from this borehole is used for cattle and sold to a nearby village. The College has started drilling one more borehole (No. 6) to increase the total yield. The storage capacity of the existing 13 concrete tanks is 1,070 c.m. and the reservoir is 455 c.m. The water is not treated except for chlorination in one storage tank (86 c.m.). The reticulation system has been developed over the years according to need without enlarging the size of main pipes. This has resulted in generally undersized pipes for the present load. Some sections of the main pipe have completely deteriorated.

With the increase in the college enrollment, the total population of the college will be 7,032 and the water demand 1,020 c.m. per day. Therefore, the expansion of the water supply system is essential to meet the expected demand.

The quality of water from one borehole was recently tested and it was found that the water was basically of good quality but was unsuitable for human consumption because of a high content of flouride, 7.8 mg/litre compared to a safe limit of 0.8 to 1.0 mg/litre recommended by the WHO.

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According to experts, borehole water in the Njoro area generally has a high flouride content, except in some cases when the borehole is drilled near the Njoro River. Three possible alternatives for the water supply are discussed below:

(1) Expansion of existing borehole supply system: According to the Ministry of Water Development, the chances of striking water in the area are good. If borehole No. 5 is equipped with a proper pump and borehole No. 1 is abandoned because of very low yield, the total capacity of boreholes 2, 3, 4, and 5 is estimated at 770 c.m. per day assuming 16 hours of pumping every day. If the yield of borehole No. 6, presently being drilled, is 10 c.m./hour, it may be necessary to drill only one or two more boreholes to meet the expected demand of the College. In addition, it will be necessary to construct storage tanks and a treatment plant for the high flouride content. Two processes are currently available to treat for the high flouride content: reverse osmosis and ion exchange. The capital cost for a reverse osmosis plant, including the cost of auxillary plant (aeration and sand filters), and the annual recurrent cost are less than the ion exchange plant, therefore, the reverse osmosis plant is preferable.

(2) Njoro River Supply: The quality and the quantity of water available from this source needs further investigation. The Ministry of Water Development is prepared to issue a permit to use the river water, but there is no assurance that a sufficient quantity of water will be available throughout the year or during drought years. According to the College staff, the river has very little flow during January and February. If the river supply proves satisfactory and dependable, the capital cost would be nearly half of the borehole water supply system. The feasibility of using the river water supply for human consumption will be fully investigated during the final design stage.

(3) Borehole near Njoro River: According to the Ministry of Water Development, if boreholes are sited near Njoro River, it is likely that the flouride content would not exceed the recommended maximum. The Ministry has designed a scheme to supply water to Njoro town from boreholes sited near the river. The feasibility of siting new boreholes near the river will be investigated during the final design stage.

The cost estimate for the water supply system is based on alternative (1), but alternative (2) and (3) will be fully investigated during the design stage. The cost estimate includes the cost of new distribution system and additional storage capacity of 1000 c.m.

b. Sewerage

The existing system is a combination of oxidation ponds and septic tanks. The two existing oxidation ponds are approximately 70 meters by 30 meters each and excavation for a third pond of the same size has been completed. The main sewer line is 150 mm diameter with manholes spaced approximately 30 meters apart. It is proposed to connect as many new buildings as possible (buildings which are isolated may be not connected) to the oxidation pond system. Existing buildings which are close to the Njoro River and have septic tanks will be connected to the oxidation pond system. The existing three ponds will be enlarged so that the area of the one faculative pond is approximately 16,000 square meters and the two maturation ponds is approximately 6,000 square meters each. The total retention time is 34 days.

c. Irrigation

At present the college uses a sprinkler irrigation system during dry seasons for the horticultural field. The source of water for this system is the Njoro River. It is proposed to expand the system to a limited extent in other fields for students' demonstration purposes.

d. Storm Water Drainage

Unlined drains will be constructed in areas which are not presently properly drained, mainly the roads.

e. Electrical Supply System

The college is presently supplied electrical power by an 11 kV high-tension overhead line from a transmission transformer station in Nakuru. The 11 kV line has sufficient capacity to carry the estimated load increase for the planned College expansion. The power is supplied by the East African Power & Lighting Company Ltd. The distribution system is basically the property of E. A. P. & L. who carry out the maintenance. A few stretches are private lines, owned and maintained by the College. The consumption by the College is metered at six points and user-charges paid to the utility company are based on different tariffs favoring different kinds of consumption (domestic, street lighting etc.) To meet the increased load demand, the on-site distribution system will be upgraded by erecting new substations and a ring main 415 volts system. The ring main will partly utilize one existing line plant. The cost estimates take into account the need to upgrade some existing distribution lines and the construction of new distribution lines to new buildings and water boreholes. New street lights will be provided only in areas which are frequently used by students and which are considered security risks. 20 KVA emergency generator will be provided in the Assembly Hall biology and the Dining Hall/kitchen because the supply from Nakuru is frequently interrupted during rain storms.

f. Telecommunications

The college is connected with three lines from the manual Njoro town exchange. The Kenya Posts and Telecommunications expects to replace the manual exchange in Njoro with a 500 line automatic exchange in 1981. Under the college expansion program, it is proposed to install a PABX system with 100 extension and 10 exchange lines. The equipment will be purchased from a private supplier, but the Kenya Posts and Telecommunications will be responsible for individual connections and maintenance.

g. Roads

The existing network of bitumen and gravel surfaced roads provides access to academic buildings, living areas and farms. Two roads, from the main entrance, one leading to the Administration Department and another to the students living area, are bitumen surfaced but are in poor shape. With the proposed construction activity on the college grounds, the road is expected to deteriorate further. It will be therefore necessary to repair and resurface the roads when the construction activity is completed. The length of these two roads is approximately 2,800 meters and they are 4.5 meters wide. In addition, approximately 3,650 kilometers (3.5 meters wide) of new gravel surfaced roads will be constructed in order to provide access to the new staff housing site and to realign the existing ring road near the biology and chemistry buildings.

SUMMARY: STATUS OF ATAC REPORT

The ATAC Manpower Report was reviewed in draft by the GOK in December 1977 and with regard to the recommendations the following actions are being proposed or considered by the GOK:

Recommendation	Status
University of Nairobi-Faculty of Agriculture	
1. Greater intake	World Bank and AID projects to provide for greater intake.
2. Taught PhD program	Under consideration.
3. Credit for diploma work	In process.
4. Agricultural Education program	Under consideration
5. Natural Resources program	Under consideration
6. Range Management program	Being planned by GOK.
7. Home Economics program	Being considered by GOK.
Egerton College	
1. Greater intake, 1,550 capacity	Component of ASSP.
2. Credit for certificate work	Approved.
3. Natural Resources program	Not accepted at this time, to be reviewed.
4. Decrease generality of program	Curricula being reviewed.
5. Reduced faculty teaching load	Contained in revised staffing pattern under ASSP.
Certificate Institutes	
1. Establish new AHITA at Ndomba	World Bank loan component
2. Embu and Bukura expanded to 660 students each	World Bank loan to finance expansion to 400 each.

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Recommendation	Status
3. Coastal Institute	ASSP component.
4. Naivasha Dairy School to offer certificates	Being planned by MOA, expected to be in new Five Year Plan.
5. Athi River expanded	MOA currently undertaking expansion.
6. Outreach program at Bukara	Responsibility of World Bank loan.
7. In-service staff training	Provided for in World Bank loan.
Farmer Training Centers	
See ATAC Report for recommendations	Recommendations under consideration by GOK but not contained in either AID or World Bank activities. MOA proposing major investment in new and existing small scale FTCs.
In-Service Training	
See ATAC Report for recommendations	ASSP providing training grant to MOA which will fund portion of in-service training. GOK currently reviewing entire in-service training program.
Management Training	
See ATAC Report for recommendations	GOK recently appointed high-level commission to review role of Kenya Institute of Administration. Directorate of Personnel Management seeking donor assistance for management training activities. ASSP training grant includes management training for MOA staff as one of eligible fields.

Recommendation	Status
Manpower Utilization	
1. Improve promotional opportunities and revise scheme of service	MOA recommending revised personnel system. Scheme of service may soon be revised.
2. Revise grade/posting relationship or compensate for increased managerial burdens	Under review.
3. Revise orientation/induction program	Under review.
4. Supplemental training in planning, budgeting, management skills	Under review as portion of KIA in-service training review.
5. Administrative matters of disbursements, transport operations, housing, tendering to be reviewed and streanlined.	MOA senior working committee to be appointed.
6. Improve Research-Extension-Farmer Information flow.	MOA proposing new Rural Development Support Communication Center and National Agricultural Documentation Center.

Agriculture Manpower Survey - Methodology

a. Survey Uses and Limitations

1.) The Establishment-Based Survey

Numerous methods of manpower survey and demand forecast methods are reported in standard texts, and variations abound in practice. Basically, there are two pure models and one which integrates both approaches.

The first is a projection method. It projects past trends into the future. In a developing sector where changes are expected to occur relatively quickly, this method is unsatisfactory as it may perpetuate existing shortcomings and not respond to emerging activities or policy priorities of the sector.

A second method, the target-oriented approach, essentially sets policy objectives to be achieved and then determines organizational structures, manpower qualifications and numbers estimated to be required to reach those targets in the planned time span.

The terms of reference of the ATAC study specified that current and future manpower requirements be determined by interviewing administrators, managers and executives as well as policy makers in the agricultural sector. This is called an establishment-based survey. It combines the two approaches above, except that it requires the key personnel of programs and projects management, rather than an analysis or planning team removed from program operations, to integrate known target needs and likely future requirements.

One of the important aspects of this survey methodology is that it does not touch on the structure and organization of manpower deployment or policy changes. It assumes that the national economy and the agricultural sector do not significantly change over the forecasting period. That is to say, the relationships among agricultural products remain fairly stable and that efficiencies in services improve only gradually although the sector may continue to develop and grow at a rate as in the past.

Similarly, no revolutionary changes in overall agricultural policies, technological breakthroughs or other changes in the agricultural sector sector will require manpower of different competence and composition than exist now. The establishment survey does clearly indicate changes in over-all required education levels and in proportions of professional specialists needed to adapt staffing to recent and anticipated changes. It does deal with the manpower requirements of future programs known; it does not take into account programs and policies not known to the respondents.

known; it does not take into account programs and policies not known to the respondents.

Because service delivery structure and economic and policy structures are perceived to change slowly or may be perceived as being beyond the control of the respondent, the manpower response to future needs is largely in terms of numerical staff increases rather than in improvement of the efficiency in the information delivery, guidance or management system. Similarly, changes in the proportions among educational levels and among specialist categories are estimated to meet service and production targets without assumption of a significant change in structure or efficiency of the delivery system.

Here, the establishment based survey goes along with the fact that large organizations and large sectors change only slowly. But since the establishment-based survey reflects the perceptions and judgements of key executives and appointed government officials who manage significant units of the sector, it provides an important input into the judgement of policy makers whose responsibility is to improve the performance of the sector.

2.) Interpretation

The survey results represent the best estimate of manpower needs as judged by program management and business managers for fulfilling responsibilities as perceived by them within current conditions and outlooks. Because these estimates are not constrained by budget considerations, they are attuned to program objectives within this environment both in quantity and in the ratios between educational levels and professional specialities.

Because of their unconstrained nature the apparent demand will in general be higher than probable budget allocations will make possible. However, since they reflect program needs most directly, they can be utilized as a basis for policy determinations on types and numbers of personnel who must be trained to achieve certain objectives. The survey in essence provides an effective short-cut to determining manpower needs without analyzing in detail reasons, motivations, programs and policies under which requests were made. Even if it was possible to do so, it would be likely that the same results would be produced.

Apart from the detailed demand structure the survey provides, the data is most useful because of the questions that must be raised when comparing demand with the staff in-post which reflects the application of budget limitations and other factors. Does the indicated shortfall result from budget deficits alone, or does it imply unclear objectives, overly ambitious targets, unsuitable project or program designs, inefficient

operating methods, or inadequate staff support? Can programs or operating methods be altered so that existing or prospective staff can more closely fulfill their responsibilities? Can the work be more precisely targeted so that existing and prospective staff can accomplish it? Can efficiency of staff be improved by providing better logistic and administrative support?

When the consolidated base data of the public sector is constrained at anticipated budget levels, it provides a reliable basis for estimating training requirements for the agricultural sector. The funding constraint assures that no more personnel will be trained than can be absorbed by the sector; while the utilization of the proportions between specialities identified by the survey assures that the numbers who are trained at each output level will be needed in those proportions.

Since the survey was not intended to deal with policy issues, it is not directly possible to convert its demand and forecast figures to fit a different policy and service framework. That can only be accomplished by estimating the impact on manpower requirements of a specific policy change and adjusting the survey data to that estimate.

Manpower requirements for activities connected with policies and programs that were in effect at the time of the survey are included in the demand figures. For example, additional manpower requirements for the implementation of IADP programs are included for those districts in which the program was being implemented or known to be scheduled.

In the private sector present requirements reflect the current shortfall in professionals needed to optimize business opportunities. Estimates for the near future were based on economic outlook as seen by the industry at this time. Estimates by businesses are likely to be on the conservative side. There is a hesitancy to overcommit or to commit at all unless business opportunities can clearly be identified. In addition, even though the survey was confidential and respondents by the large gave detailed and open accounts, there is a natural reluctance to reveal expansion plans.

3.) Accuracy and Consistency

The survey instruments and procedures were field tested before the actual survey was mounted. No provisions were made for a sample re-survey for ascertaining accuracy of responses through repeated interviews. In light of the survey procedures it is probable that those interviewed would identify similar needs for manpower to respond to objectives which were well recognized at the time of the survey.

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b. Objective

The objectives of the survey were (1) to determine the numbers of agricultural professionals and sub-professionals which the agricultural sector of Kenya will require by 1983 and by 1988 in addition to those in post in 1977; (2) to determine the efficiency with which the agricultural manpower is currently utilized in the Ministry of Agriculture, and (3) to determine the status and effectiveness of training institutions.

The survey was designed to collect a set of manpower demand data unconstrained by budgetary limitations. The only constraint on the demand figures is the professional judgement of administrators, managers and executives in MOA headquarters, provinces, districts, commercial and private industry as to the number and type of professionals they themselves require to fulfil their responsibilities, optimize farmer support services or take advantage of business opportunities. Establishment-based manpower surveys yield characteristically higher demand data (in the public sector) than can usually be funded.

Application of successively more stringent budget and programmatic constraints would have forced respondents to choose priorities. For instance, instead of requesting a general agriculturalist and a farm management specialist, both of which are needed, a DAO might have had to choose between one and the other. This procedure could have altered demand ratios between specialities and to a lesser extent between educational qualifications (salary grades). This procedure was not applied as it is held that at this stage of Kenya's agricultural development this type of program and hence manpower subject priority should be set by the Central Government in conformance with national production priorities, rather than at the operating level. The unconstrained survey estimates provide the Central Government policy makers with an indication of the trade-offs involved in such manpower allocations.

c. Survey Mechanism

1) Instrument

A specifically designed questionnaire was utilized to collect and record information. Data was obtained through interviews with top and intermediate-level officers, executives and managers in the public and commercial agricultural sector.

Survey questionnaires were designed to collect both quantitative and qualitative information. Quantitative data solicited covered current personnel in post, their educational background, terminations, retirements, and current (1977) and anticipated staff requirements for 1983 and 1988. This information was collected by thirteen agricultural specialities and eight managerial and research levels:

- General Agriculture
- Agricultural Economics
- Horticulture
- Food Technology
- Home Economics
- Agricultural Education
- Land and Farm Management
- Agricultural Engineering
- Range Management
- Animal Husbandry
- Dairy Technology
- Veterinary Medicine
- Animal Health
- Executive
- General Manager
- Technical Manager
- Loan Officer, Accountant
- Sales and Marketing Representative
- Research Scientist
- Laboratory Technician
- Agronomist
- Other.

Data on these job categories were collected at four educational levels: Certificate Holders, Diploma Holders, Bachelors, and a group containing post-graduates, Masters and Ph.D. holders. This format allowed for four times thirteen, or 84, response categories with a provision for any special cases not covered.

The qualitative information included an assessment of the adequacy of academic training of staff relative to job requirements, the need for improvement or changes in curricula, the need for either specialized or general educational background in different job categories, adequacy of in-service training and of supervision (management), adequacy of logistical support, effectiveness of job performance, performance incentives and disincentives, and the current and potential role of women in agricultural extension.

The questionnaire consists of six forms which address the following information areas:

Form I. Turnover: A listing of staff by grade or job position title and information on recent staff movements (turnover) and reasons for them;

Form II. Agricultural manpower demand: Numerical listing of in-post and required staff by educational levels and professional speciality for intervals of 1977-1978, 1979-1983, and 1984-1988, and interpretative staements;

Form III. User evaluation of present manpower training and job performance;

Form IV. In-service training;

Form V. Staff supervision;

Form VI. Logistical support;

Form VII. Professional and sub-professional women in agricultural manpower.

Most of the questions applied both to the public and to the private sector, but some only to one or the other. They were administered accordingly.

2.) Respondents

To obtain demand projections, perspectives on education and training, and views on utilization issues, three groups were chosen for interviewing. The first consisted of key supervisory management personnel in the public sector who would be able to give authoritative information for their organization unit and its sphere of responsibility. District Agricultural Officers, Provincial Directors of Agriculture, and Headquarters Division Heads and Directors were selected as those best placed to speak about the range of affairs under examination.

The second group of respondents consisted of Technical Officers and Technical Assistants who are principal field employees executing agricultural development programs and projects. They were surveyed on the adequacy of

their training, supervisory practices, supplemental in-service training, and conditions of service. They also filled in job function lists so that their daily work role could be assessed and compared with their training backgrounds.

The third group of respondents consisted of managers in the private and parastatal bodies. Assessment of both quality and quantity of their manpower demands over the coming twelve years was the principal topic but opinions on the conditioning economic outlook were also solicited. Together, these individuals carry operating policy and program responsibilities, supervise personnel, operate the administrative support machinery,and have practical business and field perspectives.

3.) Selection of Establishments

Establishments were selected using the criteria given in a.1. above. Accordingly, the following were selected for coverage by the survey:

(a) Ministry of Agriculture (MOA). All divisions.

(b) Other Public Sector (OPS). Of all other ministries, eight were found to have established positions for agriculturally trained staff. They are:

Ministry of Cooperative Development
Ministry of Lands and Settlement
Ministry of Water Development
Ministry of Home Affairs
Ministry of Education
Ministry of Tourism and Wildlife
Ministry of Finance and Planning

A classification problem was posed by the definition of Parastatal Bodies (status 040), Public Firms with Majority Control by the Public Sector (status 080) and Public Firms with Minority Control by the Public Sector (status 210). Since these classes are in constant change, it was decided that all regulatory agencies and commercially non-active bodies should be subsumed under 'Other Public Sector'. All other public firms are under the 'Commercial Subsector" which includes public, private, and mixed firms. Any misclassification would be minor and is, in any case, cancelled in the grand total demand estimate.

Seventy-five commissions and regulatory boards were interviewed.

(c) Commercial Subsector. Seventy-six commercial firms were interviewed.

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(d.) Three International Development Agencies were interviewed in addition to the Planning Departments of the Ministry of Agriculture and the Ministry of Finance and Planning to obtain an overview of the status of current and planned programs and projects.

4.) Sector Coverage

(a) Ministry of Agriculture

- Headquarters. All departments of the Ministry were covered. In 1977, the headquarters had 270 individuals posted in the field which are directly under headquarter's jurisdiction. They are as follows: 44 AO's; 8 RO's; 7 AHO's; 95 AAO's; 21 ARO's; 11 AAHO's; and 84 AA's. A specific effort was made to avoid double counts from the headquarters and district surveys.

- Provincial Headquarters. Six provincial headquarters were visited and interviewed. The seventh, Garissa, returned a completed questionaire with supplementary information.

- District Offices. The survey team visited 30 district offices and in addition to the respective District Agricultural Officers, interviewed approximately 105 agricultural and veterinary officers and assistants.

Three district offices mailed in completed questionnaires; data for the remaining seven had to be estimated on the basis of interviews in neighboring districts, information from MOA headquarters and by drawing analogies with agriculturally and ecologically similar districts.

(b) Other Public Sector

Other Ministries. Fifteen division heads or directors were interviewed from the Ministries of Education, Lands and Settlement, Natural Resources, Tourism and Wildlife, Water Development, Cooperative Development, Home Affairs and Finance and Planning. Also interviewed were the Directorate of Personnel Management in the Office of the President and Kenya Institute of Administration.

Educational Institutions. Although educational institutions were included in interpretive surveys, their future staffing was not included in the survey results as it is functionally dependent on the demand and policies of implementation.

Regulatory Bodies. Twenty-five of thirty-one regulatory boards and commissions, or 80 percent, were surveyed. These bodies have a relatively small demand for manpower. They draw either on young graduates (and some diplomats) or from the ranks of highly experienced senior government personnel. The manpower pattern is very similar among the regulatory bodies, permitting ready expansion of the 80 percent sample.

(c) Commercial Sub-Sector

Public and Private Firms. Nineteen of 25 I.S.I.C.[1/] sub-sectors and five other industry groups appeared likely to employ agriculturally trained personnel. These twenty-four groups contain 390 firms. A preliminary sampling indicated that it was highly improbable that any firm with fewer than 50 employees would utilize specialized agricultural personnel, reducing the total field to only 130 firms. Elimination of firms in the type of retail or refinement activities that would have no use for such personnel reduced the probable group to 104, all of whom were contacted.

Seventy-six of the 104 firms were interviewed[2/] and the rest were sent questionaires. Twenty-four of the twenty-eight which were not interviewed did not return the questionnaires. A follow-up by phone calls revealed that they did not now employ nor anticipated future employment of the type of agricultural personnel included in the survey.

Given the extensive coverage of the sector, it is probable that the survey accounted for more than 95 percent of the specialized agricultural personnel employed in the commercial sub-sector and at least that percentage who now believe they might employ such staff in the future. It was found that only 28 firms employed trained agricultural staff. This is a very small number for a country with an agricultural base as large as Kenya's and implies serious underdevelopment of the agricultural commercial and secondary sectors.

1/ International Standard Industrial Classification
2/ For a list of all firms covered, see Appendix C of the ATAC manpower report.

(d) Other Data Sources

Complement Control Data

Personnel data were compiled from MOA Headquarter's Complement Control files for comparison of the field survey data. The comparison involved a conversion of positions and grade levels to the educational level classification used in the survey. It was not possible to compare data on a provincial level; however, MOA totals from the survey and from Complement Control were compared.

A 30 percent sample of the provincial personnel reports to Complement Control was utilized to determine retirement rates for the different grades.

Central Bureau of Statistics

Through the cooperation of the Directorate and staff of the CBS it was possible for the study team to obtain unpublished and specialized data which made it possible to survey the private sector in a much more precise manner than would have been possible otherwise.

Similarly, data excerpts from unpublished files allowed the construction of growth rates which were important for verification of rates established from the survey data and utilized in the projections.

Eonomic Surveys and Statistical Abstracts were consulted for general trends of the economy and of the agricultural sector.

(e) Data Treatment

Equivalency of Educational Levels

A major objective of the manpower study is to determine the current and future need for academically trained agricultural manpower so that output capacities of the agricultural educational system can be adjusted accordingly. Consequently, data are presented by educational levels and agricultural specialities. This involves a conversion of public and private job categories. The following conventions were adopted:

i. Public Sector. All positions which are likely to be filled in the future with graduates were counted under the BSc+ 1/ category. This includes all Agricultural Officers I and II in the salary grades J, K, and above. Positions of Technical Officers I, II, and III in the pay scales G, H, J, and K are

1/The designation BSc+ is adopted throughout the report to include bachelors, postgraduates, masters and Ph.D.s.

treated as diploma holders whether or not each incumbent possesses that qualification. All Technical Assistants in grades E and F are treated as certificate holders.

Commercial Sector. A similar convention was applied to the commercial sub-sector. Many executive positions in the commercial sector are filled with persons whose competence rests on prolonged experience and knowledge of the particular business branch, and there is no equivalence of job categories with educational degrees. Guidance was taken from industry itself. Positions which will be filled in the future with graduates, diploma or certificate holders are listed under those categories.

(f) Wastage

Retirement

Training requirements are determined by expected manpower demands as well as by losses from the agricultural manpower sector. These losses consist of retirement, deaths and persons leaving for employment outside the sector.

Retirement rates were calculated for the different professional grades from a 30 percent sample of the provincial personnel reports as they are made available to MOA Complement Control. These were checked against an independent calculation, based on the average length of service. Before rates were finalized, they were discussed with Complement Control and adjusted where required. Rates for the private sector are derived from interview information.

Retirement rates vary considerably from job grade to job grade and from specialization to specialization depending on entry age as a function of education and on the year a speciality, program or job category was established. Rates are also affected when staff has been retained beyond retirement age resulting in superannuation or because the cadre is so young that individuals will not reach retirement age in the study period under consideration.

Rates also vary between the periods of 1977-83 and 1984-88. These rate changes are to be expected as long as the public and private sector expand and as long as new disciplines are being phased into education and service.

Other Sectoral Losses. The objective of the study is to determine training requirements for the total (public and commercial) agricultural sector. Because of the total sectoral objective the only wastage rates of significance are those of exits from the agricultural

sector as a whole. Other rates describe merely intra-sectoral transfers and have no influence on the over-all demand. In effect, the public sector will only be able to meet its requirements when the demand of the commercial sector is met since the private sector's demand is limited only by its estimate of an individuals marginal utility and not by any fixed budget.

There are minute losses from both the public and the commercial sectors to private, non-commercial farming. For convenience of computation losses other than by retirement have only been computed from the commercial sector mostly at a rate of one half of one percent.

Rather detailed intra-sectoral transfer rates were collected in the course of information compilation. These rates are presented in Appendix C and wastages from some sub-sectors of interest are calculated there. Rates applied in final demand calculations are to be found in Appendix D-2 of the ATAC manpower report.

(g) Relationship Between Felt Need and Effective Demand

The requests for additional specialized agricultural personnel included in the survey data are the felt needs of program managers responsible for work performance. Taken together, all of these requests provide an estimate of need, or "apparent demand". This apparent demand is converted to "effective demand" only when funds become available to hire staff. In the commercial sub-sector such funds come from operating revenues which are conditioned by the state of the economy; in public sub-sectors they come from agency budgets.

The apparent demand represents need as seen by the program managers who use professional and subprofessional staff. It becomes effective demand only when the funds become available to hire the requested staff. An estimate of effective demand can be established by selecting a probable personnel budget level for 1983 and 1988 and then determining how many bachelors, diplomates and certificate holders could be employed under that budget, using current salary relationships and the ratios between the different educational levels requested in the survey.

Budget growth rates needed to establish the 1983 and 1988 levels are somewhat arbitrary since they will vary from year to year in conformance with a political-administrative process. Therefore, a high and a low growth rate was used to establish a range of effective demand.

The long term inflation-adjusted growth rate of the

MOA budget was 10.2 percent*, with more than three-fourths of this recurrent budget supporting personnel emoluments and benefits. It is improbable that an establishment as large as MOA can maintain such a large growth rate; therefore, 8.5 percent was set as a high rate. The low rate is the 7 percent growth rate established as a minimum target by the Ministry of Finance and Planning. Other Public Sector (OPS) agencies tend to be small and have a considerable autonomy over hiring personnel. The low rate has therefore been set at 10 percent, while the unconstrained request is the high rate. That is, with no constraint, the budget is expected to grow at that rate which would permit hiring of all requested staff. No constraint at all is applied to the commercial sector. Private sector hiring fluctuates with economic outlook and their projections of needs tend to be conservative.

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* Republic of Kenya. Request for Fourth World Bank Education Credit; Annex III/B2/3, footnote 7: "The trend in the annual budget vote for recurrent expenditure for the Ministry of Agriculture during 1961/62-1975/76 has been an average increase of 10.2 percent in constant currency (applying a GDP deflator of 30 percent for the period)."

Range Research

A. Range Research Priorities

The report, "Range Research in Kenya: A Technical and Organizational Plan for Future Range Research in Kenya," by D. J. Pratt and range research staff of the Ministry of Agriculture was prepared for Government in 1975 with assistance from the UK Overseas Development Ministry. The report is the most current, thorough and comprehensive statement of range research priorities now in existence. Direct-hire livestock experts assigned to the USAID, who are well versed in Kenya range matters, endorse the report's priorities and recommendations. Its recommendations for range research, much of which is adaptive in nature, are as follows, categorized by priority areas:

1. "Emergency" priority studies.

   a. Predevelopment surveys for areas scheduled for early development.

   b. Monitoring and evaluation of development units.

2. "Immediate" priority studies.

   a. Basic methodology needs to be developed in respect to:

      1) Determining range conditions and trends.

      2) Range survey and monitoring standards and methods.

   b. Systems analysis to show how pastoral arrangements can be manipulated and to identify the most critical areas for research.

   c. Social studies with reference to demographic factors, social-territorial organizations, dietary preferences, and socio-economic strategies and decision-making processes.

   d. Development of methods for the prediction of rainfall and drought.

   e. Economic studies in the monetisation of pastoral economies especially in Masailand, Samburu and the northern districts.

f. Plant studies centering largely on studies in grazing management, e.g., effects of mixed stocking, and varying rest periods. Other plant work is needed on the autecology of important rangeland plants and the development of improved methods for estimating productivity, especially browse.

g. Studies in livestock management to establish the levels of productivity that are attainable by better husbandry of the indigenous livestock.

3. "Urgent" priority studies.

a. Inventory areas needing rehabilitation.

b. Studies in on-going development programs to determine impact of specific inputs/innovations.

c. Studies in livestock marketing and in alternative drought relief strategies.

d. Environmental studies including rain infiltration and run-off and the evaluation of water spreading/harvesting methods.

e. Plant studies comprising assessments of primary production and related studies in bush-control.

f. Animal studies including:

1) Studies in animal ecology, particularly feeding behavior in wild and domestic animals.

2) Studies in the efficiency of forage and water utilization.

3) Studies in animal health.

4) Studies in genetic improvement, with emphasis on the genetic capability of the indigenous range livestock.

5) Studies in wildlife utilization.

4. Normal priority studies.

a. Economic evaluation and demonstration of integrated management systems is vitally important, but has to await results from other studies.

b. Studies in surface catchment design, aimed at improving the structural and ecological efficiency of water supply points.

c. Studies in reseeding, overseeding and plant establishment.

d. Studies in the domestication of selected wild ungulate species.

e. Studies in mechanisms of disease tolerance.

B. Proposed AID-Financed Research

AID-supported research is proposed to be carried out in plant and ecology studies (priority areas 2.f., 3.e., and 4.c. per the above), animal studies (priorities 2.g., 3.f., and 4.e.), and environmental studies (priorities 2.d., 3.d., and 4.b.). The research proposed for each subject area is described below:

1. Plant and Ecology Studies

Some research work has been done in bush control by fire, herbicides and grazing. However, work is required on inventorying the primary productivity of rangelands by vegetative type and condition, nutritional value, seasonal variation, and by bush as well as the ecological effects of bush control on the primary production and management of rangelands. Along with this the following studies are proposed:

a. Studies in ecology of important rangeland plants with reference to:

- ecological status, phenology and habitat variation;

- feeding value of important rangeland and plants, and

- physiological and morphological mechanisms of drought tolerance of promising range plant species.

b. Studies in reseeding, overseeding and general work on plant establishment, including:

- selection and evaluation of promising range grasses, legumes, shrubs and browse plants;

- seed production, bulking and vegetative production of promising range plants;

- reseeding methods for various sites in the country, and

- introduction and breeding of new plant material for range conditions.

This research area will benefit from and complement the already existing FAO/NORAD Grass Collection and Evaluation Project scheduled for termination in 1979. The FAO/NORAD project is engaged in collecting and establishing in a nursery range grasses, shrubs, browse plants and bushes. These various plants will provide the bulk of the material for the plant and ecology work of the USAID project.

2. Animal Studies

The Kenya Government/USAID research effort will attempt to address itself fully to the range animal, being the secondary resource of the range. Studies will be undertaken on the most appropriate pasture and livestock management systems consistent with maintenance of proper range conditions to ensure maximum range production. This is probably the most important aspect of the whole range research component in that it will seek the appropriate balance necessary for the economic utilization of the range. It will need inputs from both the plant and animal scientists. Studies necessary to determine appropriate management systems will be given highest priority.

Along with these studies the following relevant studies will also be undertaken:

a. Studies in grazing management with particular reference to the ecological effects of:

- stocking rates;
- rest periods;
- combination of animals of different feeding habits, e.g., cattle, sheep, goats and wildlife, and
- digestibility, intake and preference of livestock for various types of grasses and browse.

b. Studies in genetic improvement of range livestock as measured by such criteria as disease tolerance, reproductive efficiency, and meat and milk production. Previous records obtained elsewhere will be used for this study.

c. Studies in various livestock management practices and how they affect performance of range livestock. These include:

- watering regimes and shade effects;
- effects of, and possibilities for, supplementary feeding;

- production systems for producing animals for meat, milk, wool, draft and other purposes suitable for various range management systems, and

- limited nutrients available under range conditions, e.g., minerals and vitamins.

3. Environmental Studies

Precipitation is the most important single factor determining range productivity and particular systems of range management. It is, therefore, appropriate that studies be carried out on how to make the best use of limited range precipitation and, thus, to minimize the consequences of drought. Studies of such factors include:

- Rain infiltration and surface run-off and how such water could be harnessed for higher range productivity.

- Use of advanced data collection methods for prediction of rainfall and drought. Reliable weather forecasts would be particularly useful in efforts to keep livestock numbers adjusted in anticipation of rain or drought.

- Studies on the most effective methods of range rehabilitation, such as the use of mechanical treatment of soil surface, e.g., pitting.

- Studies on surface catchment design with particular reference to such areas as reservoir lining and silt trap structures.

Summary, Conclusions and Recommendations of the Management Study 1/ of the Agricultural Finance Corporation and the Evaluation 2/of the Agricultural Credit Project

A. Introduction:

Under the AID's terminating Agricultural Credit Project, USAID has provided technical assistance to the Agricultural Finance Corporation (AFC). As part of this assistance, USAID financed a managment study of the AFC and an evaluation of the Agricultural Credit Project itself.

Under ASSP, further technical assistance for the AFC is proposed. The proposed assistance "package" emerged from the findings and recommendations of the ATAC management study and project evaluation. The summary findings of both studies are reproduced here as background information for the Agricultural Credit Systems Support section of this paper.

B. Manpower Study - Agricultural Finance Corporation

For a Corporation less than 10 years old in its present form, operating in a developing country with thousands of borrowers, many of whom were and are unfamiliar with the concept of credit, the AFC has made tremendous progress. It has carried out Government policy, has made over 255 million shillings of loans, sustained relatively minor ascertained losses on those loans, built a creditable staff of over 400 poeple, established 33 Branch Offices and dealt with and been responsive to, a number of international donors. In addition, the AFC has operated the Guaranteed Minimum Return (GMR) program for the Government which, because of its rigid rules (not set by AFC) and lack of an easily enforceable collection policy, has been a frustrating responsibility.

The Management Study Team believes, however, that there are substantial opportunities for improvement which, if taken advantages of, will permit the Corporation to run more effectively and to absorb the stresses of expansion that lie ahead.

Much of the Senior Management of AFC has grown up with the business. They are skillful and have coped with the growth of the enterprise because of their intimate personal knowledge. They have seen the need for changes in organization and management approach, but apparently the pressing day-to-day needs have prevented these new approaches from being put into effect as rapidly as needed. They should not be put off any longer.

1/ Research Triangle Institute. Management Study of the Agricultural Finance Corporation June 1977 AID/afr-C-1144 W.O.7.

2/ Dimpex Associates, Inc. Kenya Agricultural Credit Evaluation - December 1977 AID/afr-C-1269.

The Management Study Team's overall analysis and suggested recommendations are:

1. The responsibility for the direction of the Corporation is divided between the Ministry of Agriculture and the Corporation Board of Directors. Moreover, the act of incorporation includes operational specifications and administrative details, such as the limitation on the General Manager's delegation of loan approval authority, that handicap effective administration.

Recommendation

Revise the Agricultural Finance Corporation Act:

a. Put full responsibility in the Board of Directors to determine policies of the Corporation, and

b. Provide that the Board shall not engage in executive or administrative functions, but shall delegate them to the General Manager under broad policy guidelines (see Section III A).

2. The General Manager has found it necessary to make many day-to-day operational decisions. Centering of this responsibility in him has two negative effects:

a. Because of his absence from office on official trips abroad to other parts of Kenya and on official leave, often unnecessarily, such operational decisions are delay

b. The centering of decision making does not give the General Manager an opportunity to test his staff, nor does it build up in them a feeling of confidence in their own ability.

The General Manager is aware of this problem and has attempted to overcome it but with limited success.

Recommendation:

The General Manager must delegate authority aggressively, he must establish written policies, and he must require performance and not do the job himself if a delegate fails to live up to standard. Instead, the General Manager should train and retrain, and if necessary provide outside professional management training seminars for his staff. This requirement should also be made for senior staff in turn and delegated downward under the same principles. Adequate back-up staff should be provided so that when a manager is absent for extended periods, his work is still accomplished.

As the organization grows, the General Manager's time must increasingly be devoted to policy, planning and management through other people, not to directing day-to-day operations.

Reorganize AFC to provide for three operating Divisions, each with a separate Head, reporting to the General Manager (see Section IV B).

3. The Team discovered an overwhelming mass of controls and cross checks and reviews within the Corporation designed to protect against inadequate performance or outright fraud. Strict controls are also presumed to be needed to protect the Corporation against fraud on the part of the farmers.

There is a serious compartmentalization within the organization, in the sense that many units (Departments, Sections) do their work without a sense of its relation to the goals of the Corporation as a whole. Sometimes this results in some part of the work not being done at all, and sometimes part of the work is duplicated and done by two units, all because the sense of corporate mission is not present.

Recommendations

a. Adopt a policy of requiring that each function be completed at the lowest level possible with spot checks for compliance at the higher level, rather than intensive review of procedural actions. Eliminate the many redundant, inefficient checks and balances and streamline the controls to make them cost effective. Adopt policies which would minimize conditions under which fraud would be perpetrated (see Section VI A).

b. Open up the operation by (1) full disclosure of Corporation policy and aims to staff (and training sessions to be sure they understand); (2) broad and timely dissemination of policy, staff, and organization changes through written material; and (3) frequent senior (and other) staff meetings to get input from staff and to disseminated, through discussions, information on new trends and policy.

c. Open up the building, have larger (more people) work spaces, replace wooden doors with glass--all designed to remove concept of secrecy.

4. Long-term planning on a formalized basis is weak. The Annual Financial Budget for the year beginning 1 April 1977 was not approved until 1 May 1977. The Budget was too general and did not form a basis for guiding the various departments, and planning is hampered by the accounts information not being available at the time it is needed.

Recommendation

Create a Corporate Development Group (Staff to General Manager) to develop information for the General Manager, and function as the senior staff to plan (see Section IV B).

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5. Branch offices were found to be engrossed in carrying out several loan schemes independently without integrating them into a total program. They had not been given (or if given) had not assumed, the responsibility of running the Branch as a full fledged part of the Corporation, performing fully the operational functions relating to farmers.

Recommendations

Make Branch offices fully functioning units performing all functions (except accounting) relating to borrowers, with the Branch office manager responsible and accountable for the performance of his office under written general policy directives. Include loan disbursement authority and substantially increased loan approval authority--say to K Sh 100,000.

Make Branch Office Managers responsible to their Area Managers--working in conjunction with the Credit and Finance Departments (see Section IV B).

6. While the Management Study Team found personnel policies generally sound, not all seem to be implemented effectively. Moreover, the growth in corporate activity, the competitive market for professional personnel and deficiencies in policy create the need for substantial improvement.

Recommendations

Conduct a complete job classification, job appraisal, and salary revision study by an outside professional firm. With the new policy framework provided by such a study, the personnel department will be able to keep up more completely with the day-to-day volume of work.

7. The donors of loan funds often require AFC to have a specific organizational structure which will enable the donor to conveniently monitor AFC and account for their programs. This requirement causes constant redirection of the organization within the Corporation.

Recommendations

Build the Corporation to a state of efficiency so donors will trust it to accomplish donor aims within the current organizational structure. Use more imaginative accounting. For example, maintain separate donor funds by internal accounting procedures rather than by establishing and maintaining separate bank accounts.

8. The Guaranteed Minimum Return program, operated for the Government is a major activity of the Corporation. Many problems are attributed to the program such as:

a) It is by nature seasonal--most funds need to be disbursed in a four-month period.
b) Its rigid requirements--set by the Government not AFC.
c) Its lack of strong collection authority--ultimately exercised not by AFC but by the Government; the latter purportedly taking 4-5 years, yet infrequently resulting in collection.

d) Its unclear and allegedly inadequate reimbursement procedure to AFC. No one at AFC could provide documentation to the study team.

e) Its requirement that AFC sign its own note to raise funds. While such a note is guaranteed by other Government organizations, it appears to be a primary obligation of AFC--but does not appear on the balance sheet.

Recommendations

a. Attempt to provide greater input for drafting of regulation governing loan making, disbursement and collection.

b. Determine more accurately the cost to AFC of operating GMR and renegotiate payment for services to reflect that cost.

c. Clear up responsibility for raising of funds--to determine just who has liability.

d. If above cannot be settled to AFC's satisfaction, try to have GMR handled by some other agency.

C. Agricultural Credit Project (No. 615.11-140-148)

Conclusions

The terminating Agriculture Credit Project while having a number of shortcomings in design and implementation has, to a substantial degree, achieved stated project goals and made a distinct contribution to the institutional development of the Agriculture Finance Corporation (AFC), particularly in its branch operations. It is doubtful if the present level of lending by AFC would have been achieved or could now be sustained were it not for the technical specialists and the training of participants which have been provided through the project. There are residual elements in the project, including both the training of several more participants and continuation of the services of three technical specialists to the conclusion of their current contracts. These are important items and should go forward.

Detailed evaluation of the project and its component parts will be found in later sections of this report. However, at this point, the team feels it is appropriate to comment on several matters which bear heavily on the future viability of the AFC and the ability of the organization to cope effectively with enlarged credit demands which certainly will be placed against it.

Accepting and applauding the greatly expanded level of financing is AFC and the strong move toward providing a branching system into the countryside with increasing services to customers at local levels, the

team feels that AFC is reaching a critical juncture in its development. The recently completed Management Study of AFC treated a large number of matters dealing with organization, business operations, personnel management and overall top management methodology and approach. We strongly concur with the recommendations of the Management Study team and urge the Government of Kenya and AFC to quickly complete their review of the report and proceed with full implementation of the recommendations. Recognition is given to the fact that a number of recommendations concerning operational matters were already in the planning stage by AFC or are now in process of implementation. Policy items such as organizational structure and suggested amendments to the Agricultural Finance Corporation Act have not been placed under formal study.

The difficult problems presently confronting AFC stem quite directly from the very rapid growth in lending to small farmers which was not accompanied with fully adequate programs for farmer credit education, loan approval procedures, loan supervision, credit review functions or operations to correct deficiencies in those areas. Indeed, the first fullscale formal credit review of an AFC branch has just been completed. It probably will be another nine or ten months before all branches have been reviewed and only at that time will management have its first real evaluation as to the use of loan proceeds by borrowers, quality of loan portfolio and exposure to potential loss. As the reviews progress however, management should move strongly to correct deficiencies as they become known and strengthen weaknesses in branch operations on an individual basis. Other on-going programs in AFC such as internal audit, improved methods of loan disbursement and collection, training, computerization and development of a management information system are vital support items to the overall operation and must be pursued diligently. Most importantly, the team believes the singular approach to management as now practiced in AFC will quickly be overtaken by the increased growth of the institution and ultimately can strangle its ability to function effectively. It was not at all clear to the team how AFC would function administratively were it to be deprived, for whatever reason, of the services of its general manager. The team could not observe any automatic fail-safe device to insure continuity of effective experienced management of AFC in the absence of the present general manager. We urge the board of directors and management to take this matter under early study with a view of broadening the management base to include a deputy general manager, an assistant general manager for administration and a national level coordinator of area manager activities.

The team is aware that there are alternate approaches to the question of continuity in the management of AFC. We are more concerned with establishment of a sound organizational structure than with the precise measure in which that job is accomplished.

The team believes that the character of AFC as an institution dealing with credit to the commercial sector of agriculture on a collateral basis should be maintained. There is an apparent large and growing demand in this area and AFC should urgently shore up its capabilities to meet this challenge. Beyond that, AFC should seek as an on-going venture to "reach out" into the non-commercial sector with imaginative programs designed to bring effective supervised credit to farmers who have the ability and desire to accomplish a transition from subsistence to small commercial operations, and the extension of credit on a basis of other than real estate collateral should be an integral part of such a program.

The team felt strongly that the AFC should continue to receive a sustained level of support in technical services and participant training at least equal to the present level. Enlargement of the group of technical specialists to include a very senior policy and operations counsellor to the general manager, as well as the national coordinator mentioned earlier, would enhance the overall capabilities of AFC. Such support should continue for a period of two to four years depending upon conditions as they develop. We feel it important, and in support of the extensive efforts already made, to assist the AFC to realize its full potential as a sound and viable credit institution. Likewise, we believe the training of participants should continue but with more attention directed toward work in the fields of accounting, auditing, personnel, research and planning and management. A training specialist brought in for a period of a year to help improve AFC internal training programs could be very useful.

The high liquidity position of banking and credit institutions at the present time and the ready availability of external donor assistance argues against further input of loan funds into AFC for the forseeable future. If, however, AFC, as is contemplated, were to move seriously into the field of agribusiness lending for processing and marketing enterprises designed to support improvement in the area of small scale farming, external loan support would seem worthy of serious study.

In looking at AFC as an institution, the team has been mindful of the intent of the AID program to direct its efforts toward assisting people in the lower strata of economy. As stated earlier, we do not believe AFC should be looked to as the primary lender for this group. Therefore, our approach has been to try to identify the most effective way to mount such efforts in Kenya. It would have been most helpful if a recent major study of agriculture credit in Kenya had addressed itself adequately to the problems of small farmer credit and to primary alternate means of delivering such credit to this target group. However, the lack of creditable date - which the evaluation team expected to have in hand - hampered our efforts and we can provide

only a general overall view on this subject. Actually, the Agriculture Credit Study should have been undertaken some years ago and would, we believe, have been very helpful in the initial planning of the Smallholder Production Services and Credit Project, as well as other efforts in agriculture.

A system to deliver closely supervised credit to the very small scale farmer who is on the margin of economic viability, presently exists within the structure of Kenyan agriculture cooperatives. It should not be considered that this is a fully refined system; however, it is in place. Further, two programs, the Smallholder Production Services and Credit Project, and the Integrated Agricultural Development Project are addressed to this target group and channeled through the cooperatives. Heavy administrative costs coupled with high risk potential of any lending program which gives priority to the needs of this less privileged group argues forcefully for a unified approach by government and external donors alike. Beyond that, it should not go unnoticed that social and political components always weigh heavily in such an activity and at a cost which cannot be easily measured.

Based upon a general review of the lending programs presently aimed at the very small scale farmer, the team holds to the view that the approach through the cooperative system potentially has the best chance for success. Aside from the AFC, we have not observed any other Kenyan institution or system with a similar or equal apparatus for reaching down to this lower level economic group. An informal merging of the two loan programs mentioned above seems to the team to be deserving of close attention. The skills of the remaining group of Nordic cooperative advisors, the Peace Corp volunteers and the extension workers of the Ministry of Agriculture - all of whom seem now involved to some degree in these programs could thus be brought to bear in a cohesive and productive fashion. Logically, if a program to reach the lower economic farmers were being started from ground zero for implementation through the cooperative system, the emphasis and direction should come through the Ministry of Cooperative Development with the Ministry of Agriculture and its extension service in a supportive role. It follows that the cooperatives should have a trained cadre of field workers (or loan supervisors) who would follow the program very closely to see that credit was being used effectively and in conformity with the intent of the program. The team believes that as the on-going programs are brought under more intensive review and study the MOCD should be increasingly looked to as the ministry within government who would carry the main weight of the credit programs. This would entail a slight recasting in emphasis from the present, but we believe it would be beneficial overall. Beyond that, it would also seem appropriate for the Government of Kenya to continue with an infusion of its own money as conclusive evidence of government dedication to assisting the lower economic farmers in Kenya. The government funds would be directed toward support for the high costs of training, supervision and education of this target group.

As the Kenya National Federation of Cooperatives Limited is the central unit in the Kenyan cooperative movement, so the Co-operative Bank of Kenya, Limited is its apex financial institution. This bank, which commenced operations in January, 1968, has as its primary objective the mobilization of the financial resources of the cooperative movement and the utilization of those funds for re-lending to the movement. From its very small beginnings in 1968, the bank has grown steadily to a point where by mid-year 1977, it had made loans totaling 387 million shillings*, has loans outstanding in excess of 98 million shillings, deposits of 480 million shillings and share capital of almost 17 million shillings. Clearly, a quite impressive growth record. Looking to the future, leaders of the institution plan to open several branch offices at an early date, as well as a foreign and bills department at headquarters. Further, the Co-operative Finance Company is due for registration and should be in operation in early 1978

Interestingly enough, while other cooperative institutions have received a plethora of technical assistance from external donors, the bank itself seems to have been largely overlooked in spite of the fact that it has a grassroots base. While to some this might seem to have been a blessing in disguise, the evaluation team feels that a technical assistance package of some dimension might now be a most desirable activity. As the principal financing arm of the cooperatives and with further growth a virtual certainty, the bank will stand in need of research and planning experts, operational specialists in the fields of finance, credit, cooperative business and in accounting and auditing. Believing as it does that the cooperative system is the logical instrument for mobilizing rural resources and bringing supervised credit to the very small scale farmer, the team feels it logical to buttress that effort by helping to strengthen the present operation of the Co-operative Bank and working with it in preparing for the future. We believe such activity would benefit the entire cooperative movement in Kenya.

It is clear that the government is placing increasing emphasis upon development of rural sectors. It follows, therefore that with a healthy and viable Agricultural Finance Corporation serving the credit needs of commercial type agriculture and working in close harmony with the system of agricultural cooperatives serviced by a strong Co-operative Bank, the welfare of virtually all sectors of the rural economy can be markedly improved.

Recommendations

1. That the board of directors and management of AFC take early action of the recommendations contained in the June 1977, Management Study of the corporation. Further that the board give serious consideration to strengthening the management

*Current rate of exchange - $1.00 (US) = 8.5 Shillings (Shs)

base as outlined in the narrative comments above. (See pages 26-29).

2. That the provision of certain technical specialists to AFC and continuation of a strong external participant program for staff members of the Corporation be carried on for several more years. (See pages 20-22, 35-37.)

3. That the USAID undertake to field a small consulting team for the purpose of developing information on those important areas of credit and interest rates which were not fully addressed in the Kenya Agriculture Credit Study. (See page 30.)

4. That an in-depth study of the Co-operative Bank of Kenya, Limited, be made to (a) assess the capabilities of that institution to finance the Kenya cooperative system, (b) determine its ability to sustain increased growth and activity, and (c) assess potential needs of the bank in the fields of finance, technical services, research and planning, internal training and further development of management skills. (See page 39.)

5. That discussions be initiated with appropriate officials of government and those financial institutions dealing with agriculture to explore the merits and feasibility of establishing a centralized operation for research, planning and policy formulation as they relate to the credit function. Further, to develop and maintain a centralized repository for information on the subject. (See pages 38-40.)

6. That in the event the life of the Agriculture Credit Project is further extended or a new project is developed to encompass a wider field of effort, a coordinating committee be formed so as to provide a regular review and monitoring process. The committee should be composed of the general manager of any involved financial institution, representatives of appropriate ministries, of USAID and/or other external donors. The role of the committee would be to coordinate activities of the project (s), review progress, correct program deficiencies as they surface and remain currently informed on the activities of technicians/consultants working on the project. (See pages 40-41.)

7. That consideration be given to the merits and practicality of establishing within Kenya or elsewhere a regional institute for the express purpose of providing specialized training in agriculture credit to participants from the developing countries of Africa. (See page 41.)

8. That a careful study be undertaken to develop reliable information on the social and economic implications of extending agricultural credit to women. At present, women in Kenya are active in many farming operations but traditionally are not usually land owners. With women's liberation movements becoming prevalent in Africa and in light of the new social conscience which is developing, we feel that the future of women in agriculture in Kenya should now be addressed. (See page 41.)

1. Government Policy and Cooperatives 1/

The Government of Kenya is committed to a policy of increased equity. To this end, it has formulated the following general objectives: promotion of rural development, more equitable distribution of income, and creation of additional employment opportunities. In working toward these objectives, the government has chosen to continue its commitment to a mixed economy in which both public and private participation are prompted.

It is within that context that the cooperative movement will continue to play an active role in national efforts to achieve accelerated economic development. The government will give high priority to consolidation and improvement of efficiency in those spheres of the economy where cooperatives are already active, while extending their participation to the small-scale farming sector by provision of credit, farm inputs and marketing facilities for their members.

Cooperatives will continue to be increasingly powerful tools in mobilizing natural, human, and financial resources for national development. Their vital role as agents for initiating economic activity in less developed areas has been duly recognized and will be enhanced. Their potential as important forums for promoting education and accelerating overall development in rural areas has been demonstrated in the country's high potential areas and initial efforts to develop more marginal areas appear promising. Government is committed to bringing services and increased economic opportunity to the nation's small farmers, the bulk of whom are called "traditional", "marginal" or "less-progressive". These farmers form the core of Kenya's rural poor. They face a variety of constraints inhibiting their capabilities or opportunities for both increasing production and obtaining the benefits of increased production (i.e. inadequate access to inputs, markets, technology, production and pest control equipment, production credit etc). Cooperatives provide the necessary forum through which area specific constraints can be identified and constitute an appropriate mechanism through which these constraints can be overcome. It is for these reasons that Government has selected cooperatives as their primary vehicle for assisting the small farmer. USAID's SPSCP and IBRD's IADP Projects represent the initial Kenyan efforts to bring appropriate services (credit, input supply etc) to the less progressive farmers through cooperatives. Results, thus far, have been mixed. On the positive side, input supply and marketing services appear to have addressed a small-farmer constraint and both activities are progressing satisfactorily. On the negative side, the

1/ Drawn from Sessional Paper No. 14 of 1975, "Cooperative Development Plan in Kenya".

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credit program is faultering as a result of poor loan repayments. Though there are numerous reasons why the credit program may have faultered but, underlying most of these is that of the capacity of the cooperative unions and socities to administer a loan program. Cooperatives simply took on more borrowers than they could prudently manage. Recognizing that management capabilities were clearly a constraint to an expanded credit program but that management appeared capable of handling larger in-put supply and marketing volumes, the GOK and donors have agreed to expand the supply and marketing activities while carefully restricting the credit activities. The emphasis of the credit program will be upon the development of the capacity to operate sound credit programs rather than upon numbers of participants.

2. Growth of the Cooperative Movement

A number of references has been made in the PP concerning the rapid growth of the cooperative movement. Information in the following tables substantiate those statements. Large increases have occured in all categories of measurement--number of cooperatives and members, value of business (turnover) and share capital accumulations. Rates of growth for the 16 year period 1960 to 1976, and from 1975 to 1976 are shown in the tabulation below with supporting details in table 1. The large yearly increase in turnover from 1975 to 1976 is partly explained by the drought of 1975. The overwhelming majority of new members are small farmers and, increasingly, more marginal (less-progressive) farmers.

Category	Percent Increase 1960-76	Percent Increase 1975-76
Number of co-ops	107	27
Number of members	349	22
Turnover (value of business)	1,561	104
Share capital	2,490	61

These cooperatives handle a wide variety of agricultural products and farm supplies. There are also a number of other types of cooperatives, such as credit unions, consumer, fish and housing cooperatives as outlined in table 2.

Unfortunately the information presented on the cooperative movement is incomplete as it does not include direct sales of inputs and marketing of five country-wide and national cooperatives, or on that portion of their business that by-passes other societies and unions. Indications are, that the amount of such direct business is considerable. As such, the turnover of cooperatives is somewhat greater than that shown in the two tables, but the growth rates for the movement should be reasonably correct.

Statistical data from national cooperatives are not being collected by MOCD, or at least not included in the data for the movement. The major items handled by those 5 cooperatives are farm supplies, coffee and dairy and horticultural products. As noted, the most important crop handled was coffee. It represented 66 percent of the co-op's agricultura business.

Cooperatives handle a relatively high share of the total production of some products as shown in the following tabulations:-

Product	Co-op share as part of total production
Pyrethrum	91
Cotton	90
Coffee	55
Milk	38
Sugar cane	31

In the past, cooperatives have handled only a small share of basic food crops such as maize and beans, which are produced largely by small landholders. This situation is rapidly changing with SPSCP and LADP sponsored cooperatives emerging as the major purchasing agents of the Maize and Produce Board in many areas.

Government policy is to encourage small producers to increase their production of these basic crops by giving them credit, storage, and marketing assistance, and it has designated cooperatives as the vehicle for providing inputs and marketing outlets.

B. Ministry of Cooperative Development

1. Background

The Ministry of Cooperatives Development (MOCD) is the Government agency responsible for providing services to the cooperative movement. It was established as a ministry in November 1974. However, cooperatives have been an officially recognized movement for about 35 years. The predecessor agency was the Ministry of Cooperatives and Social Services.

2. Department of Cooperative Development, MOCD

The Department provides a wide range of services that contribute greatly to the development of cooperatives and their members as education, training, promotion, credit supervision, standard accounting procedures, auditing, and land purchase and settlement schemes. The Department also has powers and responsibilities to register cooperatives, enforce the Cooperative Societies Act and Rules, conduct inquiries, and liquidate those that have failed.

Table 2: Number of cooperatives, membership, turnover and share capital, by type of activity, Kenya 1976 1/

Type of activity	No. of co-ops	No. of members	Turnover	Share Capital
Agricultural		1,000	Shs. million	
1. Societies				
Coffee	148	268	855	24
Dairy	119	70	74	2
Pyrethrum	94	82	59	2
Sugar Cane	42	10	55	3
Multi-produce	110	33	45	2
Cotton	48	55	32	1
Farm Purchase	122	49	4/23	29
Livestock (Ranching)	35	12	12	10
Cereals	9	1	2	5/
Sisal	2	3	1	2
Vegetables	3	1	1	5/
2. Unions	28	-	3/128	4
Sub-Total	760	584	1,286	79
Other				
Savings & Credit	332	131	18	139
Consumer	48	14	16	2
Fishery	18	4	7	5/
Building	1	2/	1	5/
Housing	22	4	5/	2
Crafts	2	2/	5/	5/
Timber	4	4	-	2
Other	81	45	85	25
Sub-Total	508	202	126	170
Total	1,268	786	1,412	249

1/ Does not include information on five country-wide or national cooperatives.

2/ Less than 500.

3/ Represents farm supply sales, commissions and other revenue.

4/ Represents sales of produce from cooperative farming operations.

5/ Less than shs. 500,000.

Table 1: Number of cooperatives, membership, turnover and share capital, Kenya, 5 year periods, 1960 to 1975, and 1976*

Year	No. of Co-ops	No. of Members	Turnover	Share Capital
		1,000	Shs. million	
1960	613	175	85	10
1965	548	355	151	1/
1970	1/	434	373	86
1975	996	644	691	155
1976	1,268	786	1,412	249

* Source: Ministry of Cooperative Development

Does not include five country-wide and national cooperatives

1/ Not available.

Cooperatives are the direct beneficiaries of the Department's services. Cooperatives are the tools and vehicles that serve farmers with production inputs, credit and marketing outlets, and provide education, training and related type services to farmer members.

The Department has a central staff in Nairobi and a network of field employees. The central office has five divisions: Training and Manpower Development, Development Planning, Credit and Finance, Audit and Accounts, and Settlement.

The bulk of work involved in implementing co-op policies, supervision, and projects and development programs is conducted in the field. The Department has field personnel at the Province, District, divisional and location levels. This organization permits the functions and services of the Department to reach primary societies and farmer members as the case may be.

Implementation at the District level is coordinated and supervised by a District Cooperative Officer (DCO), through the District Coordinati Committee. This group, chaired by the DCO, sets targets, priorities and strategies for co-op development in the area, in accordance with directives and programs of the Department.

District officers are under the supervision of Provincial Officers Each Provincial Officer reports to the Commissioner of the Department as does each Division Head at Nairobi.

The supervisory and technical staff of the Department totalled 495 at June 1, 1977. Of that number about 57 were located in the central office, and the balance in field offices.

The percentage of number of field staff, in September 1977. by types of general functions performed, was as follows:

Function	Percentage of Total Field Staff
Supervisory and administrative	7
Auditing	28
Accounting	5
Co-op housing	2
Credit, education, training, promotion	58
Total	100

A brief description is given here of the three divisions in the Department that have major responsibilities for the education, training planning and credit activities for the cooperative movement. These are the Training and Manpower Development, Development Planning, and Credit and Finance Divisions.

Table 3: Number of Training activities conducted and number of participants, by the Ministry of Cooperative Development, by year 1974 - 76

Year	Co-op members	Co-op Committee members	Co-op staff	Total
Number of Training Activities: 1/				
1974	402	223	138	763
1975	610	499	327	1,436
1976	645	409	310	1,364
Number of Participants:				
1974	77,500	2,004	2,691	82,195
1975	108,716	3,918	4,287	116,921
1976	112,877	4,003	5,813	122,693

Source: Training and Manpower Development Division, Ministry of Cooperative Development

1/ Includes agricultural shows

a. Training and Manpower Development Division

This division, headed by an Assistant Commissioner, has three sections. The Field Training Section is responsible for planning and implementing various types of cooperative education and training programs to be conducted in the field. These programs are designed for co-op members, committee members, the general public and visitors Part of its work is preparing and distributing a quarterly newsletter.

The Manpower Development Section is responsible for surveying training needs, arranging programs (which will be carried out by the Field Training Sections) to meet the training needs, and making surveys of manpower needs, projections, and deployment for the Department.

The Division has 14 technical staff employees in Nairobi and 8 in the field, one at each province. Those at provinces assist and coordinate the field activities of the three Sections. Further coordination and implementation of educational and training activities are conducted at District levels through the District Cooperative Education Committee. Most of the 42 Districts in the nation have such a committee that conducts a number of functions pertaining to the implementation and follow-up of training programs. They also serve as the principal linkage to the Provincial Cooperative Educational Committee of which there is one for each Province.

There is a national level coordinating and policy committee for cooperative education and training. It includes the Commissioner of Cooperative Development, the Principal of the Cooperative College, the Secretary-General of the Kenya National Federation of Cooperatives, and the Secretary-manager of the Kenya Union of Savings and Credit Cooperatives.

Principal problems of the Division relate to: (1) shortage of educational materials - audio-visual aids, pamphlets, flip charts, etc., and lack of expertise to prepare the materials, (2) shortage of funds to produce adequate numbers of educational materials to conduct some of the scheduled training programs, and (4) lack of an in-depth evaluation of training programs such a study would measure the impacts of training and would use the evaluation results to strengthen future training programs.

The work of the Division is directed at co-op members, committee members, movement staff and the Department staff. The extent of training in recent years is considered to be extremely high. For example, in 1976 a total of 1,364 training activities were conducted for 122,693 attendees, Table 3. Note that field days and agricultural shows tend to swell the attendance figures. This performance was also attributed to the combined efforts of other Divisions of the Department. To keep pace with the growth of the movement, Division officials believe that all types of training programs by 1983 should be double the present levels.

b. Development Planning Division

This Division is supervised by an Assistant Commissioner. It has three Sections - Statistics, Management, and Projects and Surveys.

The Statistics Section is responsible for collecting and assembling reliable statistical data about the cooperative movement, such as, number of cooperatives, number of members, turnover, and share capital by type of activity. It analyzes the data in order to determine the degree to which the co-op movement contributes to the agricultural sector and the national economy, and publishes results at least annually, distributing the information to the movement and concerned Government personnel. Five employees, including two clerks, work in the Section. There are no field employees.

The Management Section is responsible for developing and implementing planning and management methods and procedures for the co-op movement and for the Ministry of Cooperative Development. Two technical staff positions are authorized for this Section but both are vacant at present, because the former employees found other employment. There are also 3 expatriate advisors in this Section.

The Projects and Surveys Section is responsible for providing the movement and the Ministry with analytical information, such as feasibility studies, for those areas where co-op development priorities have been established, and to identify other areas where priorities should be established. This Section also has a Market Research Unit which gives emphasis to crop surveys and the role that co-ops should play in processing, marketing and related activities.

The Section has five technical staff employees and two advisors in Nairobi, and six technical staff in the field. The latter serve as counterparts to eight expatriate advisors who are also located in the field. The Divsion has a total of thirteen expatriate advisors, five at headquarters and eight in the field.

Projects and Surveys work only started in 1977. It is planned and anticipated that this section will develop the capability for conducting effective project appraisals and feasibility studies for cooperatives, except for those involving highly technical and complex operations.

The type of responsibilities assigned to this Section, if carried out effectively, will contribute greatly to the expansion of integrated operations of cooperatives. As such, the cooperatives would be able to provide a wider variety of services to farmers and, hopefully, perform these efficiently.

The six Project Officers are thinly scattered in the field, only one at each of six provinces. Without a larger trained staff the overall impact is believed to be rather minimal.

In past years the Division has made several studies and surveys of cooperative operations. Some of these studies and reports have identified potential areas for co-op development. Surveys have been made of multi-purpose societies; coffee pricing systems; cotton lint formulas and milk processing and marketing.

Three principal problems of the Division are: (1) obtaining technical staff with proper training and background experience, (2) staff turnover, and (3) shortage of travel and other funds to conduct necessary studies and surveys.

C. Credit and Finance Division.

An Assistant Commissioner is in charge of this Division, which has four sections - Rural Credit, Urban Credit, Inspectorate, and Cooperative Investment.

The Rural Credit Section is responsible for providing supervision, implementation, coordination and progress report services for four rural credit programs - Cooperative Production Credit Scheme, Smallholder Production Services and Credit Program, Intergrated Agricultural Development Project, and Farmer Input Supply Scheme. It has one technical staff employee working on each program, except SPSCP which has two, a total of five in the Section.

The Urban Credit Section is responsible for providing promotion and supervisory services for savings and credit societies. It has a technical staff of three.

The Inspectorate Section is responsible for developing guidelines for credit activities, making inspections and reports of credit activities and continually appraising control measures in credit and accounts procedures. It also has a technical staff of three.

The Cooperative Investment Section is responsible for appraising: (1) credit worthiness of cooperatives, (2) agri-business projects, (3) co-op housing programs, (4) financial investments of cooperatives, (5) purchase of farms, and (5) for studying possibilities for mechanization of banking functions of cooperatives. It has one technical staff employee.

The Division also has about 71 technical employees in Provinces and Districts, 56 work mostly on rural credit and 15 on urban credit programs.

Some of the principal problems of the Division are (1) getting competent, trained staff, (2) shortage of travel funds to properly supervise the field staff and operations, (3) getting some parts of the co-op movement to better adhere to established credit policies and procedures, (4) keeping, or trying to keep, separate the identity and records for each of the smallholder credit schemes, and (5) problems associated with providing assistance to a larger percentage of the marginal farmers. With regard to the latter, Division officials believe that cooperatives should assume greater responsibilities in expanding services to marginal farmers and that the Division should provide only a supervisory role. It also recognizes that such a transfer of responsibilities will take considerable time and effort.

In terms of manpower deployment the Credit and Finance Division is probably the most active of those in the Department. Because of the anticipated growth in the movement and the greater role it is expected to play in overall development, the Division views its manpower needs in the near future to be more than double those at present. This need will exist even though the movement may assume a larger responsibility for assisting marginal farmers.

Because of the anticipated increase in staff, Division officials believe that it may be necessary to change the structure of the Ministry by the Division becoming a department, by establising another Division to assume part of the work load, or by some other type of restructuring.

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C. COOPERATIVE COLLEGE OF KENYA

For many years the Government of Kenya has placed great emphasis on education and manpower training at all levels in the cooperative movement including Government personnel who promote, supervise and guide the movement. "It is of the belief that a sound and intensive program of education and training in the cooperative sector is the surest long-term objective towards achieving permanent efficiency in the business operations of cooperative organizations."1/

The primary purpose of the college is to help meet the manpower needs just stated. Although it has played a significant role in meeting those needs, it has fallen far short of satisfying all the demands for manpower training for all sectors of the cooperative movement.

The college was established in May 1967, but formal training programs for co-op sector personnel in Kenya started in 1952 and have continued since that date. The college provides academic, co-op education, and short-course training in a wide variety of related subjects and for a wide variety of personnel. Only employees of the movement are accepted for academic training, usually for either 1 or 2 years depending on the type of course. These include employees of cooperatives, the government and foreign students. The training they receive prepares them to move into positions of increased responsibility.

The structure of the College includes a College Committee, comprised of 13 members, that provides overall policy and guidance; a principal; a vice-principal supervising five departments, and an Administrative Secretary in charge of general administration and logistics. (See organizational chart attached).

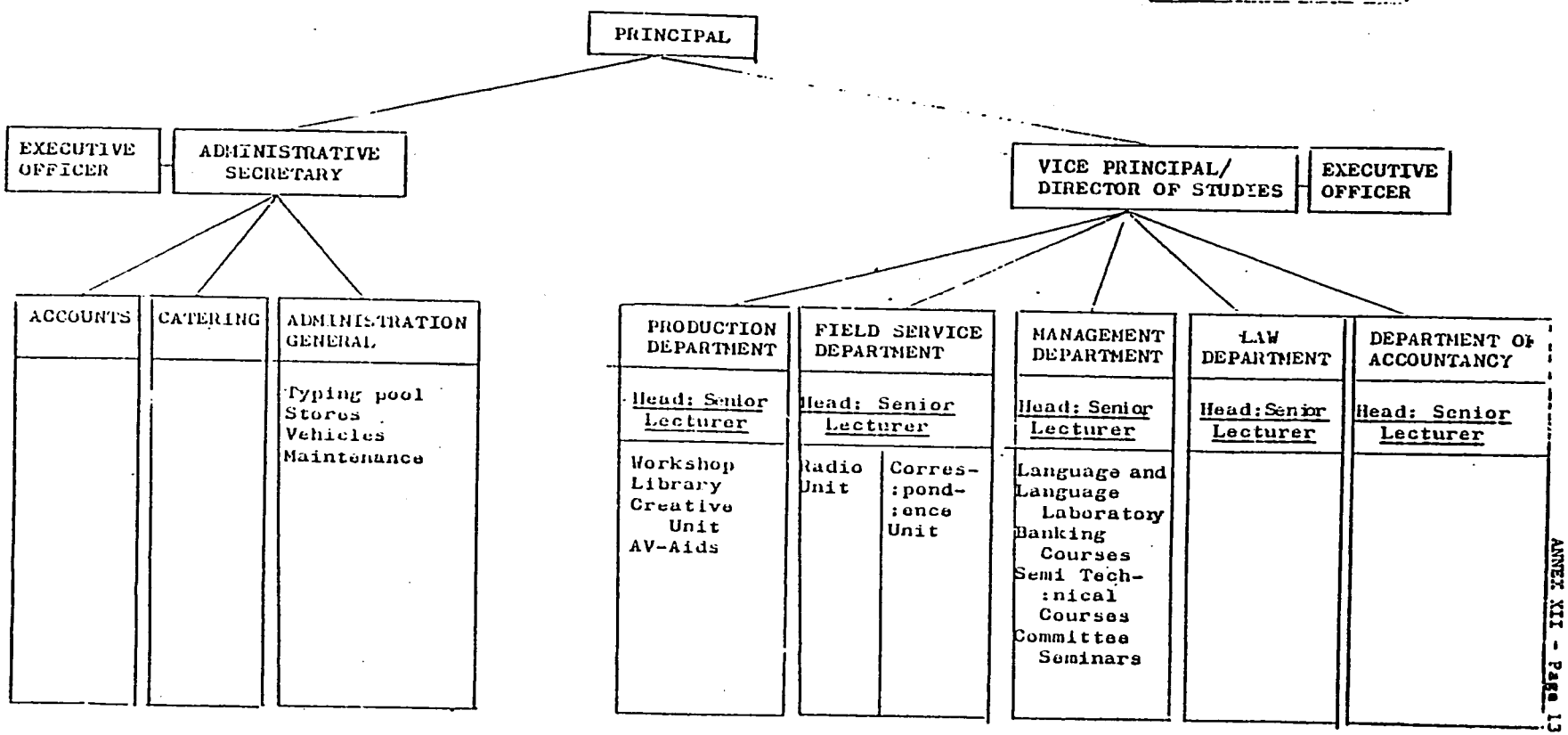
In addition, the College has several overview committees, i.e., The Coordination Group for Cooperative Education, Academic Staff Committee, Joint Standing Committee of the Nordic Project for Cooperative Assistance to Kenya, Bursary Committee, College Housing Committee, Students Disciplinary Committee, and Certificate Award Committee.

The teaching staff consists of about 28 lecturers who have a university degree or equivalent educational backgrounds, and who have wide cooperative experience. Several staff members have received special training in other countries. Personnel from the Nordic Project have also served on the Staff, all but one have been replaced by trained Kenyans.

1/ Sessional Paper No. 14 of 1975, Cooperative Development Policy

PLAN OF ORGANISATION FOR CO-OPERATIVE COLLEGE OF KENYA

CEM 0433



The basic courses taught include: Bookkeeping and accounting, cooperative accounting, cooperative law, commercial law, auditing and investigations, costing, economics and statistics, management subjects, business communications, business math, taxation, and history and development of cooperatives. Two-year courses include six months of field training. Short courses include: Coffee factory management, banking, accounting, instruction in all facets of savings and credit operations, various refresher courses, seminars for members of co-op committees, and other seminars and conferences as required by the movement. In addition, the College conducts correspondence courses which have become very popular. The enrollment increased from 187 in 1971 to 3,316 in 1976. The enrollment includes long and short-term courses, with some students living-in while most commute.

The College also provides training for a number of foreign students, not only from African but from many other countries. However, because of the large number of training requests from other countries, it has been forced to decline many due to inadequate facilities.

The capacity of the college is limited to 220 live-in students with a capacity for an additional 200 commuting students. Principal facilities include:

Beds for 220, of which 52 are for women
Assembly hall accommodating 300 people
Dining hall accommodating 400 people
Library - 7,000 textbooks and 1,300 periodicals
Eight classrooms
Language laboratory
Banking training office
Three group workrooms
Administrative and staff offices for 67
Printing office
Photo development room
Radio recording room
Recreation hall and outdoor recreation facilities
Workshop
Seven stores
Water purification plant

Finance for the College primarily come from three sources - the GOK, tuitions, and to a decreasing extent, constributions by the Nordic Project. Total costs per day, per student average Shs. 60. Tuition charges are Shs. 20 a day, and the balance is subsidized.

The original cost of the College was Shs. 20 million. The Nordic Project provided 80 percent of the total and the GOK 20 percent. Additional facilities added or started in 1976 included a new water purification plant costing Shs. 630,000, and a women's hostel. The Nordic Project has provided annual contributions for recurring expenses. In 1976 it contributed Shs. 275,000. These contributions are reduced each year and are scheduled to phase out by 1980.

The performance, or output, of the College has been very commendable. This can be largely attributed to the competency of supervisory, teaching and other staff of the College, and of the fiscal and other suppor by the GOK and of the Nordic Project for Cooperative Assistance to Kenya. USAID has not provided any assistance to the College to date.

In 1976 the College conducted a total of 66 courses or seminars for 1,516 participants which involved nearly 38,000 participant days (Table 4). This table also gives similar information by type of courses for 1976 and for the combined total for 1967 through 1976.

Despite its performance to date, college officials readily state that the cooperative education and training needs of Kenya are far greater than its present capacity to meet such needs. They believe that its capacity and output should be at least double that of the present.

TABLE 4.

Number of courses taught, participants and participant days of the Cooperative College of Kenya, 1976 and total of 1967 through 1976 *

Type of Course or Training	1976				Total 1967 - 1976			
	No. of Courses	No. of Participants	Participant days	% of Activity	No. of Courses	No. of Participants	Participant days	% of Activity
ABM 1 (Admin, bookkeeping, management)	3	87	7,723	20.5	45	1,076	69,247	30.0
ABM II	6	96	8,516	22.5	30	562	40,059	17.0
CCA (Cert. course in Co-op Admin) 1/	3	79	5,631	15.0	7	158	25,746	11.3
Diploma (2-yr.courses in Co-op. Management)	3	75	7,605	20.0	5	120	36,600	15.7
Savings, Credit, Banking	13	342	2,535	7.0	45	851	7,354	3.0
Managerial courses	6	164	760	2.0	55	1,195	7,018	3.0
Seminars for members of Co-op committees	20	383	1,845	5.0	107	2,193	10,628	5.0
Seminars and conferences	11	264	2,339	6.0	90	2,235	16,438	7.0
Co-op officers induction courses	1	26	676	2.0	8	140	4,780	2.0
TOTAL:	66	1,516	37,630	100.0	402	8,697	231,347	100.0

* Source: 1976 Annual Report, The Cooperative College of Kenya.

1/ Mostly 1-year courses but some are for 2 years.

D. THE COOPERATIVE BANK OF KENYA

The Cooperative Bank of Kenya was registered as a cooperative society on June 19, 1965, and as a commercial bank in 1968 under the Banking Act of Kenya. It began operations in January 1968 with share capital of Shs. 255,800 and a loan from the GOK for Shs. 214,000, interest free and repayable within 10 years by half-yearly installments.

The general objectives of the Bank are to meet the sound credit needs of cooperatives, to mobilize the financial resources of the cooperative movement and utilize the funds for re-lending to the movement, and to undertake other activities that will encourage the growth and development of cooperatives in Kenya. Any registered cooperative in Kenya is eligible for membership in the Bank if it otherwise meets qualifications specified in the bylaws of the Bank.

The structure of the Bank is vested in the general membership, board of directors, general manager and three departments, (see organization chart that follows). The board of directors is comprised of ten members, six represented by cooperatives and four by Government.

The Bank's headquarters is located in Nairobi. It has no field offices. Commercial banks throughout Kenya act as its disbursing and receiving agents, although some borrowers in the close proximity to Nairobi may deal directly with the Bank. The total staff of the Bank number about 60, 15 of whom may be classified as supervisory. Two expatriate advisors are providing advisory services to the Bank, as shown on the organization chart.

Services offered by the Bank have been relatively minimal compared with normal services of cooperative banks in other countries. Much of the detailed work associated with loan applications including processing and approvals; loan appraisals and evaluations, and to some extent recovery of loans are performed by other agencies and groups. The Bank, of course, has final authority to approve or disapprove cooperative loan applications. It recognizes that it should assume greater responsibilities than those provided to date, particularly relating to identifying new projects for prospective loans, appraising loan applications, and supervising loans and loan repayments.

Responsibilities of the newly formed Field Services Department, with six technical employees, include those general areas just mentioned. Because the services are new, in the process of being implemented, and are important to the proper functioning and operations of the Bank, they are listed in detail - those for the Field Services Manager, the Loans Division and the Projects Division.

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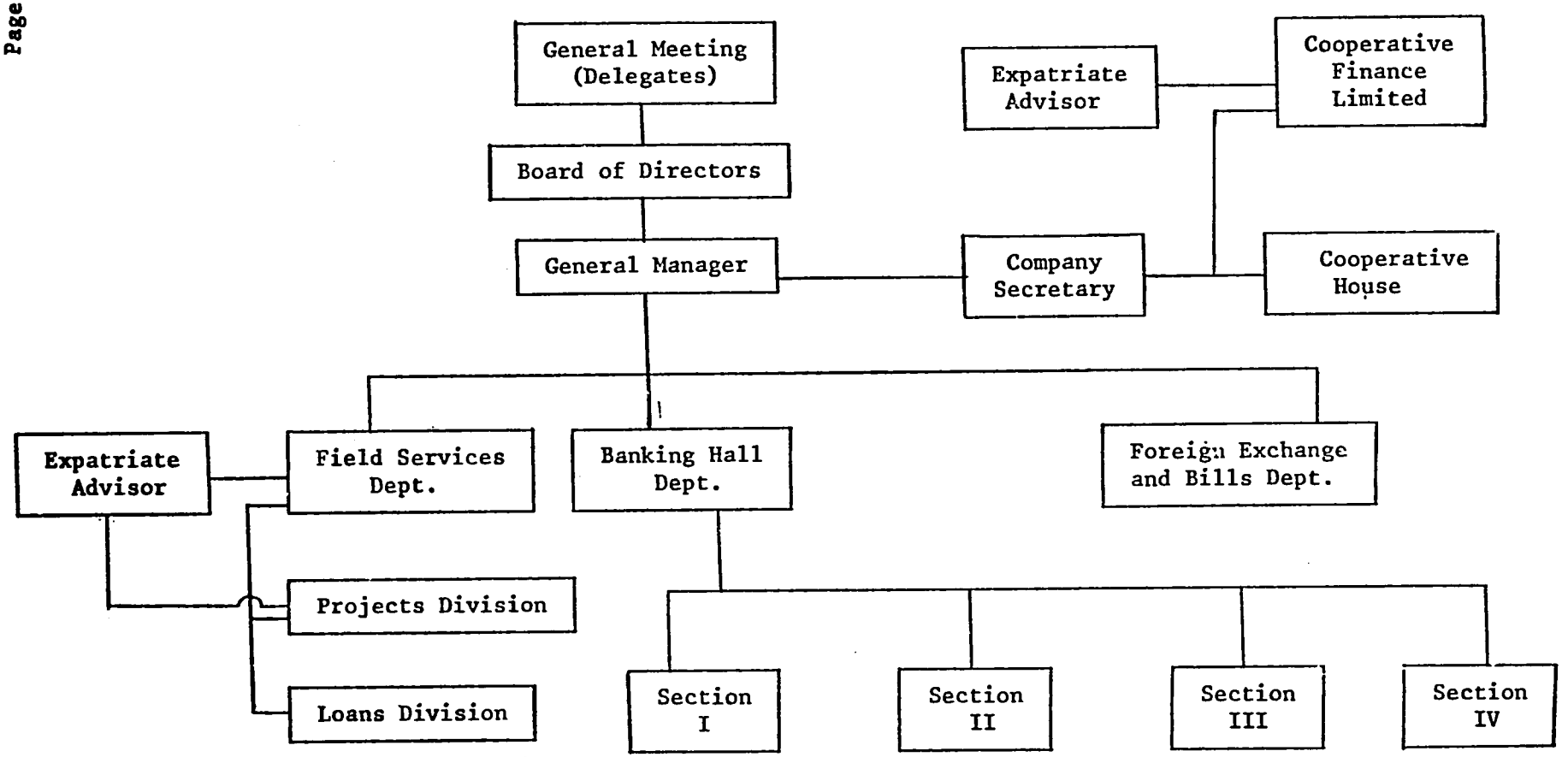
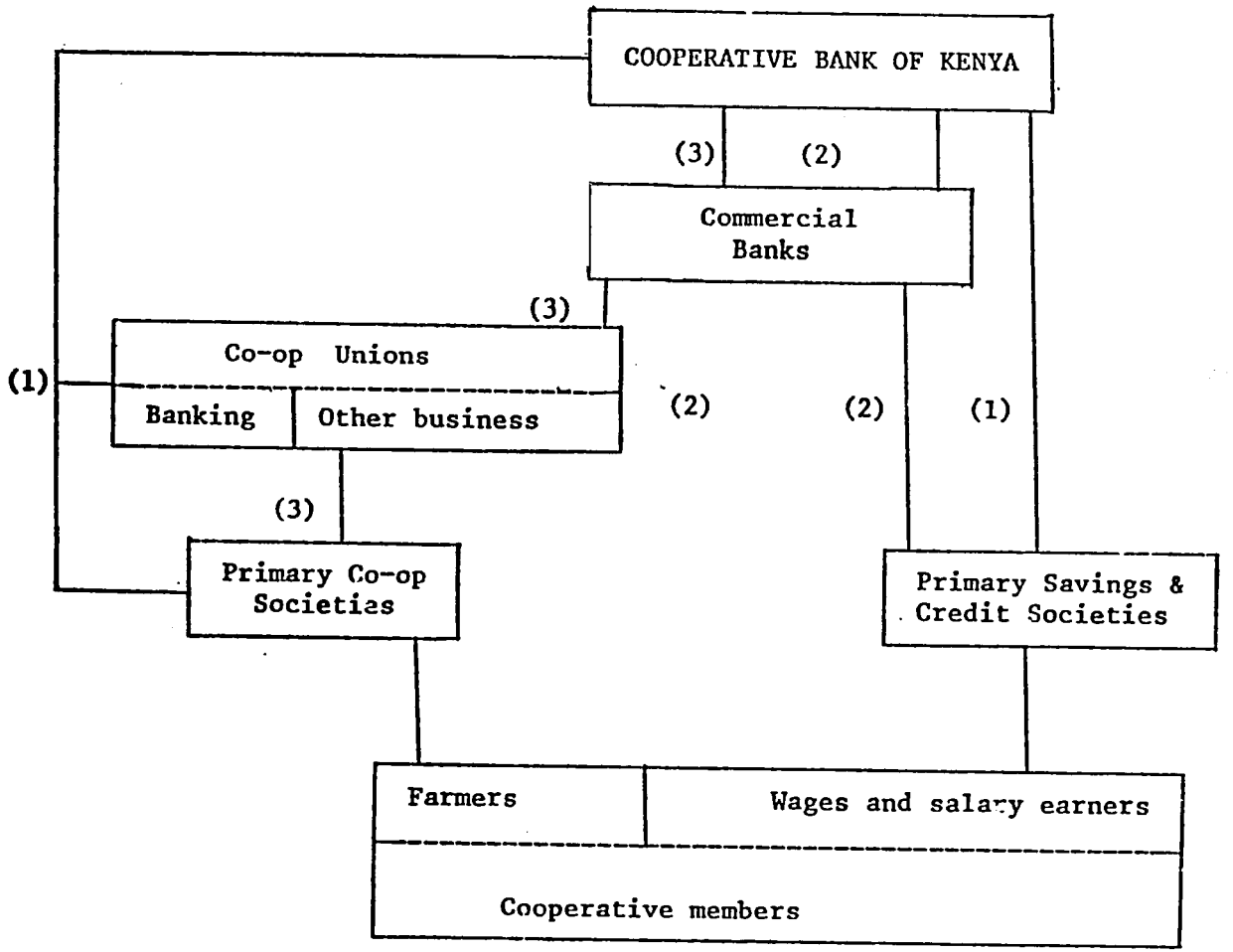
COOPERATIVE BANK OF KENYA LIMITED

ORGANIZATION CHART



LOAN FLOW CHART



Code:

(1) Loans and all other services directly from Bank to unions and societies, generally in or nearby Nairobi.

(2) The same services as in item (1) but operated through local commercial banks.

(3) Loans to unions and/or societies for re-loaning to farmers, and banking services for farmers which operate through societies and/or unions and in turn through commercial banks.

Field Services Manager

He is responsible for the work of the Field Services Department and in addition has the following specific duties:

1. Identification of new projects.

2. Follow-up of existing projects.

3. Improving loan application procedures.

4. Maintain CBK contacts with members and outside bodies.

Loans Division

Under the general supervision of the Field Services Manager, Loan Officers perform the following duties:

1. Service loan customers coming to the Bank. On investment loans a representative of the Projects Division should assist.

2. Receive and record and scrutinize applications to determine whether they are complete.

3. Review applications with the Projects Division.

4. Prepare applications for Board meetings.

5. After Board meetings, to process the loans and produce monthly follow-up reports.

Projects Division

Under the general supervision of the Field Services Manager, Project Officers perform the following duties:

1. Identify new cooperative projects for Bank financing.

2. Assist customers in implementing new projects.

3. Visit existing projects according to agreed schedule for follow-up purposes.

4. Analyse data collected from customers for following up progress.

5. Carry out appraisals of loan applications as initiated by the Loans Division and agreed to by the Field Services Manager.

6. Prepare reports on field visits giving recommendations to management.

In addition to providing loans to cooperatives and the newly planned follow-up services just described, the Bank also provides savings facilities and services for cooperatives. The deposits or savings, are the Bank's primary source of money for re-lending purposes. They totalled more than Shs. 450 million at June 30, 1977. Interest is paid on deposits ranging from 5 to 5-7/8 percent depending on types of deposits. No interest is paid on "current accounts" which represented 62 percent of total deposits.

A balance sheet and statement of operations in summary form are attached. Total assets exceeded Shs. 500 million at June 30, 1977, and members' equities rep. esented 3 percent of the total. Net income before taxes for the fiscal year was Shs. 4.4 million and Shs. 2.2 million after taxes but before dividends. Dividends on share capital over the years range from 7½ percent in 1972 to 10 percent in 1971.

Footnone 1/ on the balance sheet shows that the Bank had borrowings from USAID totalling Shs. 17.0 million and Shs. 18.7 million from other donors. Those from GOK institutions totalled Shs. 3.9 million.

The growth of the Bank in terms of loans, deposits, and liquidity status has been outstanding. Annual loans outstanding have increased steadily and rapidly since 1973, from Shs. 16.3 million in 1973 to Shs. 96.9 million at June 30, 1977, and to Shs. 166.0 million at February 15, 1978. It experienced similar rates of increases in deposits and liquidity surpluses each year except in 1975, as shown in the following tabulations:

	1973	1974	1975	1976	1977
	(Million Shs. - Year ending June 30)				
Deposits	65.6	122.9	59.4	238.6	480.4
Loans and overdrafts	16.3	33.3	71.9	80.3	96.9
Liquidity requirement	13.1	24.6	11.9	47.7	96.1
Liquidity surplus	36.2	65.0	-24.4	110.6	287.4

Loans outstanding, by type, at February 15, 1978, are given in Table I. Of particular importance are the relatively large number and value of loans for production, Shs. 84 million and Shs. 59.8 million, respectively. These loans are made to cooperatives for re-loaning to farmers primarily under the SPSCP and IADP programs.

The Bank is restricted by the Banking Act on the amount it can loan to an individual borrower. Two types of loan limits are placed upon it:

1. Loans to an individual borrower cannot exceed 5 percent of the Bank's total deposit liability or 100 percent of its share capital, whichever is larger.

2. The total of all Bank loans on immovable property, on which chattel mortages are obtained, cannot exceed 15 percent of the Bank's total deposit liability.

To overcome this latter restriction which limits mortage loan on immovable property, a subsidiary company has been formed, Cooperative Finance Limited. This subsidiary is classified as a financial institution rather than bank. Because of this it is not bound by the Banking Act's 15 percent limitation. However, the subsidiary is bound by the loan limitation regarding the maximum amount to an individual loan outlined above.

Cooperative Finance Limited has been registered but has not received a licence to begin operations. This however is expected in the very near future.

Although the Bank has had "growing pains", it has managed the increased business to date. However, the number of senior-level staff has remained about constant in recent years while loans and deposits have increased substantially, placing great pressures particularly on that staff.

The Bank believes that the new services to be performed by the Field Services Department will strengthen the Bank's services and performance. At the same time such services, if implemented as intended, will increase pressures placed upon the staff. The Projects Division has only three technicians at present with one expatriate advisor who also serves as Advisor to the Manager of the Field Services Department. As the Division gains experience, plans call for a few additional employees for the Projects Division.

Bank management is busily consolidating recent business growth and seeking methods to both improve services and cope with anticipated further expansion. A comprehensive, forward looking management study would be appropriate and timely to assist them in these deliberations.

The Cooperative Bank of Kenya Limited

Balance Sheet as at June 30, 1977 (Shs. million)

ASSETS

Current Assets		551.3
Fixed Assets		1.6
Investments		0.6
TOTAL		553.5

LIABILITIES AND MEMBERS' EQUITIES

Liabilities:		
Current	496.2	
Long-term 1/	39.6	535.8
Members' Equities:		
Share capital	16.8	
Reserves	0.9	17.7
TOTAL		553.5

1/ Long-term loans by source:-

	Shs. million
USAID	17.0
SIDA	14.0
DANIDA	4.7
GOK (Treasury)	1.9
GOK (MOA)	1.3
GOK (MOCD)	0.7
TOTAL	39.6

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Table 1.

Loans Outstanding: Cooperative Bank of Kenya
February 15, 1978 *

Type of loan	Number of loans	Amount of loans
		Shs. 1 million
Farm purchase 1/	8	22.8
Building and Construction 2/	32	13.7
Production 3/	84	59.8
Purchase of vehicles	49	4.0
Other 4/	142	65.7
TOTAL	315	166.0

* Source: Cooperative Bank of Kenya

1/ Usually 5-year loans to societies for purchase of farms for cooperative settlement.

2/ Loans up to 7 years for cooperative buildings, processing plants, etc.

3/ Loans to cooperatives for re-lending to farmers.

4/ The majority are short-term loans to cooperatives for produce buying.

The Cooperative Bank of Kenya Limited

Statement of Operations for Year Ended June 30, 1977

(Shs. Million)

INCOME:		
Income from loans and overdrafts	3.7	
Income from investments & other	9.2	
TOTAL INCOME		12.9
EXPENSES:		
Interest	5.7	
Depreciation	0.2	
Other expenses	2.6	8.5
Net Income before taxes		4.4
Taxes		2.2
Net Income after taxes		2.2

NATIONAL FOOD STORAGE STUDY

Scope of Work

The study team will undertake a comprehensive, nation-wide evaluation of farm and cooperative-level storage problems in Kenya. The team will evaluate farm and village-level storage needs, taking into account local variations in climate, production and consumption patterns, existing facilities, transportation network, traditional storage practices and preferances, and locally-available construction materials.

The team will evaluate alternative structures and techniques for storing ear and shelled maize, sorghum, millet and legume seeds; paddy rice and wheat storage will be given a lesser priority.

The study should determine the food storage and drying needs of smallholder farmers and of cooperative societies and unions. This study should also determine the need for trucks, grain grading equipment, inspection equipment, training, technical assistance, research and extension efforts. The study should include a field survey of grain storage losses, both cereal and leguminous, from insects, molds and rodents, as well as other crop storage losses, such as for potatoes.

The prime responsibility of the food storage study team will be to assist the USAID Mission and GOK to define and detail specific donor funded activities in the area of food storage and to work with the Mission to prepare a Project Paper Revision. This activity is to address only the needs of smallholder farmers and cooperative union/societies; assistance will not address the needs of national marketing boards.

The following activities are recommended for development of background information, establishment of working relationships, and collection of information in preparation for producing project proposals:

a. Make a systematic review of relevant literature relating to on-farm and cooperative-level storage with emphasis on East Africa literature.

b. Undertake discussions with relevant individuals within the Ministry of Agriculture Research and Extension Divisions, the Ministry of Cooperative Development, the University of Nairobi, Egerton College, and other foreign assistance donors.

c. Visit the national agricultural laboratories, Research Stations. the UNICEF Appropriate Technology Center, Farmer/Extension Worker Training Centers, smallholder farms, Maize and Produce Board Depots, society/union facilities, maize mills and local markets.

d. Examine current research and extension efforts regarding development of smallholder on-farm storage facilities and dissemination to smallholder farmers of known crop storage technology. Also, examine research and extension activities relevant to society/union storage facilities.

e. Conduct a field survey of storage losses of cereal and leguminous grains caused by insects, rodents and molds by sampling stores of grain at farms, cooperatives, Maize and Produce Board Depots and markets. Also, determine moisture contents of grain sample. (The team should come equippped with a portable moisture tester and bag probe.

The study team is expected to investigate the following project proposals:

1. Develop a program for storage-related training needs, including speciality skills such as agricultural engineering as well as extension personnel.

Identify the personnel at all levels within the National Laboratories staff, the Extension staff and other Ministry of Agriculture groups which may require further training in food storage; delineate those training needs and specify the appropriate training courses and institutions for training the personnel selected.

2. Develop a design for demonstration storage and drying units to be installed at Farmer Training Centers.

Specify the most appropriate food storage structures and grain drying equipment for use by the smallholder farmer and provide specifications, cost estimates, working drawings and operating instructions for these structures and equipment, taking into account the climatic variations within the country. Structures and equipment should be specified for storing and drying ear maize in addition to threshed cereals and leguminous grains and other foods as appropriate.

The number and size of each kind of storage and drying unit to be built at each Farmers Training Center should be determined.

3. Develop a design for loans to smallholder farmers to buil grain storage structures (probably for both ear maize and shelled grains).

Evaluate the demand by smallholder farmers for loans to build the facility types identified in Item 2 (above), identify appropriate lending institutions, recommend credit procedures for extending and monitoring assistance, also specify the technical assistance, training and supervision required to facilitate construction conforming to specifications developed in Item 2 (above). Training for construction may be given to extension personnel, farmers, carpenters and teachers at polytechnics.

4. Develop a design for loans to cooperative unions and societies to build/buy food storage and drying facilities and equipment.

Specity the most appropriate food storage structure, grain drying and grain grading equipment for use by cooperative society/unions and provide specifications, cost estimates, working drawings and operating instructions for these structures and equipment, taking into account the climatic variations within the country. Determine the expected number of units to be build and the size required for each cooperative.

5. Develop a design for research in storage and drying of ear maize and shelled grains.

Evaluate research needs related to drying, storing and marketing grains at the farm and cooperative levels. The team should determine relevant applied research areas including appropriate technology, integrated pest control, transportation, pricing problems and cooperative financial management problems. The team should specify the approximate location, institution, personnel, apparatus, equipment, supplies, expenditures and time duration of the projects.

Personnel Requirements. The study team will be composed as follows:

1. Team Leader.

a. Qualifications:

The team leader should have an advanced degree in some branch of natural or social science relating to agriculture.

b. Experience Requirements:

The leader should have at least 10 years experience in his profession. Experience in a team leadership role is highly desirable. He must have experience in food storage problems of humid, tropical or subtropical countries. The leader must be familiar with the problems of agricultural change in less developed countries. He must be

adept at making contacts, have the ability to communicate effectively and have the patience to work within a different system of procedure and concepts.

c. Duties and Responsibilities:

The team leader will coordinate all activities of the team. He will be the major point of contact between the team, GOK, donors and others. He will develop relationships with officials in MOCD, MOA and other relevant governmental bodies. The team leader will have primary responsibility for writing the final report.

2. Agricultural Engineer:

a. Qualifications:

The agricultural engineer should have at least an M. S. in agricultural engineering.

b. Experience Requirements:

The engineer should have at least 10 years of professional experience in grain storage and drying. Experience is required in the design of structures for bagged storage and drying of grain. The engineer must be experienced in utilizing and evaluating technology appropriate for grain storage and drying in humid, tropical or sub-tropical climates.

c. Duties and Responsibilities:

Engineer will provide the design and specifications for grain storage structures for smallholders and storage and drying structures for cooperatives. He will cooperate in field surveys of storage losses and will collaborate with team in most phases of activity, providing guidance in design and conduct of the study.

d. Period of Assignment: Six months.

3. Agricultural Economist:

a. Qualifications:

The agricultural economist should have at least an M.S in agricultural economics or at least an M. S. in economics with extensive experience in agricultural applications.

b. Experience Requirements:

The economist should have at least 10 years of professional experience in agricultural marketing, with specialization in crop storage and transportation. Experience in LDC's is essential, and experience in East Africa desirable.

c. Duties and Responsibilities:

The economist will contribute economic evaluations of alternative storage, drying and transport systems under consideration by the team. The economist will provide cost/benefit analyses of project proposals developed by the team, and will cooperate with the team in most phases of its activity.

d. Period of Assignment: Six months.

4. Entomologist:

a. Qualifications:

The entomologist should have at least an M. S. in entomology.

b. Experience Requirements:

The entomologist should have at least 10 years of professional experience in crop insects with extensive knowledge of stored grain insect problems and their control. Experience in humid, tropical or sub-tropical LDC's is highly desirable.

c. Duties and Responsibilities:

Entomologist will evaluate insect-control capabilities of alternative grain storage and drying structures and systems. The entomologist will aid in the design of research and training efforts where pest-control implications are evident, and will cooperate with the team in most phases of its activity.

d. Period of Assignment: Six months.

5. Design Draftsman

a. Qualifications:

The design draftsman should be hired locally and should possess standard qualifications for high-quality drafting work.

b. Experience Required:

The design draftsman should have at least four years professional experience with specialization in small-scale warehouse design.

c. Duties and Responsibilities:

The design draftsman will provide working drawings, specifications, site layout work and cost estimates for storage and drying facilities.

d. Period of Assignment:

One month beginning five months after the agricultural engineer arrives at post.

Report Requirements

A draft copy of the report will be provided 30 days prior to departure from Kenya for review and discussions with USAID, AFC, and other agencies, as appropriate. The contractor shall provide to USAID/Kenya at least 15 copies of the final typed report within 30 days after the last team members departure from Kenya.

DETAILED JUSTIFICATION FOR WAIVERS

Waivers Required

A. A waiver of the source and origin requirements contained in A.I.D. Handbook 1, Supplement B, and Section 636(i) of the Foreign Assistance Act to allow procurement of eight project vehicles (approximate cost $153,000) from Code 935 sources rather than from the U.S. only (Code 00C

B. A waiver of the source and origin requirements contained in A.I.D. Handbook 1, Supplement B to allow the procurement of approximately $1,000,000 of construction materials from Code 935 sources rather than from countries included in Code 941 only. (That is, to eliminate the componentry limitation for commodities produced locally.)

C. A waiver of the source and origin requirements contained in Handbook 1, Supplement B to allow the procurement of construction services from firms of Code 935 nationality rather than from firms of Code 941 (and Kenya) nationality only. (That is, to allow procurement of services from firms incorporated in Kenya or Code 941 countries but not 50 percent benefially owned by citizens of such countries.)

A discussion and justification of each of the above three waivers follows:

A. To permit the procurement of eight motor vehicles from Kenyan source and of Code 935 (Special Free World) origin.

Kiboko Range Research Station is located about 150 kms. from Nairobi in a rural area. Fifteen to eighteen Research Officers, U.S. and Kenyan, will be working considerable distances from the station conducting field experiments. For this project to meet the goals of assisting small livestock holders and pastoralists, the Research Officers will have to conduct a major proportion of their research on the range, including grazing blocks in the Northeastern Province and Isiolo District. They will also have to conduct field trials on associated range sub-stations, train livestock holders at the Pastoralist Training Center and conduct in-service training for range management extension personnel.

These activities will require eight vehicles. Three station wagons for carrying personnel and three pickups for carrying technical equipment, tools and camping equipment will be needed. Two trucks will be required for transportating heavy equipment (e.g., water infiltration and drilling gear, tractors) to various field sites, cattle

and equipment between research stations and to field shows, and personnel to distant parts of the Kiboko research station which consists of several thousands of acres. One truck will be a seven-ton, four-wheel drive for especially heavy or bulky loads and for use on especially rough roads during the rainy season. The other will be a five-ton two-wheel drive for more general use. Both trucks, like the pickups and station wagons will be used almost solely on rough, non-paved roads in remote rural areas where repair and maintenance facilities are virtually non-existent for U.S.-made vehicles.

Experience with U.S.-made vehicles in Kenya indicates that frequent breakdowns have been the rule rather than the exception and access to adequate supplies of spare parts and a competent repair service outside of Nairobi is non-existent. The only exception to this statement is a workshop in Wajir, Northeastern Province, which has been specifically set up by AID to maintain and repair light service vehicles and heavy equipment used in the National Range-Ranch Development and the Livestock Development Loan Projects. These vehicles generally operate within a 100 kilometer radius of Wajir. Even so, the unavailability of spare parts and difficulties in delivering them to the workshop have still caused difficulty in repairing the U.S.-made vehicles in these projects. This workshop is over 700 kilometers from the Kiboko research station.

In the Range Research component of the Agricultural Systems Support Project, a special situation exists. Since the vehicles described above will be based at Kiboko, a rural area, and will be travelling almost totally in rural areas, vehicles that can be repaired and maintained in the rural areas are essential.

The Landrover and Bedford dealers are two of the largest importers of personnel carriers, pickups and trucks in Kenya. They carry large quantities of required spare parts necessary for repair and maintenance and operate assembly plants in Kenya. The Ministry of Works and the Ministry of Agriculture vehicle repair and maintenance workshops are equipped and their mechanics trained to repair and maintain these vehicles since these vehicles constitute the bulk of their motorpool. The GOK is not equipped to repair and maintain U.S. made vehicles which require different tools and equipment for servicing them. This holds true for the day-to-day repairs and maintenance of the vehicles in this project, which will be done by a mechanic stationed at Kiboko. It is important, therefore, to have vehicles on which this person is skilled to work.

Finally, since the number of vehicles is small it would be unreasonable to request the Government of Kenya to equip a workshop, train personnel, order an indefinite quantity of spare parts just for eight U.S.-made vehicles. This would put a considerable and unnecessary strain on their limited resources.

Given the above situation, the Government of Kenya has strongly urged that USAID/Kenya seek this waiver in order to keep the project vehicles operational throughout the project life. We are of the opinion that it is appropriate to exercise the waiver authority in these circumstances.

B. To permit the procurement of approximately $1,000,000 of construction materials from Code 935 sources.

Construction of the expansion of Egerton College will use materials primarily of Code 941 and local source and origin. A.I.D.'s componentry requirements (Handbook 1, Supplement B), however, may not be satisfied for approximately $1,000,000 of construction materials. A.I.D.'s componentry rule for commodity procurement where the eligible source is Code 941 limits procurement only if (a) components are acquired by the producer of the commodity to be procured in the form in which they were imported and (b) the total cost to the producer of such components exceeds 50 percent of the lowest price, excluding ocean transportation and marine insurance, at which the supplier makes the commodity available for export sale.

Discussions with local producers of commodities to be used in the construction at Egerton College indicates that for several commodities the percentage, by value, of imported (Code 935) components may exceed 50 percent. These commodities include: reinforcing steel, PVC tiles, electrical cables, water pipes (PVC and cast iron) and steel casement windows and doors. These commodities, collectively, will cost approximately $1,000,000. It is requested that a waiver be authorized to permit procurement of such commodities from Code 935 sources; in effect, waiving the 50 percent componentry limitation.

Those Code 941 countries which may produce these commodities will, it is reasonable to assume, also be unable to meet A.I.D.'s componentry rules. To require that these materials be imported from the U.S. will yield price increased of 50 to 100 percent over the cost of the same commodity purchased in Kenya. Additionally, the long lead time required to procure these commodities from the U.S. could delay project implementation. If, as anticipated, a construction contract is awarded to a local construction firm it would facilitate that firm's ability to carry out the work if it is able to utilize its existing

sources of supply for construction materials. Certainly, in the event of repairs and maintenance during the life of the project and after A.I.D. assistance is completed, it would assist the GOK if materials used were compatible with those readily available in-country. This is particularly true with regard to electrical equipment and water pipes. It has been the experience in East Africa that the long-term value of A.I.D. assistance is increased if commodities used on the project can be easily maintained and/or replaced by locally available materials. See, for example, previous A.I.D. experience in Malawi (Bunda College) which justified a waiver of similar magnitude. Moreover, to the maximum extent possible, since the construction at Egerton is basically an add-on to an existing facility, it would be beneficial to maximize the extent to which materials used for the existing facility (primarily bought locally) were also used for the A.I.D. financed expansion. Finally, it will be extremely difficult for suppliers in certain instances (particularly with regard to reinforcing steel) to be sure that componentry rules have been satisfied. Price fluctuations and uncertainty as to the value, at particular times, of imported components will make it difficult for suppliers to certify to the eligibility of the commodity. Thus, in part to avoid the kinds of implementation problems verfication might entail, a waiver is being requested.

For the above reasons it is recommended that A.I.D. waive its 50 percent componentry rule and allow procurement of commodities of Code 935 origin, i.e., commodities whose components comprise greater than 50 percent of the value of the procured commodity.

C. <u>To permit the procurement of construction services from firms of Code 935 nationality</u>.

A.I.D. Handbook 1, Supplement B states that a firm providing services under an A.I.D. financed contract must, in order to be eligible for A.I.D. financing, be organized under the laws of an eligible source country and be more than 50 percent beneficially owned by citizens of countries included in the authorized geographic code.

A review by the architects for the expansion of Egerton College indicated that at most there were 10-12 firms in Kenya which satisfied this criteria and which had the technical qualifications to do the amount of construction proposed. It is further estimated that of these firms perhaps half would tender for this job, commitments for other construction jobs preventing the balance of the firms from expressing interest. Given the type of construction proposed and since

no U.S. construction firms have offices in Kenya it is expected that no more than one or two U.S. firms will be interested in the work--and these will more than likely attempt to form joint ventures with eligible Kenyan firms.

There are approximately 35 other firms in Kenya which could do the work but which are not eligible since, in most cases, ownership resides either with individual expatriate nationals (usually citizens of the U.K) or with parent firms located in Code 935 countries. Should A.I.D. allow tenders from Code 935 firms it is anticipated that as many as 10 of these firms would tender for the work.

A waiver to allow procurement of construction services from Code 935 firms is requested to enable the project to maximize competition and, thereby, assure that the work will be done at the most reasonable cost to the project and tenders submitted by most qualified firms.

SOCIAL SOUNDNESS ANALYSIS

This analysis is presented in two parts. The first describes the project context in terms of the existing demographic, geographic and socio-economic situation. It includes a description of small producer agricultural systems focusing on farms of less than 20 acres and various livestock schemes. The second part discusses social issues related to this project, specifically spread effect, women, pastoralists and nutrition. Included in the section on spread effect is a discussion of mechanisms contained in this project to ensure that project benefits reach the small producer with minimum negative social impact.

I. Project Context

A. Geography and Population

Kenya is characterized by highly diverse climatic conditions and terrain. Based on rainfall data, three principal climatic subdivisions can be distinguished. These include: the narrow coastal strip along the Indian Ocean; the central highlands region and the lower plateaus west of this area bordering Lake Victoria, which usually receive sufficient rainfall for farming, and the remaining 80 percent of the land area which is arid and semi-arid, receiving less than 20 inches of rain and mainly used for rangeland (see map 1). Monthly rainfall in the arid and semi-arid regions is very erratic and often has serious effects on crop and livestock.

Ninety-eight percent of the population is African, belonging to more than 30 ethnic groups, giving Kenya a cultural diversity rivaled only by its diverse terrain and climate. No single ethnic group is numerically dominant in Kenya. The three most numerous groups--Kikuyu, Luo and Luhya --make up almost half of the African population. Of these three the Kikuyu is the largest, constituting a little over one-fifth the population.

President Kenyatta and many of the predominant political and economic leaders are Kikuyu although conscious efforts are made to involve other groups through representation in the Cabinet, for example. The homelands of the various ethnic groups correspond more or less with the administrative units of the country, which, in turn, correspond to distinct ecological zones. This situation reflects in part the degree to which these groups had adapted to the various physical characteristics of the country. Government efforts to address the various groups' concerns combined with the strong leadership of President Mzee Jomo Kenyatta and the widespread respect in which he is held have given Kenya political stability for continuous economic development and growth.

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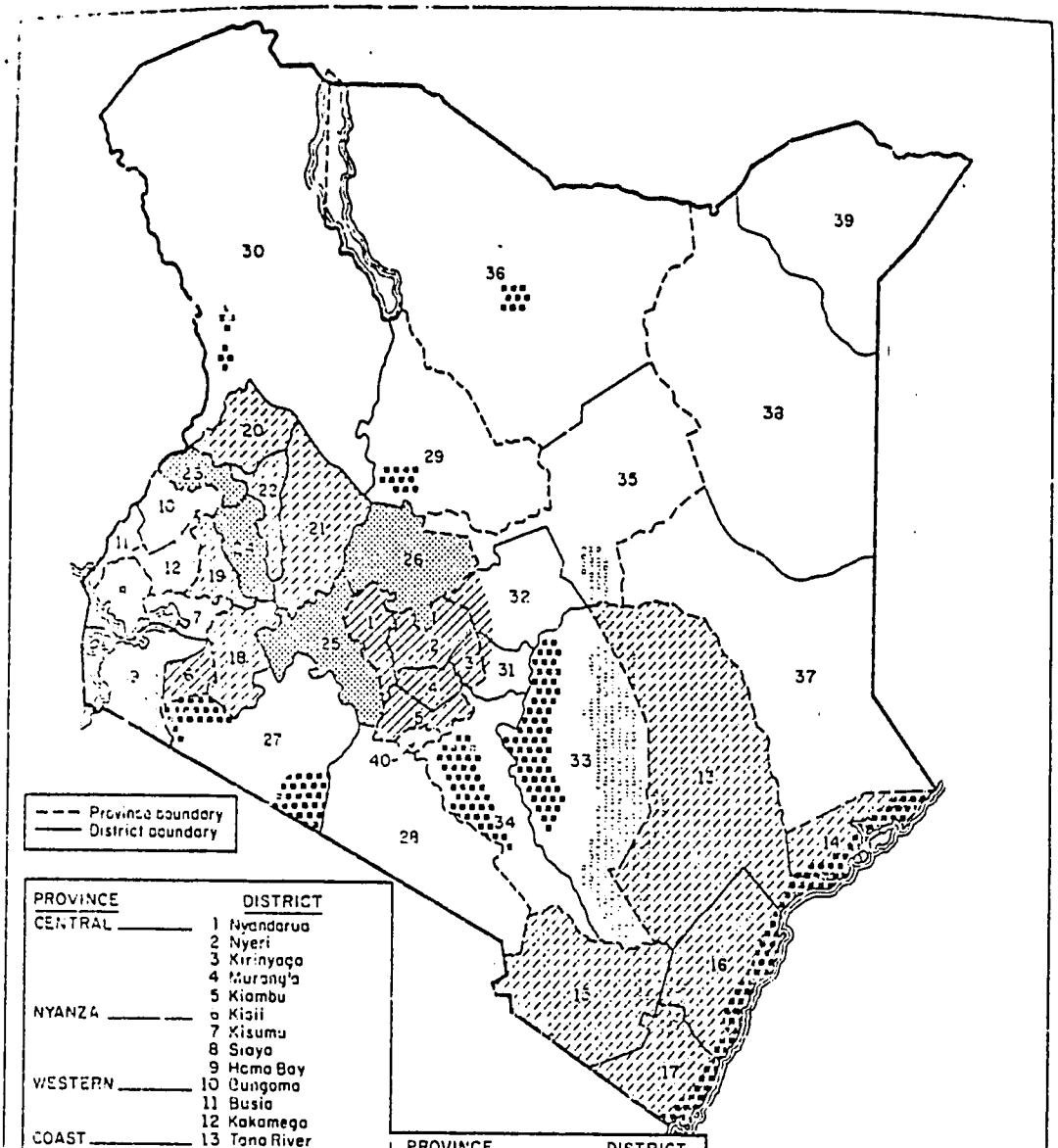
MAP 1



PROVINCE	DISTRICT
CENTRAL	1 Nyandarua
	2 Nyeri
	3 Kirinyaga
	4 Murang'a
	5 Kiambu
NYANZA	6 Kisii
	7 Kisumu
	8 Siaya
	9 Homa Bay
WESTERN	10 Gungoma
	11 Busia
	12 Kakamega
COAST	13 Tana River
	14 Lamu
	15 Taita
	16 Kilifi
	17 Kwale
RIFT VALLEY	18 Kericho
	19 Nandi
	20 Kara Pokot
	21 Baringo
	22 Elgeyo-Marakwet
	23 Trans Nzoia
	24 Uasin Gishu
	25 Nakuru
	26 Laikipia
	27 Narok
RIFT V. (cont'd)	28 Kajiado
	29 Samburu
	30 Turkana
EASTERN	31 Embu
	32 Meru
	33 Kitui
	34 Machakos
	35 Isiolo
	36 Marsabit
NORTH-EASTERN	37 Garissa
	38 Wajir
	39 Mandera
NAIROBI AREA	40 Nairobi

ACTUAL LAND USE IN DISTRICT

- Large farms, estates, or ranches
- Improved smallholder farming, cash crops
- Dense, poverty-level smallholdings
- Sparser subsistence smallholdings on the good cropland; marginal smallholdings on the poor cropland
- Districts in trust for pastoral groups
- Marginal smallholders on higher-risk cropland
- Zone II or III cropland currently underutilized, in trust for ethnic groups

LAND POTENTIAL IN DISTRICT

- Ecoclimatic zones II and III (high to medium potential for crops, ranching, and forestry) (Embu and Meru have portions of rangeland)
- Districts having large portions of zone II and III cropland but other large portions of rangeland risky for crops
- Predominantly in ecoclimatic zone IV through VI (rangeland of low to moderate potential); high risk of crop failure
- Isolated areas of high to medium potential (zone II or III) held for ethnic groups

Note--Ecoclimatic zone I (barren land) occupies less than one percent of total land area.

Source: Foreign Areas Studies' Area Handbook for Kenya. 1976 Page 295

Kenya's population is presently estimated at 14 million and growing at an average annual rate of roughly 3.5 percent, one of the fastest growing populations in the world. About 87 percent of the people live in the rural areas. Urban population is concentrated mainly in the cities of Nairobi and Mombasa.

The highest concentrations of rural population occur in Kisii District in Nyanza Province and Kakamega District in Western Province where population densities may be over 1,000 people per square mile. High rural population densities are also found in the Central Province and the coastal strip between the Kenya-Tanzania border and Malindi. In contrast, most of the northern half of Kenya and the area between the coastal zone and the highlands have population densities of less than 10 people per square mile. Population concentrations in these latter areas are usually found in locations containing a regular water supply.

Against the background of rapidly increasing population there are two major population shifts: rural-urban migration and spontaneous land settlements. In 1948 there were 17 urban centers containing some 285,000 inhabitants, constituting 5.1 percent of the total population. Between 1948 and 1962 urban population increased at an annual rate of 6.6 percent to bring the total in 34 urban centers to 671,000. By 1969 urban population had risen to over a million, constituting close to 10 percent of the country's total population. The annual urban growth rate was 7.1 percent, compared to the national average of 3.3 percent. Urban planners recognize that this trend is likely to continue at least until the end of this century. In fact, it is expected that Nairobi and Mombasa will absorb two-thirds of the rural migrants during the remainder of this decade. The Agricultural Systems Support Project with its emphasis on increasing agricultural productivity and incomes may affect rural-urban migration by providing more opportunities for greater earnings in rural areas. In any case this project should not heighten such migration.

According to the 1969 census, most migrants to urban centers were male, young (under 30 years old), and more than one-half were single, and possessed higher than average educational levels for their age groups. The main attraction of the urban centers for these migrants was wage employment; more than two-thirds of them owned no cultivable land in a rural area. Off-farm employment supplements income from subsistence farming, and for some it is essential in order to provide for families too large to be supported solely by a small farm. One result of such migration is to make the very young, very old, women, and less well educated more predominant in rural areas.

The second effect of rising population was the spontaneous movement

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of persons to land for which they held no title nor traditional rights of usage in order to farm and establish residence there. Government settlement schemes to accommodate such "squatters" have so far been unable to meet the need. Several important factors in Kenya society which continue to aggravate this situation are:

> First, increasing population density in relation to the carrying capacity of the land in many areas is pushing people off the land. Second, Kenya's high annual population growth rate of 3.3 percent is accentuating this trend. Third, alternative non-farm employment is scarce--urban employment is increasing at an annual rate of 2.5 percent while migration to urban areas ranges between 8 and 15 percent. And fourth, the current land tenure system allows the existence of extensive cultivated large-scale farms and intensively exploited, technically underdeveloped traditional farming areas. 1/

One result is an increasing number of people moving from higher potential land areas to medium and low potential areas.2/ (See map 2.)

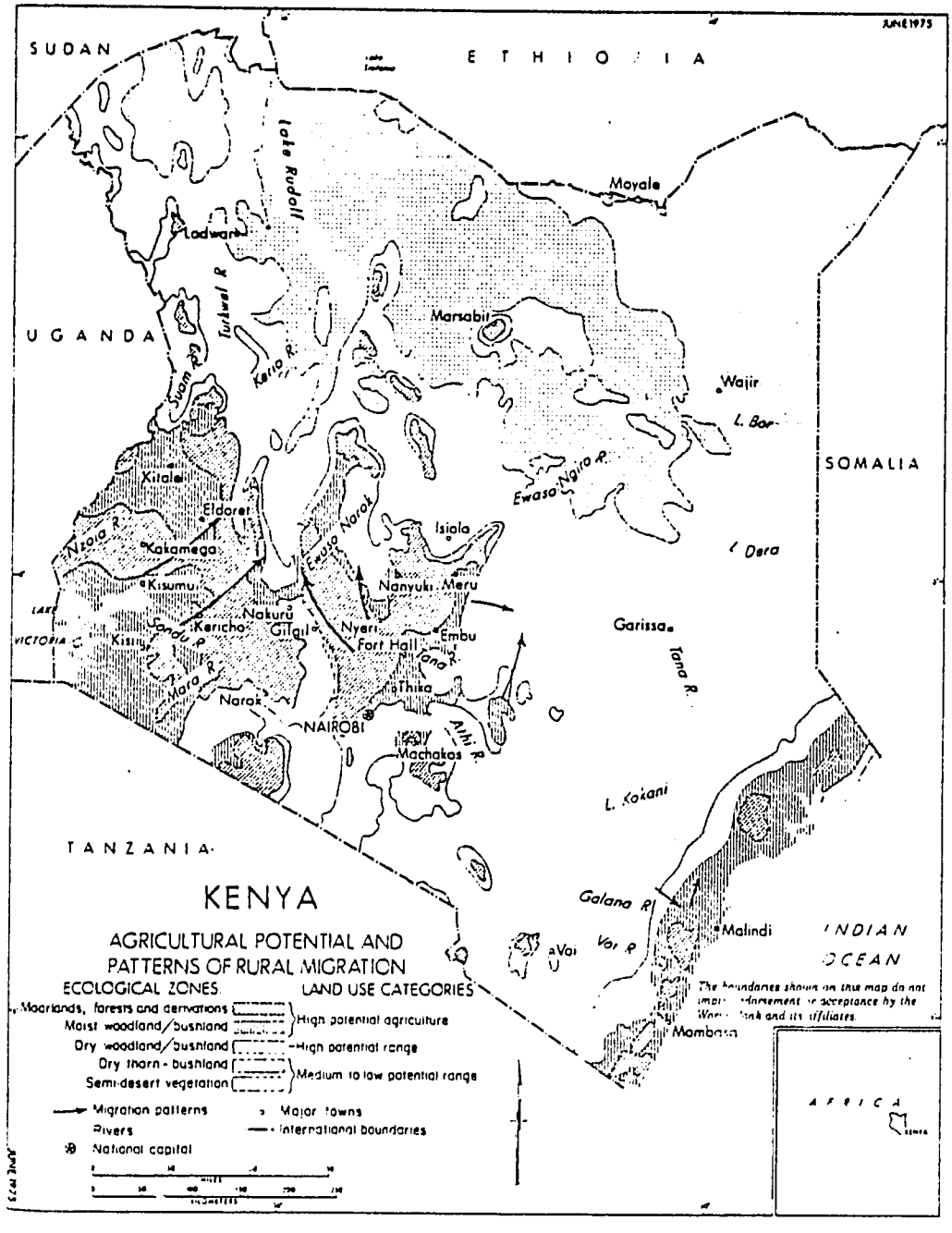
These problems are recognized in the 1972 report of the International Labor organization (ILO) on Kenya entitled Employment, Incomes and Equality to which Kenyan scholars significantly contributed. This report strongly recommended the redistribution of land into more labor-intensive units and concentration of development efforts on the poorer rural families. Most of these recommendations, although some were modified, were incorporated in the Government of Kenya 1974-78 Development Plan.

Government continues to respond to the problems created by the rural population shift. Indications are that even greater emphasis will be placed on the development of marginal, semi-arid and arid lands in the 1979-83 Development Plan. This would include accelerating agricultural training, extension, research and infrastructure support programs in the areas of dry-land farming and range activities to convert present marginal lands into productive farm and rangelands through the application of improved technology.

1/Uma Lele, The Design of Rural Development. 1975, pages 213-214.

2/For further discussions on rural migration patterns and settlement patterns see R. Chambers and J. Moris, "MWEA: An Irrigated Rice Settlement in Kenya," Development Digest XV (4), 1977, pp.75-90, and D. Thom "Human Resource and Social Characteristics" in Interim Resources Inventory (Vol. I), 1977.

MAP 2



Source: Uma Lele's , The Design of Rural Development, 1975, p.211

The goals and objectives of the Agricultural Systems Support Project address many of the same concerns. Since many of the rural poor are in marginal, semi-arid, and arid lands, the concerted efforts of the Government of Kenya and USAID will therefore, be focusing on their problems. These systems, however, also support the poor in the high potential areas as well since they are national in their scope.

B. Socio-Economic Situation

1. Decision-Making Institutions

Present political and planning institutions represent a combination of traditional, colonial, and contemporary models for collective decision-making. Administrative units descend from the province through the district and division to the location and sub-location levels. These latter units are administered by tribal chiefs who are appointed Government officials. Important decisions at the local level are also discussed at public meetings (barazas) in which the opinions of local leaders may be expressed. Although these meetings are usually too large and formal to function as effective planning institutions, they can allow for considerable expression of local viewpoints which may be taken into account in decision-making.

At the district level there is a District Development Committee (DCC), composed of the Members of Parliament from that district, the district officers of the various ministries involved in development planning and implementation, the District Development Officer, who serves as the secretary, and the District Commissioner, who chairs the group. Development Committees at the division and location level are also starting to be formed. Although the exact number is uncertain, it is estimated that a few such committees have been organized, primarily at local initiative, in 40-to-50 percent of the districts and that the number is increasing yearly. These Development Committees made up of elders and local officials discuss and reach decisions about development issues and help implement programs emanating from the divisional and higher levels.

The District Development Officer coordinates for the DDC preparation of the District Development Plan in which the inputs of the various ministries are organized, and local development priorities are established. DDC's also have a certain amount of discretionary funds to be allocated to development projects. Their use of these funds can be an indicator of local priorities. Although much remains to be done to make the DDC's an effective link in the planning process, they represent an important step toward decentralization of decision-making and local participation in planning activities.

At the provincial level a Provincial Development Committee, similarly composed, brings together the district plans and provides a forum for discussing regional priorities. However, the District Development Plans are supposed to form the basis upon which national projects, programs and plans are formulated. These plans, initiated as part of a five-year planning cycle, are updated annually to reflect changes in local and national goals and priorities as well as to accommodate changes in available resources.

2. Smallholder Farming Systems

Up until the 1950's most export crops had been grown by commercial farms or by the large-scale farming sector when they were entirely foreign-owned. Since then, however, GOK support for cash crop production by African smallholders has significantly increased the percentage of marketed agriculture production to 51 percent in 1976 compared to less than 20 percent in 1960. These and other changes described in Part II. A. have drawn small farmers increasingly into the cash economy. They also highlight the importance of the role of small farmers in increasing Kenya's future agriculture production given the sizable potential for intensifying production on existing holdings.

Approximately 85 percent of the people of Kenya are dependent on agriculture for their livelihood. There are about 1.5 million rural households in Kenya with the vast majority of these having holdings of less than 20 acres. In 1975 nearly 60 percent of the 1.5 million smallholdings were less than 5 acres. Almost 32 percent were less than 2.5 acres even though this is the minimum acreage considered necessary on average for providing a typical family's food and clothing requirements. Over half of the smallholders have individual freehold title to their land. Most smallholders raise some livestock for dairying mainly but are still essentially cultivators since their holdings or shambas are too small to sustain enough cattle to provide a significant share or the family's nutrition or income.

Even though the average smallholding is about 5 acres or less only about 3 acres is cultivated. This situation reflects several interrelated problems in some of the smallholder farming systems. These include the practice of letting some land always remain fallow, setting aside some land for grazing of livestock, shortage of labor, and the the lack of agricultural techniques, capital and other inputs to cultivate a full holding more intensively for greater income.[1/]

1/See Part II. A. 1. for a discussion of this latter point.

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Agricultural patterns among smallholders are primarily based on subsistence food crops. Maize is the predominant subsistence crop often accompanied by legumes, such as peas and beans. Other staples include cassava, sorghum, millets, potatoes, plantains and bananas supplemented by kitchen garden vegetables, fruits and spices. A limited surplus of food along with the cash crop grown, if any, are sold to obtain money for taxes, school fees, clothing, tools, kerosene, medicines, tea, coffee, sugar and other items considered essential.

Money is sometimes used to buy maize and other basic food supplies when food provisions run low. Of the smallholder families perhaps 25 percent systematically produce crops for cash sale and about half of these may be using improved agricultural rather than traditional methods. Small farmers also may earn money by working on other farms, or by doing casual labor in town or on road construction when the demand for farm labor is slack. Off-farm employment as noted above is often essential in order to provide [illegible] a family.

Most subsistence producers utilize only hoes and other hand tools. Women perform the routine tasks of cultivation, including regular weeding, watering as appropriate, harvesting and post-harvest processing operations for both food and cash crops. Men might perform the heavier tasks of cultivation, such as clearing land, removing stumps and preparing the land for cultivation.

Single draft oxen are used by some cultivators in Nyanza Province and in the districts of Nandi, Kakamega, Machakos and Kitui. About 80 percent of the 7,000 tractors in use in 1972 were used on large-scale farms.

Generally, smallholder farm families live in "compounds" consisting of a cluster of houses, a kraal where cattle are kept at night, and a few small granaries. The number of structures in a compound changes as the family unit changes. Polygamous familes are common, and most men aspire to have more than one wife if they can raise the funds for the "bride price" which can be given in livestock, goods or cash. A wife may advocate and select other wives. Within the compound each wife lives in a separate house with her children.

About one-third of all rural households are headed by women whose husbands live and work elsewhere. Male-migration in most agricultural areas in Kenya is substantial. Although 20 percent of urban wages is sent back to rural families by the migrants working in towns and cities, it results in a drain of rural leadership and talent as well as causing labor shortages in rural areas during peak periods of agricultural operations, especially at the time of preparing the land for planting.[1/] Consequently as Kenya's population increases and

1/A. Wipper, "The Politics of Sex", African Review Studies XIV (No.3), 1971

I. Tinker, "The Adverse Impact of Development on Women", Women in World Development, 1976.

out-migration continues, even greater responsibility for cultivating the shamba will fall on women. Women seldom have legal title to the land they cultivate[1/] even when they are widowed since land traditionally is held by males.

3. Livestock Systems

The livestock population in Kenya is estimated at about 10 million cattle and 12.5 million sheep and goats. More than 90 percent of the cattle are indigenous Zebu breeds which are relatively hardy and disease resistant but low meat and milk producers. Quality beef production and export come from improved indigenous Boran, often crossed with higher yielding foreign varieties.

Most livestock production is used for home consumption. In fact, marketed livestock increased less rapidly than marketed cash crops through the mid-1960's. However, from 1968 to 1972 official cattle purchases from pastoralists rose rapidly. In 1970 it was estimated that 37.5 percent of cattle sold came from pastoral areas. This increase in purchase was probably due however, in part at least, more to climatic factors forcing pastoralists to reduce stock.

To date there have been two National Livestock Development Programs. The first was carried out from 1968 through 1974 and was aimed at assisting livestock holders to enter a market economy. This project also had considerable success in laying a foundation for sound range management practices. In the Second Livestock Development Project, covering development during 1974 to 1978, the following are being implemented: construction of three feedlots, development of group ranches on adjudicated land in parts of Narok, Kajiado, and Samburu districts; 100 new commercial ranches in parts of Nakuru, Laikipia, Nyandarua, and Machakos districts, and 21 new company or cooperative ranches in the rangeland areas of Tana River, Kilifi, Kwale, and Taita districts. This program is also financing development of 7 million acres of grazing blocks in the North Eastern Province and another 3 million acres in eastern Isiolo District by creating permanent water supplies, access roads, livestock dips, handling facilities and supervision of range management through the Range Management Division.

Pastoralism has a long history in East Africa. One settlement site at Norasura in Narok District dates back to the beginning of

1/A. Slattery, "Looking at Rural Woman: A Path to Understanding 'Women in Development'", 1978.

the first millennium BC. Among pottery, stone bowls, and other artifacts bones of domesticated livestock were found, including a large number from mature cows. 1/

Pastoralism has also had important and beneficial effects on the historical development of ecological regimes. For example, it has been demonstrated in Maasailand that traditional pastoralism may not have been destroying the environment and endangering wildlife in such areas as the Serengeti Plains, contrary to the long-standing view held by wildlife conservationists. Heavy pastoral grazing of medium to tall grassland areas appears to be both a necessary and beneficial condition for the development of short-grass regions required to support vast herds of wild ungulates and their predators. 2/ However, due to relatively recent historical influences, including population pressure and colonial displacement from traditional high-potential grazing lands, Maasai have had to abandon traditional grazing practices for other alternatives, often ones proving detrimental to the physical environment.

Pastoralists, like farmers in Kenya, come from several ethnic groups. Some of these groups are both pastoralists and farmers, such as the Pokot and Kamba, 3/ and others are predominantly pastoralists, such as the Somali, Maasai and Boran. Although these groups vary from one another in terms of social organization, herding practices and places in which they live, there are similarities that make it useful to examine briefly how the Maasai and Somali organize themselves socially and practice herding of livestock in order to gain insight into the interaction of social cultural and ecological variables in pastoral livestock production.

Traditionally Maasai heads of compound polygynous families secured rights to communal grazing and water within their tribal boundaries through initiation into a specific tribal age-set. Families of one group were prohibited from grazing in the territory of another unless they had obtained permission. During times of drought or famine, however, there was often institutionalized sharing of available resources. Sometimes families changed their affiliations, but generally families of a particular group were prepared to defend their territorial boundaries from intruders, with force if necessary.

1/ A.H. Jacobs, "Maasai Pastoralism in Historical Perspective", Pastoralism in Tropical Africa, 1975, p. 410.

2/ Ibid., pp. 410-411

3/ R.B. Edgerton, The Individual in Cultural Adaptation: A Study of Four East African Peoples, 1971, pp. 91-128.

Each group was divided into a number of "localities" (enkutoto) which had its own permanent water supplies for dry season graz ing and well defined range boundaries for wet season grazing. Each famil lived a transhumance mode of pastoralism. Each "locality" had its own "council of elders" under the leadership of its own age-set "spokesman". The fact that each locality was a self-contained socio-political and ecological unit enabled local leaders to manage its resources as if they owned them. Depending on local environment and other factors, localities varied tremendously in size. However, an average locality consisted of about 300 square miles (200,000 acres) with 1,000 persons, or roughly 125 families, in possession of 19,000 livestock units (1 cow = 5 sheep or goats = 1 livestock unit).1/

The socio-political organization and transhumance existence of the Maasai is similar to the Somalis in the North Eastern Province. The grazing blocks in that province demonstrate how social and ecological considerations can be incorporated into livestock development programs. Two of its strengths are: grazing block boundaries conform to the traditional Somali sub-tribal territorial boundaries, and the grazing blocks are large enough (about 1,000,000 acres each) to permit wet and dry season grazing without overgrazing any one area.

The various herding practices of the Somali also exemplify adaptations of livestock raising and social organization to the environment. In the northern part of the North Eastern Province the Somali pastoral nomads depend heavily on camels, sheep and goats. The contrasting water and grazing requirements of these two categories of livestock lead to the establishment of two herding units, one for sheep and goats, and the other, camels. The first unit consists of the small stock and burden camels which never venture far from water sources. The other consists of camels which can survive without water for up to 14 days and can be driven long distances from permanent water to the best available grasses and pasture. Significant social differences accompany the ecologically and zoologically based differences in herds. Grazing camels are herded by boys and young bachelors, while the herds of small animals and the burden camels are cared for by married men, their wives and children.2/

1/A.H. Jacobs, op.cit., p. 415

2/I.M. Lewis, "The Dynamics of Nomadism: Prospects for Sedantarization and Social Change", Pastoralism in Tropical Africa, 1975, pp. 429-430.

II. Issues

A. Spread Effect

Two important questions which arise in this project are: How will the various outputs from training, research, studies, and TA reach the smallholder or pastoralist? And if the outputs do reach the target individuals, will they benefit? These questions are examined here by viewing the historical perspective of agriculture policy and services in Kenya, by analyzing the complex process for diffusing innovations, and by discussing ASSP efforts to facilitate diffusion of benefits to the ultimate users with minimum negative social impact.

1. Background

During the colonial period agriculture policy and services generally neglected food production in favor of export, or cash, crop production and were directed toward expatriate farmers. Consequently, such policies and services reflected prevailing practice in Great Britain, for example, use of land titles as security for loans.

Food crops were considered the domain of the African producer, requiring only the introduction and distribution of seeds. It was only during periods of stress, e.g. war and famine, that African farmers were urged to grow more. Concomitantly, there was disregard for the constraints of labor, technology and capital affecting food production.

With Independence the "new" Government removed colonial restrictions on land holdings, with UK assistance facilitated transfer of expatriate land holdings to African ownership, and encouraged production by African farmers of various cash crops, such as coffee, tea, and dairy products, which had previously been forbidden. Registration of land titles based on traditional usage rights, was initiated, and efforts were made to extend credit facilities to those not previously eligible.

That all these have had a positive effect on African farmers - both large and small - is demonstrated by data cited in Part II. A in the DAP, and in the DAP Supplement on increased production, rising incomes, and growing smallholder participation in the economy. That these policies did not affect all farmers equally is evidenced by the emergence of the "progressive" and "non-progressive" groups and of rural-urban and intra-rural income disparities cited by the ILO/UNDP[1/] and a host of other studies. These problems reflect not "sins of commission" so much as the natural outgrowth of relying on colonial systems and approaches carried

1/ILO, Employment, Incomes and Equality: A Strategy for Increasing Productive Employment in Kenya, 1972.

over into the post-Independence era; the manpower constraint, which among other problems resulted in mass hiring of JAA's lacking much prior training or up-to-date technical information (see Part II. B.); the natural human tendency found in teachers as well as extension staff to give attention to those most responsive to one's efforts, and other socio-economic factors, including prevailing development theory during most of the first decade of Independence.

Some authors contend that this pattern of policies and services has continued well into the post-Independence period[1/] and that only with the drawing up of the 1974-78 Development Plan was there a determined effort to shift attention to smallholders. One could add that the GOK initiative, which led to the 1972 ILO/UNDP study on employment and incomes,[2/] represented concern by GOK policy makers that development was not affecting equity as positively as expected. The 1974-78 Plan stated the policy decision to focus on rural areas. ASL I, Part C, and IADP represent practical efforts since Plan publication to implement that policy, while the discussion of policy issues growing out of the ATAC manpower-education report (encouraged and requested by the MOA) combined with the GOK's policy decision to extend services to the "non-progressive" group has further moved the process forward. However, the actual task of reorienting existing systems and extending their outreach to those not now benefitting from them still remains.

2. Bridging the Gap Between Smallholders and Existing Agricultural Support Services

The traditional approach to introducing agriculture innovations has been through extension contacts with the more progressive large and small farmers and assuming the new technology would eventually reach other farmers by word of mouth, example, or some other means. This has proved ineffective. Two tasks, therefore, exist. One is development of communication channels and techniques which will permit transmission of innovations to smallholders more effectively.[3/] The other is ensuring that the innovations are relevant to small producers' needs.

The introduction of an innovation is a complex process

1/P.O. Alilia, "Kenyan Agricultural Policy: The Colonial Roots of African Smallholders Agricultural Policy and Services", 1977.

2/ILO, op. cit.

3/Pertinent research in this area done in Kenya includes: Schonherr and Mbugua's "New Extension Methods to Speed Up Diffusion in Agricultural Innovations", 1974 and Garst's "Spacial Diffusion in Rural Kenya: The Impact of Infrastructure and Centralized Decision Making", n.d.

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subject to the influence of numerous variables. One source[1/] suggests that any proposed innovation will be subject to these influences: behavior of the innovator, motivation of the recipient, and behavior of the recipient stemming from the nature of his traditional culture. ASSP will have limited direct impact on the last two but will have to rely on the fact that market incentives do effect Kenyan farmers and pastoralists behavior, that virtually all Kenyans have a use for money, that the desire for modernization does effect Kenyan behavior and that many tribes have shown themselves very open to adoption of new innovations - one example is the Kisii. On the other hand, nomadic pastoralists as a group may still adhere most strongly to their traditional way of life. Research into means to improve range management and productivity will need to relate traditional mechanisms for achieving these objectives to proposed innovations, just as range grazing blocks have been based on traditional grazing areas.

To say that ASSP will have limited direct impact on the ultimate users of the systems being aided does not mean there will be no impact. TA personnel at Egerton and Kiboko may well have opportunities for direct contact with pastoralists and smallholders at FTC's, field days and so on. However, diffusion of project-related innovations will mainly result from the multiplier effect acting through the extension service.

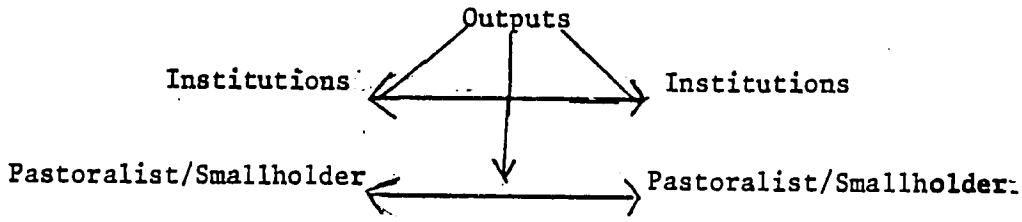
The project will most directly aim at changing the behavior of the innovator through training of extension, research, cooperatives and AFC staff; through association of Kenyan counterparts with U.S. TA personnel, and through proposed linkages described in the "Beneficiaries and Rationale" subsections in Part II. B. between the various ASSP components. The purpose of these efforts will be to instill acceptance of the idea that poor smallholders and pastoralists are the proper focus for the efforts of the staff of the ASSP systems, to provide these staff with needed technical and other specialized information so that they can pass this on to the ultimate users of the information, to imporve the systems' efficiency so the technology, credit and other inputs can reach these users in a more timely fashion, and to make available sufficient numbers of staff to serve a much expanded target group. Thus, ASSP is to assist the GOK create the capability within existing systems and institutions to serve a much larger clientele than has heretofore been reached.

1/Niehoff and Anderson, "The Process of Cross-Cultural Innovation: Positive, Negative and Neutral Factors", 1964.

3. Diffusion of Project Outputs

Three areas of spread effect can be discerned in ASSP per Figure 1 below:

Figure 1



The first is the diffusion of project outputs , such as research findings, graduates of training facilities, credit, and co-operative marketing services to the ultimate smallholder-pastoralist users. A second is the spread of outputs among the various institutions and systems involved in ASSP or otherwise related to it. Examples might be diffusion of research findings to training institutions and/or the extension service and the assignment of better trained graduates from Egerton and the Coast Institute as staff for Farmer Training Centers.

The third diffusion channel is among and between smallholders and pastoralists themselves. There is evidence that innovations adopted by less progressive farmers spread rapidly among other similar farmers and that more progressive farmers will also readily adopt the same innovations.1/ The rapid growth of hybrid maize in Western Kenya demonstrates a similar effect.2/

Component specific means for ensuring linkage and diffusion are discussed in Part II.B. and III.A. Without much further repetition the following selected examples illustrate project specific diffusion channels:

a. Component Linkages - Curriculum reviews at Egerton College and the other assisted educational institutions will be so structured as to feed in information and working experiences from graduates assigned to extension positions, FTC's, and research

1/Schonherr and Mbugua, op.cit.

2/ Garst, op.cit.

facilities. These individuals can also contribute knowledge gained from direct contacts with the ultimate users of extension services. U.S . research staff will also be involved.

b. Research - These findings will be disseminated through distribution of published research materials to training facilities, other entities conducting research, and extension staff. They will be built into pre-service and in-service training programs through the curricula, field trips and seminars. They will be further disseminated through such work experiences of extension staff as monitoring research field trials.

c. Farmer Services - The credit and cooperatives systems now rely on MOA extension personnel for providing extension services per se to loanees and for various services in analyzing credit-worthiness and in monitoring crop production and credit use. Credit provided to non-progressive farmers has little utility unless it is provided in an integrated package with extension and marketing, including storage, services and sufficiently in advance of planting time for the loanee to purchase seeds, fertilizer, and pesticides and to clear his land. In the same way, increased production which is lost through poor storage or sold at too low a price outside authorized channels because MPB or cooperatives storage space is not available or existent neither raises incomes nor can be used for credit repayment.

d. Smallholder Focus - Project activities will be oriented toward smallholders. For example, proposed studies, like the Coastal Institute and the Cooperative Manpower ones,and in-service and pre-service training, such as at Egerton College and at AFC, will be directed to the needs of the smallholder. Field activities will be stressed in order to learn from smallholders by involving them in defining problems that need to be and can be addressed by the various components of this project. Orientation of all U.S. project field staff will stress the same focus, and participant training should include in addition to technical courses, a socio-cultural component to build awareness of such considerations in participants.

e. Multiplier Effect - Basic to educational development theory is the tenet that it is more efficient and effective to improve knowledge and skills of a large population by training the trainers of that larger group or by training "trainers of trainers". The manpower training component as well as much of the cooperatives component of ASSP seeks to do just that and do it for all three tiers in the agriculture education system simultaneously. Especially crucial here is the role of Egerton graduates as research staff, as principals for FTC's which train other extension personnel and farmers, as staff at agriculture institutes, and as technical resource personnel for farmer-contact agents and/or as such agents themselves. The effect of improved and small farmer/pastoralist-oriented training on these graduates should diffuse widely throughout the agriculture extension, research and manpower training systems and should impact upon the ultimate users of these systems. The expansion of Egerton's capacity will enable that diffusion to take place more rapidly and comprehensively.

f. Social Science Input - Throughout the project social scientists and communication specialists will assist in designing training and research programs , designing and conducting studies such as the one for the Coastal Institute, and working in any other areas where such assistance will ensure the relevancy of the project inputs to the smallholder.

An issue regarding diffusion of innovations relates to the effectiveness of the extension service as a vehicle for this purpose given known deficiencies of extension systems as diffusion channels experienced in various countries.1/First, the extension system already exists in Kenya and is used by farmers as a source of technical information. This was demonstrated by the hybrid maize experience and has recently been reaffirmed by a prominent Kenyan sociologist.2/The logistic support and management problems experienced in the past are presumably being met by GOK actions now underway. Also the recurrent budget covenant in this PP will bear on logistic support concerns, and training of managerial/supervisory personnel as a result of ASSP activities should also affect management problems. Finally, ASSP provides various means for linking spontaneously and by design extension improvements and expansion of the system's outreach to similar changes for credit and cooperatives, research and storage.

1/AID, Extension in the Andes, April 1971.

2/Personal conversation, Richards - Mbithi, April 27, 1978.

Proposed evaluations will provide a means for ascertaining actual project impact on the rural poor. Periodic curriculum reviews may also contribute to this process. During the course of project implementation other mechanisms may be found for facilitating impact on smallholders--indeed, Part II. B.2, for example, clearly states the USAID's expectation that U.S. research staff will give attention to this.

4. Participation of Beneficiaries

Direct participation of the ultimate users of the ASSP component systems in project activities (as distinguished from their being beneficiaries) can help to ensure that the system's services and/or products are helpful to smallholders and also facilitate diffusion of innovations. This process has been succinctly stated in a recent report by the University of Nairobi for the Ministry of Finance and Planning. It states that participation at one level is

> ...the active involvement in the decision-making process with regard to plans and priorities for the development of services and assets at the community and ultimately the national level. Participation denotes an intimate involvement whereby people critically influence the decision about how, when and in what form they acquire benefits, it implies power transfer to the target groups. 2/

Suggestions have been made in the PP of ways in which smallholders might communicate their concerns to researchers and trainers, for example, by involving them in research field trials and demonstrations. Also, greater participation of cooperative members in that system is both desirable and necessary, and expanded member training may contribute to this end. Certainly, not all means have been explored for involving farmers and livestock producers in ASSP activities. It will be important that contract staff identify additional mechanisms for such participation during project implementation and make every effort to enable beneficiaries to contribute to the institutions being assisted.

B. Women

The role of women in agricultural activities is central. In fact, efforts to help farmers to increase their productivity and income often increase the burden of agriculture work for women. Several studies 3/

1/ See Garst, op.cit. for Kenyan example.

2/ P.M. Mbithi, "Towards Strategies for Intensified Social Development", December 1977, p.7.

3/ See Abbott (1974), Barnes (1975), Bookman (1973), Kershaw (1975), Krystall and Pala (1975), Pala (1974), Slattery (1978), Staudt (1975), Wills (1967), Wipper (1971) and Whiting (1973a, 1973b).

indicate that this is especially true when a family farm enterprise adds labor-intensive cash crops like coffee, sugar cane, or pyrethrum, and livestock, such as poultry, pigs or dairy cows. In addition to the traditional maternal responsibilities of raising and caring for the children taking care of the homestead; fetching water and fuel; producing, processing, and cooking foods for the family and maintaining the expected "good relations" with her in-laws, a wife is the manager of the farm when her husband is absent and the chief field hand at all times. As the family begins to use their newly acquired cash to send children to school, the wife's burden increases even further when she loses the regular help on the farm of school-aged sons and daughters. However, it has also been demonstrated that women prioritize and tend to select among the range of tasks before them, giving the most time and attention to those which they judge more important.

The trend of women taking an increasing repsonsibility for farm operations under various socio-economic pressures, such as out-migration of men to cities for employment, must not only be recognized but dealt with. Women have proved themselves to be as able farmers as men. However, they have not had equal access to agricultural services. For example, women have difficulty obtaining agricultural credit because they traditionally do not have title to the land they are farming.

This project attempts to address these and other issues by ensuring that women are involved in representative numbers in the various extension pre-service and in-service, farmer and pastoral, and participant training activities as well as actively involved in the research, credit, cooperative and storage components, both as implementers and recipients. For example, many more women agriculture (not simply economics) extension workers and credit personnel are needed. Women farmers are estimated to head on-third of all farm households so that more women need to be included in farmer and pastoral training programs. Egerton has made significant progress in training women. In its 1975 class, 13.7 percent were women; in the 1976 class, 15.1 percent and in the 1977 class, 20.3 percent. By 1983 Egerton's administration plans to increase this percentage to 30 percent and to provide the necessary dormitory and other physical facilities with AID assistance to do this. Efforts still need to be made, however, to place women in positions where they can influence women farmers.

While it is not anticipated that ASSP will have significant negative social consequences for women, it is still essential for this project to analyze continuously the role of women as it relates to the various project components in order to determine that programs are having the intended impact and to minimize any potential negative consequences. This will not be a specific effort directed toward women alone but part of the overall evaluation process.

C. Pastoralists

One of the most challenging efforts in Kenya's Livestock Development Program is the work being done with nomadic pastoralists. The Government of Kenya is trying to both increase nomadic livestock productivity and to increase their access to social services, such as health and education facilities. Development of grazing blocks is an attempt at this. The program has been able to develop year-round water resources and management practices for a defined area of rangeland in order to avoid overgrazing and in the process may have facilitated the pastoralists' "settling" within the area.

Questions which arise concerning the effect of range research on pastoralists are: Will more inputs into livestock development, such as range research, lead to excess cattle and greater degradation of the range, increasing the severity of potential drought and famine? What are the social roles of cattle and how do they influence livestock practices? Which land ownership structures facilitate increased livestock production while maintaining the range? 1/ It is, therefore, important for the success of this project that the various animal husbandry and range programs for pastoralists be analyzed continously to ascertain not only the positive and negative consequences of livestock programs, but to learn how research, extension and training programs could be designed or redesigned to truly meet the needs of the pastoralists and of Kenya as a whole.

D. Nutrition

One indirect impact of increased involvement with a cash economy as facilitated by a successful Agricultural Systems Support Project is that on children's nutrition. The process of increased cash crop production on small farms leading to greater malnutrition among young children has been found in a number of studies, especially regarding monocrop cash cropping, such as sugar cane, when the income derived is spent on beer, radios, or other items instead of nutritious food for children. To some degree this reflects the fact cash income usually goes to the male household head and is for his use while mothers, who lack access to the cash, are responsible for child feeding.

1/ See Jacobs, op.cit. and Lewis, op.cit. for discussions of these and other issues relating to livestock production.

They may in turn, lack the knowledge or funds to provide more nutritious food. In Kenya, however, nutrition studies have shown great intra-and inter-community variability in levels of nutrition, especially among young children, and unlike other African countries malnutrition may not be a major problem for Kenya as a whole. The prediction is that at most this project would have only a very indirect effect on nutritional levels.

E. Overview

It is difficult to determine if all of the objectives of this project have an equal chance of being realized. Nevertheless, this project is as firmly based from a social perspective as can be reasonably expected given its complexity. Available studies have been examined to identify potential issues that could effect the attainment of the goals of the project. Means have been designed into the project to ensure that project outputs not only reach the targeted beneficiaries but that they have minimal negative effects. If these measures are followed, the project should make a significant contribution to the small producer and to the overall long-term agricultural development of Kenya.

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Project Background and Description

A. Development Strategy

This section describes the development problem which the project addresses. First, it provides a general description of the agriculture sector in Kenya, together with a more in-depth assessment of the components of that sector which constitute key constraints to rapid and sustained agricultural development; these components are: (1) training agricultural manpower, (2) macro-economic policies, (3) smallholder producer access to agricultural institutions, services and infrastructure, and (4) adaptive research. Second, it reviews and assesses the development policy of the Government of Kenya (GOK) as it relates to the agricultural sector in general and to each of these four components in particular. Annex XVI describes how the assistance proposed to the project's five systems relates to the on-going Mission program in agriculture as well as to agriculture-related programs of other donors.

1. The Agricultural Sector

The following overview of Kenya's agriculture sector reviews recent trends of key agricultural production indicators and describes Kenya's rural poor majority, the smallholders and pastoralists. It provides neither an exhaustive assessment nor an interpretative analysis;[1/] instead, it provides a framework in which to understand the project described in detail in Section B. Specifically, it indicates: (a) the importance of agriculture in relation to the overall economy; (b) smallholder access to services, institutions and infrastructure; (c) the importance of the smallholder in relation to the largeholder; (d) estimated income distribution among smallholders, and (e) magnitude of agricultural production by smallholders in relation to total production and total marketed production.

Agricultural in Relation to the Overall Economy. Agriculture is the dominant sector of Kenya's economy. In 1976 it employed approximately 85 percent of the nation's labor force and contributed 29 percent of total GDP, more than any other sector; (the share of the services sector was about 28 percent; government, 18 percent; manufacturing and mining, 15 percent, and construction and utilities, 10 percent). Agricultural

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1/ For in-depth analyses, see the USAID DAP (1974) and DAP Supplement (1975); IBRD - Agriculture Sector Survey (1973), Basic Economic Report on Kenya (1974), Current Economic Position and Prospects of Kenya (1976), and Economic Memorandum of Kenya (1977), and the ILO/UNDP report on Employment, Incomes, and Equality (1972). For a Macroeconomic Summary see Annex VII.

products constituted 69 percent of total exports in 1976, and 86 percent during the first half of 1977; of this, coffee accounted for 61 percent and tea accounted for 19 percent. Quite clearly, agriculture has been crucial to Kenya's overall economic development.

Although the Kenyan economy has largely recovered from near stagnation during 1975, it has not attained the overall growth rate of 6.7 percent per year or the agricultural growth rate of 4.5 percent per year realized during 1964-73, nor the 6.0 percent overall growth target set forth in Sessional Paper Number 4 of 1975. Thus, in 1976 Kenya's real GDP increased by 5.1 percent compared with 1.2 percent in 1975 and 4.1 percent in 1974. Agricultural growth was 2.2 percent in 1976 compared with 0.3 percent in 1975 and 1.6 percent in 1974.

The 1974-1975 agricultural performance was due largely to unfavorable weather in certain parts of the country and world-wide inflation. In addition, however, it can be attributed to an inability of key agricultural institutions, including governmental and parastatal institutions, to provide essential agricultural services efficiently to a large number of smallholders. This institutional inefficiently occurs in spite of firm government policy (discussed below) to concentrate on the development of the agricultural sector. The clear implication is that if agriculture is to play the crucial role it must in terms of contributing to overall economic growth, increased employment, and reduced poverty, the capability of its agriculture institutional infrastructure and the calibre of the personnel charged with performing essential agricultural functions must be improved.

Smallholder Access to Services, Institutions and Infrastructure. Some estimates of actual access situations are illustrative: (1) Currently, the extension service reaches only about one-half of the 1.5 million smallholder households; (2) although the number and proportion of smallholders in the credit portfolio of the Agricultural Finance Corporation is increasing rapidly, AFC lends now to only about 30,000 smallholders annually, and these can generally be considered among the more progressive members of this group; (3) cooperatives enroll less than half of all smallholders among their members, providing at present mainly credit and input services to support production of export crops although the crop focus is changing to a mix of food and cash (or security) crops and although the range of services is expanding through addition of marketing and storage; (4) losses in production due to inadequate on-farm storage may approximate from 5-to-30 percent of total grain produced, and smallholders' use of off-farm storage can all too easily be limited by problems of capacity, location and availability.

The bases for these deficiencies are the constraints listed above. Manpower affects nearly all of them directly and/or indirectly, impacting as it does on personnel to carry out research, provide extension advice, and to implement lending and cooperatives services. The problem is both one of availability of sufficient numbers of trained personnel to serve existing clients and to add a large new clientele, and one of adequacy of training, both pre-service and in-service. Related to this problem is the adequacy and comprehensiveness of technical information to be disseminated, the provision of such information to extension service dissemination agents, and availability of information geared toward smallholder needs.

Organizational orientation toward smallholders is also a contributing factor to access considerations. In the past the charge has been made that various agriculture institutions and services were directed principally to large farmers and only the most prosperous smallholders. This, USAID believes, is changing with regard to the extension service, AFC lending, and research, and that redirection merits support.

Finally, there are personnel and administrative procedural problems within the Ministry of Agriculture, such as schemes of service, allocation of travel funds and so on, which along with concerns re the adequacy of linkages among mutually supporting services and institutions, e.g. research-extension, extension-training, limit the dissemination of technical knowledge and outreach capabilities.

With the above difficulties smallholder agriculture has still made significant gains. But much remains to be done as the following makes clear.

Smallholder-Land Distribution. The improvements which have so far been achieved in agricultural institutions and personnel are especially true in the case of institutions designed to reach and serve the smallholder. An appreciation of the magnitude of Kenya's smallholder population becomes apparent when compared with the relatively small number of large farms, which are located almost without exception in the former scheduled (European) areas. In 1975 there were an estimated 3,264 large farms, up somewhat from 2,820 in 1965. As the following table indicates, the size distribution of large farms is becoming somewhat less skewed over time. Moreover, the area under large farms has decreased slightly from 2,739,900 hectares in 1965 to 2,674,500 hectares in 1975 (two-thirds of which is in uncultivated meadows and pastures). Both trends are positive.

Table A-1

Large Farms:

Number of Holdings by Size and

Percentage of Total, 1965 and 1975

Size of Holdings (hectares)	Number of Holdings		Percent Share	
	1965	1975	1965	1975
8 - 49	565	810	20.0	24.8
50 - 999	1,752	2,011	62.2	61.6
1000 -over	503	443	17.8	13.6
	2,820	3,264	100.0	100.0

Source: Economic Memorandum, Tables 7.4 and 7.2. This data refers to ownership of holdings, not operational units.

In contrast to the 3,200 large farms there are 1,500,000 small farms, those with holdings under eight hectares (or about 20 acres).1/ (With an average of seven persons per household, this smallholder group constitutes almost 11 million of Kenya's total population of 14 million, or about 80 percent.) The total acreage under smallholder agriculture is estimated at 3.5 million hectares; on average, therefore, the small farmer has access to 2.3 hectares, of which about 1.2-to-1.5 hectares are under cultivation. Table A-2 indicates that 32 percent of these holdings are less than one hectare; almost 60 percent are less than two hectares, and almost 75 percent are less than three hectares.

1/ The Central Bureau of Statistics defines as a "small" farm any holding of less than eight hectares (although on a case-by-case basis some farms up to 12 hectares in size are included in the small farm category). The MOA, on the other hand, has used a 20 hectare limit for their operational definition of small farms. Using either definition, the basic picture remains the same.

Table A-2

Small Farms: Percent Share of Total Holdings by Size, 1975

Size of Holdings (hectares)	Percent Share 1975
0.0 - 0.5	13.9
0.6 - 0.9	17.9
1.0 - 1.9	27.0
2.0 - 2.9	15.1
3.0 - 3.9	8.9
4.0 - 4.9	7.2
5.0 - 7.9	6.5
8.0 - over	3.5
	100.0

Source: Economic Memorandum, Table 7.5. In March, 1977, the results of the Integrated Rural Survey undertaken in 1974-75 became available--these data provide a wealth of information about Kenya's 1.5 million smallholders, and will constitute an invaluable tool in helping the GOK monitor the implementation of the programs designed specifically to assist these people.

Smallholder Income Distribution. The following table indicates per capita income distribution for the Kenyan smallholder (the range for total household income would be greater by a factor of 7, the average family size).

Table A-3

Small Farms: Percent Distribution of Households by Income Group, 1975

Income Group ($ per capita)	Households (Percent)
below 0	6.7
0 - 18	11.8
19 - 38	22.4
39 - 57	13.8
58 - 76	11.7
77 - 114	13.5
115 - 153	8.0
154 - over	12.1
	100.0

Source: Integrated Rural Survey, Table 6.9. Average per capita income of the richest group was $250. The negative per capita income (household outlays greater than household income) is explained largely by the drought conditions prevailing in livestock areas during the period of the survey and the consequent reduction in the value of the herds, as well as some respondents not revealing the full extent of their income.

Thus, over half (54.7 percent) of the smallholder households had average annual per capita incomes of less than $57 in 1975; about 88 percent, less than $150. Within the smallholder category 54 percent of the households account for 21 percent of the income and 80 percent account for 51 percent of the income.

In view of the small size of many holdings (see land distribution table), it is not surprising that only 57 percent of rural household income is derived from farm operating surplus; the remaining 43 percent is derived from non-farm earnings, including wages from regular and casual employment and from transfers (principally from relatives in urban areas).1/

Smallholder Agricultural Production. The smallholder share of gross marketed production has increased dramatically from 20 percent in 1960 to 51 percent in 1976.

Table A-4

Value of Gross Marketed Production for Large and Small Farms, Selected Years
(K£ million)

Year	Large Farms	Small Farms	Percent Share of Small Farms
1960	37.7	9.5	20.1
1965	33.3	23.8	41.7
1970	41.2	44.2	51.7
1976	124.5	127.8	50.7

Source: Economic Survey, various years.

1/ Integrated Rural Survey. Table 8.4.

As the following crop-specific table indicates, the smallholder has increased his share of marketed coffee production from 20 percent in 1960 to 47 percent in 1976; for tea, from 1 percent to 31 percent, and for maize, from 43 percent to 65 percent. From 1960 to 1971 the share of pyrethrum output accruing to the smallholder increased from 21 percent to 45 percent. The trend then is quite clear.

Table A-5

Share of Marketed Production for Large and Small Farmers, Selected Crops and Years

Year	Coffee		Tea		Pyrethrum		Maize	
	Large	Small	Large	Small	Large	Small	Large	Small
1960	80	20	99	1	79	21	57	43
1967	40	60	88	12	14	86	68	32
1971	53	47	79	21	55	45	54	46
1975/76	53	47	69	31	--	--	35	65

Source: Statistical Abstract, 1968; Heyer, et al; Agricultural Development in Kenya; Economic Survey, 1977, and Anderson and Pfost, 1978.

Acreage expansion appears to be one of the major factors explaining the increased smallholder share in marketed production, as indicated in Table A-6.

Table A-6

Acreage Allocated to Selected Crops by Large and Small Farmers, 1970 and 1974/75, '000 Hectares

Year	Coffee		Tea		Pyrethrum		Hybrid Maize	
	Large	Small	Large	Small	Large	Small	Large	Small
1970	29.7	62.5	23.8	19.5	3.3	13.5	59.3	155.8
1974/75	28.0	113.3	25.6	65.6	4.1	27.1	67.8	759.0

Source: Economic Survey, 1973; Statistical Abstract, 1976; Integrated Rural Survey Basic Report, 1977.

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This is important for it suggests substantially increased small farmer participation in the Kenyan agricultural economy. Perhaps even more important, however, is the need to increase smallholder incomes by increasing crop yields.[1] Realization of this potential, however, will require that the smallholder have access to essential agricultural institutions and the services they provide. Without these, he/she is unlikely to adopt yield increasing technology. As discussed below, this project is designed to improve the capability of those institutions that are best able to provide services to small farmers.

This general description of Kenya's agricultural sector and the role of Kenya's smallholder constitutes a framework within which to understand this project, particularly the three of the four agricultural development constraints which the project addresses.

2. GOK Agriculture Policy

In the 1974-78 Development Plan the GOK strongly emphasized agricultural development since that sector offered the best prospects for increasing production with relatively low capital inputs, raising productive employment, reducing dependence on imports of raw materials and intermediate goods, contributing to export earnings, and narrowing rural-urban income disparities. (Economic Memorandum). This emphasis on agriculture and the rationale substantiating that emphasis is sound.

At the conclusion of the January 1978 conference on "The Kenya We Want," the participants (including Ministers, Members of Parliament, Permanent Secretaries and their deputies and Provincial Commissioners) strongly endorsed continued emphasis on agriculture, particularly in the marginal areas and by the rural poor.[2] "The long view suggests that marginal areas must be developed to enable us to complete the task of providing basic needs in the country." (Mr. Kibaki, Minister for Finance and Planning) Among the 30 resolutions flowing from the conference (none of which was surprising, but which did incorporate a greater degree of specificity and clarification than is typically the case) were the following: recognition that local government was the necessary institution to ensure local participation in the development process; realization that resources should be mobilized through organizations, especially unions and cooperatives, observation that women in Kenya comprise the bulk of labor in rural areas, and agreement that effective program implementation required that financial resources be allocated to provincial and district levels.

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[1] A comparison of the previous two tables illustrates the kind of potential that exists. While small farms accounted for only 57 percent of the value of coffee marketed in 1975/76, they accounted for 80 percent (113,300 out of 141,300 hectares) of coffee acreage.

[2] This three-day conference re-examined the same theme that Government leaders had examined 15 years earlier. The position papers reflected a keen sense of Government awareness of the country's problems. As a result, the conference was able to analyze solutions to problems rather than merely identify them. (See The Weekly Review, January 30, 1978, for a discussion of the issues in the position papers and for the texts of the position papers).

This commitment to agriculture is to be continued, and reinforced, in the Fourth Five-Year Plan (1979-83) which is currently being prepared. The major policy objective--on the national, not sectoral level--of the GOK over the next plan period is to be the alleviation of rural poverty. The two approaches that the GOK is likely to pursue to achieve that objective are: (1) rural development to redress current rural-urban income disparities and other imbalances, and (2) employment creation. Both approaches are mutually reinforcing and suggest a clear appreciation of the close, yet complex, linkages between agricultural growth and increased employment in the rural economy. Implementation of these approaches to achieve the overall policy objective translates, in large measure, into increasing the productivity and income of the smallholder.

In the agriculture sector specifically the Fourth Plan reportedly will aim at raising productivity and employment, meeting nutritional requirements and, also, earning foreign exchange. Spending on agriculture is to be more than doubled from the K£100 million projected for expenditure under the 1974-78 Plan. The GOK further plans to utilize policies on pricing and institutions serving agriculture to insure that incomes of agriculture workers will more closely approximate those of urban workers. Finally, Government, recognizing that over half of the nation's smallholders have not benefited from agriculture development achieved since independence, will "cautiously" try to implement programs for "non-progressive" farmers not now reached or served by existing agriculture programs and who reside in high potential and marginal agricultural areas.

The GOK recognizes that while the policy is sound, implementation will not be easy, principally because smallholder agriculture is characterized by problems whose solutions are not entirely understood. Specifically, the institutional mechanisms needed to satisfy smallholder needs in areas of research, extension, credit, storage, and the provision of other services are simply not the same as those which are established to support the large farm sector. These problems are magnified for programs focusing on marginal lands development. While the GOK will continue to increase public investment in agriculture, the return on those investments will depend in large part on the extent to which key local and national institutions are capable of utilizing those resources. This project is designed to augment and create that capability in those institutions where it is weak.

The remainder of this section assesses GOK agricultural policy in terms of (1) budget commitment to agriculture, (2) agricultural pricing policy, and (3) overall focus on the rural economy (wage policy, credit policy).

GOK Budget Commitment to Agriculture. The anticipated shift in the sectoral composition of investment (public and private) to favor agriculture has been slow. In 1976 fixed investment in agriculture was 12 percent of total fixed investment (1972 prices), slightly lower than agriculture's 12.5 percent share in 1975, but higher than its 9.7 percent share in 1972. Although most of this was private investment, Government investment is growing at a faster rate than is private investment. As indicated below, the GOK has channelled increased levels of development resources to agriculture, but there is still room for increased recurrent expenditures in agriculture. Specifically, increased agricultural investment must be complemented by improved planning and implementation of these investment resources, and this necessitates improving the capability of the manpower charged with this responsibility. The development budget and the recurrent budget are examined in turn.

Development Budget. The trend of GOK development expenditures shows an increased emphasis on directly productive activities and quick yielding projects and away from large infrastructure projects with long gestation periods.

Table A-7

Composition of Development Budget

Category	Actual 1972-74 (Percent Share)	Prov. 1976/77 (Percent Share)	Est. 1977/78 (Percent Share)
Directly Productive Activities[a/]	25.2	39.3	41.5
Economic Infrastructure[b/]	42.9	36.2	29.5
Social Infrastructure[c/]	22.9	15.9	21.4
Other	9.0	8.6	7.6
	100.0	100.0	100.0

a/ Includes Ministries of Agriculture, Commerce and Industry, Wildlife and Tourism, Natural Resources, part of Water Development, and Finance and Planning.

b/ Includes Ministries of Power and Communications, Works, and part of Water Development.

c/ Includes Ministries of Health, Labor, Lands and Settlement, Housing and Social Services, Education, and Cooperative Development.

Source: Economic Memorandum, p. 24

The development budget for Agriculture proposes a gross expenditure of $71,433,000 in 1977/78, an increase of 26 percent over the Agriculture budget for 1976/77; agriculture accounted for almost 11 percent of the total increase in the 1977/78 GOK development budget. The development budget for Cooperative Development (which implements many of the programs designed to assist small farmers) is $4,389,000 for 1977/78, an increase of 102 percent over that for 1976/77; this increase accounted for 1.6 percent of the total increase of the 1977/78 GOK development budget over the 1976/77 budget.

Recurrent Budget. The following table suggests that increased recurre expenditures for directly productive activities are proposed in 1977/7 which largely restore the relative balance that was obtained in 1972/7 however, in view of the substantial increases in development expenditu on these kinds of activities, even larger recurrent expenditure is probably warranted.

Table A-8

Composition of Recurrent Budget

Category	Actual 1972/73 (Percent Share)	Prov. 1976/77 (Percent Share)	Est. 1977/78 (Percent Share)
Directly Productive Activities[a/]	10.9	8.8	11.5
Economic Infrastructure[b/]	8.9	8.5	9.0
Social Services[c/]	38.2	38.8	34.8
Other Services[d/]	28.3	33.6	31.4
Consolidated Fund Expenditures[e/]	13.7	10.3	13.3
Total	100.0	100.0	00.0

a/ Includes Ministries of Agriculture, Commerce and Industry, Wildlife and Tourism, Natural Resources, and part of Water Development.

b/ Includes Ministries of Power and Communications, Works, and part of Water Development.

c/ Includes Ministries of Health, Lands and Settlements, Housing and Social Services, Labor, Education, Cooperative Development and part of Water Development.

d/ Includes Information and Broadcasting, Security and Defense, and Administration.

e/ Includes interest and pension payments, but excludes amortization of public debt.

Source: Economic Memorandum, p. 25.

Disaggregating the Agriculture portion from overall directly productive activities shows an increase of 35 percent in recurrent expenditures in 1977/78 over the 1976/77 level to a total $48,185,000. For Cooperative Development, the increase is 12 percent to a total of $3,618,000.

This brief overview suggests that the trend in the allocation of GOK budgetary resources over time and the current 1977/78 allocation among major activities are consistent with a strong governmental commitment to agricultural development. Nevertheless, continuous appraisal is needed to assure that the current level of recurrent expenditure is maintained, and perhaps increased, for both agricultural and cooperative development.

Agricultural Pricing Policy. In Kenya, the government fixes the prices of several major foods at all points of exchange in the marketing chain: producer, produce buyer, wholesaler, processor, distributor, and consumer. Consequently, all the intermediaries operate on fixed margins, which constitutes a major tool of GOK agricultural policy. The purposes of controlling prices are to regulate total production of key crops as well as the internal and external marketing of those crops, to maintain a strategic reserve, and to guarantee satisfactory prices to both consumers and producers. Critics of the system of rigid controls cite various inefficiencies and argue that both producers and consumers would be better served if Government would, in the case of maize, announce a floor price, instead of fixed prices, and if the Maize and Produce Board would cease acting as the sole marketing agency and, instead, become a buyer and seller of last resort. This makes sense. On the other hand, Kenya has had a system of marketing boards for decades, and their virtual monopoly position is not likely to be diminished quickly.

The up-coming Fourth Development Plan is expected to contain per the above proposals resulting in a major restructuring of Kenya's pricing policies. Prices will be geared towards reducing the urban-rural income gap by shifting the terms of trade between rural and urban-produced products and services, thereby reducing the dualistic nature of the economy and directing benefits towards the lower income groups. Agriculture pricing and marketing policies should, obviously, play a large part in any such changes.

Producers of most crops have enjoyed adequate price incentives, though this varies over time and by crop. For example, maize price policy has tended to favor producers, while beef price policy (at least until February 1978) has favored consumers. Officially announced producer

prices for major crops have increased from 1972 to 1976/77 as follows: maize, 129 percent increase over the five-year period; wheat, 150 percent; beef (standard grade), 70 percent; milk, 71 percent; cotton, 205 percent; sugar cane, 193 percent, and rice, 175 percent.

However, for small-scale producers (in contrast to large farmers), input prices, rainfall, and home consumption needs are more important in determining maize output than prices established by the Maize and Produce Board (MPB).1/ Because 65 percent of total marketed maize derives from the smallholder, the price policy of the MPB is ineffective in regulating a major source of output. In surplus areas it is questionable that smallholders actually receive the guaranteed farm gate prices, primarily because the MPB has limited storage capacities shortly after harvest. Recent estimates indicate that smallholders may receive one-half or less of the official price, which is currently KSh. 80/bag.2/ Therefore, the MPB is unable to guarantee satisfactory prices to smallholder producers. This situation has major implications for storage facilities since there is a quasi-free market price as well as the Government fixed price, thereby providing some economic return to storage facilities as the quasi-free prices rise and fall with the harvest cycle.

It is likely that price controls will be diminished over time, and that fundamental changes in the pricing and marketing system will be implemented. From the smallholders' standpoint, however, a less rigid control sytem can prove successful only if the physical and institutional infrastucture assures a marketing environment which allows a competitive system to emerge, linking the local, district, and interregional trading systems. Alternatively, even with constant farmgate prices smallholder income can increase (thereby reducing the rural-urban income gap) provided maize production rises as the combined result of more labor input and higher yields per unit of labor input. Again, however, this requires not only wider use of hybrid maize, but also Government support to improve marketing and other agricultural services. The awareness of this prerequisite is widespread (for example, see Economic Memorandum, Judith Heyer, Guenter Schmidt), which helps to explain the major emphasis to improve local and national level agricultural support systems.

1/ H. Gsaengerand, G. Schmidt, "Decontrolling the Maize Marketing System in Kenya?", Zeitschrift fur Auslandische Landwirtschaft, July-September 1977, pp. 268-284.

2/ Anderson and Pfost, Smallholder Grain Storage Problems in Kenya. March 1978.

Rural-Oriented Policy. Wage policy is one instrument the GOK employs to narrow the income gap between rural and urban areas as well as within each area. Specifically, wage increases are not to be more than two-thirds of cost-of-living increases, and the concept of progressivity (the more wealthy receive relatively less of any increase in compensation) is to be maintained. From 1973 to 1975 the cost of living in the modern sector increased by 41 percent while average wages in the modern sector increased by only 33 percent; this means that modern sector wage earners did, in fact, experience a drop in real income over the period. From 1975 to 1977 consumer prices increased by 30 percent. In response the GOK increased minimum wages for both rural and urban sectors as well as salaries for lower level Government workers by 17 percent; the increase for higher-level civil servants was less, ranging from 7-to-17 percent. This led to a further drop in real income for modern sector wage earners.

In contrast, the rural economy has benefitted from agricultural price increases. Not only have farmers, as a group, experienced increased real income since 1972, but also their income position has improved relative to the average wage earner in the modern sector. Still, average incomes are about six or seven times higher in Nairobi than for smallholders. Even allowing for cost of living differences, average urban incomes are significantly higher. For example, the poorest 40 percent in Nairobi are five or six times richer than the poorest 40 percent in rural areas.

The situation is not particularly unusual. What is striking is that the gap is actually closing. In large part, the process toward more equitable income distribution is long-term and must result from increasing the productivity of smallholders and pastoralists of the rural economy, which is clearly the thrust of the rural development policies of the Government.

Another measure of rural-focused policy concerns credit. GOK policy is to increase the share of credit to the agricultural sector and to small-scale African entrepreneurs. From 1975 to 1976 the proportion of total bank credit going to agriculture increased from 13 percent to 15 percent, which, though below the target of 17 percent set by the Central Bank, is in the right direction. Similar increases have occurred for small-scale entrepreneurs. (Economic Memorandum, p. 4) In absolute terms credit for small-scale farmers increased from $2.44 million in 1972/73 to $10.09 million three years later in 1975/76 (a jump of 312.7 percent); for large-scale farmers, from $4.83 million

to $5.83 million (an increase of 20.7 percent); for cooperative societies, from $2.41 million to $6.43 million (an increase of 166.6 percent), and for other farmers, from KSh $1.64 million to KSh $1.42 million (a decrease of 13.4 percent). On average credit flowing to farmers more than doubled in the three years, from $11.32 million to $23.76 million, an increase of 109.9 percent (Economic Memorandum, Table 7.12).

The origins of the ASSP are detailed in Nairobi 477 of last January 10. Throughout its history ASSP (originally called Agriculture Sector Loan II) has involved a systematic approach to developing the agriculture sector through assistance for training related to agriculture sector needs, extension and research. The proposed project retains a strong component of manpower training (both as a specific component and as parts of other components) and agriculture research. In addition it supports strengthening the delivery of essential agriculture services (credit, marketing-storage) to smallholders.

The project's immediate roots are in a series of technical studies.[1/] One, a manpower-education study commenced in June 1977 and the draft report was reviewed by the GOK in December 1977. Also the agricultural research study was submitted to the GOK in December 1977. The GOK, though it indicated that it already was moving ahead to implement the latter report's recommendations, expressed a strong desire for USAID assistance in the area of research.

The GOK has reviewed and accepted the recommendations of the ATAC manpower and agricultural research reports and has based its assistance request for this proposed project upon the recommendations of these reports, on evaluations of the Agricultural Credit Project and ASL I, and on a management study of the AFC.

1/American Technical Assistance Corporation (ATAC). Professional and Subprofessional Agricultural Manpower in Kenya, March 1978. AID/Afr-C-1142. W.O. 52.

ATAC. Agriculture Research in Kenya, November 1977. AID/Afr-C-1142. W.O. 52.

ATAC. Evaluation of the Smallholder Production and Credit Program (SPSCP). October 1977. AID/Afr-C-1213.

Dimpex Associates. Kenya: Agricultural Credit Evaluation. December 1977. AID/Afr-C-1269. W.O. 7.

Research Triangle Institute. Management Study of the Agricultural Finance Corporation. June 1977. AID/Afr-C-1144. W.O. 7.

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3. Project Rationale

The GOK's Fourth Development Plan is being prepared around the single goal of alleviating poverty with considerable emphasis, consequently, being given to increasing agriculture production and farmer incomes. Eighty-eight percent of all smallholders can be considered poor based on an income criterion, most of the smallholder group has no access to credit, over half receive no extension advice, and senior Government officials publicly admit that about half can be considered "non-progressive."1/. One approach which the Government of Kenya proposes to use to achieve this goal is to increase the quantity and quality of agriculture support services intended to reach the smallholder group, including those considered "non-progressive" or traditional farmers.

Achieving this goal and, thereby, extending support services to that sizable portion of the smallholder target group which does not now receive them requires in the Mission's judgment a broadly based but direct attack on the major sectoral constraints identified by the DAP Supplement. For ASSP manpower, research, and access (to credit, other inputs, storage and marketing services) are considered to be the constraints of crucial significance with manpower having especial across-the-board importance because of the pervasiveness of its impact throughout the sector, its role in alleviating the research and access constraints, and its import both for reorienting the extension service and for creating the capacity within that service to extend its outreach to sizeable numbers of "new" beneficiaries. Increased efficiency and better utilization of current agriculture staff will not meet the sector's needs for additional manpower for extension or other purposes.

Given the magnitude of the task confronting the GOK, it is also necessary to draw on resources from various agents in addition to Government and USAID. Consequently, ASSP while providing a significant input cannot by itself finance all the assistance needed, but does embody the approach used successfully by USAID before in Kenya of collaborating closely with other donors and of relating

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1/ This term, first used in Agriculture Sector Loan (ASL) I, defines a small farmer who has an agriculture holding of 20 acres or less, has not received gross per capita real farm income in excess of Sh. 800 in the previous year, has the potential to earn more than this amount, and has not previously received significant production credit or significant Government-sponsored technical assistance.

new activities to other USAID efforts. Thus, ASSP includes within its manpower component support for only part of the total need for University and certificate-level graduates. The IBRD and GOK are providing additional assistance to increase their numbers and to improve the training of these categories of skilled personnel--$4.2 million for the Faculty and $4.3 million for the existing institutions, plus contingencies estimated at up to $2.6 million, AID alone is financing the Egerton expansion, by choice and reflecting its past association there. On the research side, the range research activity included here is additional to, but supplementary of, AID's Food Crops Research project (a revision of which has been designed in coordination with preparation of this PP) and complements USAID activities in livestock and marginal lands development. It also supplements FAO assistance in drylands research and reflects MOA conclusions regarding its ability to absorb additional assistance in the drylands area. In the marketing-storage field the directing of ASSP to on-farm and cooperative storage reflects USAID experience with ASL I, the important work already underway of FAO in marketing-pricing and the UK in construction of central storage facilities for the Maize and Produce Board. It also reflects the policy changes portended by information now available on the 1979-83 Plan which is to be published o/a December. Finally, on the cooperatives and credit sides technical assistance proposed under ASSP is the direct outgrowth of experience with ASL I and the Agriculture Credit project and a judgment that for these systems to provide support to the smallholders not now benefiting from them improving manpower and management skills are of high priority.

ASSP's support for the GOK's redirection and expansion of its various agriculture support systems so as to serve the needs of all smallholders will not be an easy or a quickly achieved process. There are now some 11,000 individuals in the extension service - the principal employer of the manpower to be trained under ASSP - and their reorientation, and for the junior-most staff, their gradual replacement will be a 15-year long process. It will require that new entrants to the service must be instilled with the concept that traditional farmers, those hardest to deal with, in addition to the more responsive progressive small farmers and large farmers, are a proper and necessary target for their efforts. A similar attitude must be instilled into current employees as well as current and new employees of the research, credit and cooperatives systems.

Attitudinal changes, it is believed, can be effected through the content of training provided, in which curricula and quality of teaching staff should play a predominant role; through improved supervision, incentives and logistical support, in which better trained supervisors and managers, an improved personnel system, and adequate budgetary

provisions are key, and through creating and strengthening or reinforcing linkages among and between the various agriculture support systems: Extension-research; cooperatives, credit-extension; storage-extension, and cooperatives-storage. ASSP efforts to reinforce linkages are set out in the preceding sections of this paper.

The extension and marketing systems per se are not specifically included here. This reflects assumptions and conclusions identified above re extension and in the discussion on pricing policy. However, both will benefit from assistance proposed herein for other systems. This is especially true for extension since pre-service training of field-level contact and supervisory staff is judged to be an appropriate point for donor input at this time and an area where the U.S. has a comparative advantage--in providing certain technical assistance expertise, in training Kenyans in specific agricultural skills, and in providing construction materials and equipment. AID is at a comparative disadvantage with regard to the GOK in fielding, for example, massive numbers of extension agents.

ASSP will not, by itself, directly resolve all the ills of the individual systems included in the project nor of the extension system. However, an increased flow of better trained personnel into the extension service as well as the wider availability to that service of better technological information generated by ASSP research and storage, and Food Crops Research activities, should improve the quality of extension advice which can be offered and the outreach of the service to smallholders.

These are necessary, but not, sufficient, conditions for the extension service to address the needs of its smallholder clientele. Organizational, personnel and financing issues may also need to be addressed for the extension service per se to reach its full potential. Based on the GOK's acceptance of ATAC's recommendations and USAID's understanding now of the emphases of the 1979-83 Plan, we believe it a valid assumption that the GOK will address these other issues. Publication of the next Development Plan and review of implementation of smallholder-oriented extension services will provide a means of reviewing the actual project-aided systems' performance over time, including that of extension. Project evaluations will, also, review the validity of assumptions made as part of this project, changed circumstances which may arise during ASSP implementation (for example, those which might result from promulgation of related GOK policies in the next Plan as published and subsequently), budgetary considerations, and actual experience in implementing ASSP. In the near term, Part V.D. includes several relevant covenants and CP's.

USAID is aware that questions have been raised regarding the magnitude of AID construction financing included in this PP. USAID obviously believes such financing is appropriate given projected demand for Egerton graduates measured against existing output (see above in Part II.B.1.), the important role which Egerton graduates now play within the extension and research systems and the even greater importance they are expected to have in the future (also Part II.B.1), and the criticality of the manpower constraint. Further, USAID does not believe the cost estimates to be out of line with, for example, similar efforts being undertaken by the IBRD, considering differences in the magnitude of capacity expansions; in the need for expansions of related supporting structures, such as dormitory space, student dining facilities and staff housing; in differing construction and staff requirements resulting from the varying locations and functions of Egerton versus these other training institutions, and in the proposed scope of additions to the respective educational programs. Finally, USAID per Part III.B. has carefully reviewed proposed construction plans for appropriateness of the individual facilities included herein, costing, and design standards. The reader's attention is also drawn to the relative magnitude of other components compared to Egerton. In this regard the proposed revision to the companion Food Crops Research Project is estimated to require over $5 million in new AID financing in addition to previous life-of-project costs, falling outside the revision, of $4 million. When that sum is combined with funding for the research component of ASSP (about $5.1 million, excluding the research share of the MOA Training Fund), AID financing for the Egerton expansion falls more into perspective, particularly since Egerton graduates do serve in the research system.

USAID has considered and rejected other alternatives to the assistance package included in ASSP:

a. Address each of the systems as proposed, but in separate projects. This would not change the total amount of new assistance proposed for FY 1978 or over time but would lose the considerable benefits to be gained from simultaneous implementation and as one package so as to reinforce linkage among the different systems involved.

b. Revise and/or extend the Agriculture Credit and ASL I projects, separately or jointly, to add to them the credit, cooperatives and storage support in ASSP. This might have some advantages in implementation, for example, in regard to contracting for the former project and in using ASL I reflows for constructing storage facilities at participating cooperative societies and unions. ASL I now reaches 12,000 non-progressive smallholder members of 81 societies grouped under 11 unions and covering a very small part of Kenya. While reflows might appropriately serve for these ASL I participants, to

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divert reflows exclusively to a nation-wide storage program would deny resources needed to continue ASL I activities. It would also mean initiating a nation-wide program for on-farm and cooperative storage without the appreciation of the problems involved to be gained from the ASSP-funded study and contrary to ASL I's purpose as a pilot, demonstration activity. Re extending the credit project, it was first authorized in FY 1971, has been revised several times, and already exceeds AID's six-year ceiling for years of obligation (project activities end in April 1979).

c. Adopt a pilot, demonstration approach to developing the improved extension, credit, cooperatives and storage systems or some other combination of the specific systems embodied in ASSP. This would to some degree be duplicative of ASL I and would not be as responsive to the GOK's needs, concerns or objectives as the broader ASSP approach. Impact on poor smallholders would be direct for those receiving the systems' services under such a pilot approach, but the number of direct beneficiaries would necessarily be small. Also, the value of pilot efforts is greatest when they occur before implementation of services incorporating the demonstrated lessons of the pilot program. When pilot programs are implemented simultaneously with expansions of the systems into which they are to feed experience, the benefits are significantly reduced since pilot programs are usually overtaken by events and operational necessities in such circumstances, as Kenya's Special Rural Development Program showed. Further, the focus of ASSP is on the national systems

d. Focus only on one system, such as research or extension, either through training of personnel or direct provision of services. This might be appropriate for research and, in fact, reflects the content of assistance included in ASSP and the Food Crops Research activity. Direct provision of U.S. experts to fill extension field positions would not be feasible (for reasons of cost, language problems, etc.) or acceptable to the Ministry. The USAID has concluded that at this time pre-service training represents the mode having the greatest potential impact on the extension system affecting as it does training of farmer-contact agents, of supervisory extension personnel, and of Farmer Training Center staff needed to carry out farmer training and in-service training of farmer-contact agents. Additionally, it is anticipated that in-service training included under the MOA Training Fund will also impact to some degree on extension personnel. Recognizably, other problems impinge on extension performance and the status of GOK actions on these is described in Part II.B.1.b. As indicated, these will be kept under review.

Quite apart from considerations internal to the individual systems, is the question of the supportive and mutually reinforcing relationships among the systems themselves. As indicated in the first alternative above, one reason for ASSP's combined approach is to focus on these rather than to focus on only one system. In a related vein, it is believed that to focus only on one system, to the exclusion of the others, would make it impossible to achieve needed and desirable changes in the target system. Much of the success of any extension service depends on the suitability of the technological package which field staff have available to transmit. Such information is generated by research. Ability to understand and communicate the package and motivation to do so are functions of training, logistic support and supervision. Similar examples could be cited for credit, cooperatives and storage.

In conclusion, then, ASSP as presented here, represents the most feasible contribution to the most crucial sectoral constraints in light of opportunities open to AID, especially those created by the series of studies cited elsewhere in the PP, the multiplier effect to be gained from manpower training, and the need to give attention to linkage considerations. As Part III demonstrates, the proposed project is considered economically and technically feasible and considered to contribute to improving the welfare of Kenya's smallholder majority.

ASSP Systems And Their Relationship To AID and Other Donor Programs

A. Key Agriculture Systems

During the up-coming Plan period, the GOK is seeking to alleviate poverty, most particularly rural poverty, through increasing the real incomes received by the poor. For the rural poor the Plan will focus on increasing rural production, most particularly agricultural production.

Development experience in Kenya since Independence indicates, that Government rural development efforts can impact on the smallholder farmer and can result in significant incremental production as long as basic services are being provided by either Government parastatals or the private sector. These services include: development planning, technology inputs, production inputs, credit availability, and marketing opportunities.

The 1967 Kericho Conference outlined a strategy of providing the basic inputs and production requirements of farmers along with services associated with the processing and handling of the farmers' produce.1/ This strategy was first implemented in the Special Rural Development Program (SRDP) which was initiated in 1969 and as part of which AID financed the Special Rural Development - Vihiga project. One outgrowth of the SRDP has been the AID-funded Small Producer Services and Credit Program (SPSCP) financed under ASL I and the IBRD and BADEA-funded Integrated Agricultural Development Project (IADP).

Essential agricultural services can be provided on either a geographical basis, as was the case in the SRDP and is now the case with IADP, or these services can be provided to the entire agricultural sector. While moving forward with the IADP and gradually increasing the number of farmers and areas being served, the GOK is seeking to increase the delivery of agriculture services throughout the sector by placing a special emphasis on the broad provision of services to the less progressive smallholder farmer. Approximately 11 million persons belong

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1/ P. M. Mbithi, "Issues in Rural Development in Kenya," East African Journal, March 1972.

to households classified as "small farm," and between 50-88 percent of these households fall into the category of "less progressive" either using access to services or income as a criterion. Achievement of the goal of alleviating poverty will require a special push towards increasing the production of the less progressive smallholder. (Hereafter simply referred to as the smallholder.)

1 Extension Service

The provision of technology, inputs, credit, and marketing is viewed by the GOK as a central element in Kenya's development strategy. The extension service is central to the effective implementation of this strategy; reaching the smallholder farm population will require a redirection of the extension service. 1/

The extension service has been active in Kenya since about 1911, but only as Independence approached were African farmers consciously included in the group being served. In order to expand the provision of extension services, the colonial administration hired persons with very limited educational standards. Throughout the first years of Independence the extension service maintained a bias of serving the large holder and progressive farmer at the expense of the smallholder farmer. Some survey results have indicated that only 4 percent of staff visits have been devoted to "poor farmers" while 59 percent were devoted to "progressive farmers," with the remainder devoted to group visits, village meetings, and the like. 2/

The MOA has had several extension successes. One is the artificial insemination program, which has helped raise the grade dairy cow population on settlement and smallholder farms from a negligible number in 1963 to some 225,000 in 1972. A second is in maize. Development of high yielding hybrids and composite varieties in the early 1960's, coupled with an efficient seed multiplication system, and the readiness of African farmers to plant improved maize has resulted in the planting of about one million ha. being achieved in less than 10 years. Over 70 percent of the improved maize is grown by small farmers. This achievement is all the more creditable in the light of the shortage of rural credit for small farms, the need for new seed each year, and the difficulties of getting adequate distribution. 3/

1/ N. Roling, F. Chege, J. Ascroft, "Rapid Development for Kenya's Small Farms," I.D.S. Discussion Paper No. 173, July 1973.

2/ D. Leonard, H. W'Opindi, E. Luchemo, J. Tumwa, "The Work Performance of Junior Agricultural Extension Staff in Western Province," I.D.S. Discussion Paper No. 109, 1971.

3/ IBRD. Agricultural Sector Survey-Kenya. 1973, Annex 6.

A detailed analysis of this spread of hybrid maize in western Kenya examined and attempted to isolate the various factors influencing the technology diffusion.1/ In addition to farm size and certain environmental conditions, the study concluded, "Other characteristics of the farmer and his farm environment which were found to be positively related to adoption included formal education, knowledge of credit, availability, and extension visits, attendance at Farmers Training Center courses, and attendance at maize demonstrations ... One must conclude that the extension service did play an important part in putting across the message about hybrid maize."

While even Gerhart's exhaustive study was unable to generate a maize production function, with coefficients for extension, credit, fertilizer, attitude, and so on, the extension service clearly made a significant contribution to the spread of hybrid maize and to incremental maize production.

Progress with smallholder tea, coffee and pyrethrum has been considerable, and valuable lessons can be drawn from these experiences. In each case, extension workers of the respective parastatal commodity organizations have been able to offer attractive production packages to farmers. With tea, for example, improved planting material, credit, fertilizers, guaranteed prices, and collection and marketing facilities have been available jointly with extension advice. Much the same is true for coffee and pyrethrum. However, with the exception of wheat (grown mainly by large farmers) such is not the case for the crop and livestock products handled solely by MOA. In many instances, extension staff do not have precise recommendations to make, nor can they ensure that the inputs and credit needed to implement recommendations will be available. Poor input supply systems and inefficient marketing organization have made extension personnel largely ineffective.2/

Extension service success can be measured by the number of innovations introduced and the degree to which existing innovations are spread. The constraints facing the extension service include:

1. Ineffective management of the extension staff,

2. Shortage of trained extension staff,

3. Lack of motivation for the extension staff,

1/ J. Gerhart, The Diffusion of Hybrid Maize in Western Kenya, CIMMYT, 1975.

2/ IBRD. op. cit.

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4. Shortage of transportation,

5. Slow diffusion of ideas from farmer to farmer.1/

To these now must be added numbers of trained personnel as a result of the decision to extend services to large numbers of farmers not previously reached.

S. Schonherr's evaluations of Kenya's extension service concluded, "Key to improving extension performance in Kenya would appear to be the management system."2/ Field staff management is crucial for the guidance of field staff, for a feedback system from the field staff to supervisors, and for increased motivation and skill levels of the field staff. The extension service is called upon to set local agricultural development priorities, to prepare a work plan, including the provision of inputs and credit, to plan FTC training programs and to select farmers for attendance, to plan demonstrations and arrange follow-up activities, to make marketing arrangements for locations, and to plan the next crop season. These complex activities require proper management from the field staff management as well as the continual re-education of the field staff.

The GOK is seeking to address the management problem through a massive increase in the number of degree and diploma holders placed in the field, increased in-service training programs for field staff managers, and a general up-grading of the Junior Agricultural Assistance (JAA's). The MOA is asking donors to assist in this activity through an expansion of existing, and the establishment of new, agricultural training institutions.

The MOA is undertaking measures to remove some of the motivational problems plaguing the extension staff, including greater opportunities for training and promotion and recognition (and financial reward) for increased responsibilities for field staff. A review of administrative procedures impacting on the provision of transportation, staff housing, and travel expenses is to be undertaken by the MOA and the Directorate of Personnel Management.

1/ D. M. Hunt "Agricultural Extension and Farmers Training: Results of S.R.D.P. Experimentation" Second Overall Evaluation of the Second Rural Development Program I.D.S. Occasional Paper No. 12, 1975.

2/ S. Schonherr and E. Mbugua, "New Extension Methods to Speed Up Diffusion of Agricultural Innovations," I.D.S. Discussion Paper No. 200, May 1974.

Through improved management practices the efficiency of the existing extension service could be increased considerably. Experiments conducted in the Mbere S.R.D.P. area between 1971 and 1973 indicate that when a conscious effort is made to improve extension management, through improving the quantity and quality of supervisors as well as conducting in-service management/planning workshops, that a significant increase in farm visits, farmers contacted, and demonstrations conducted will result.1/ While incremental production resulting from improved management was not quantified in the subject study, it appeared that the efficiency of the extension service did increase significantly.

The shortage of extension staff can be addressed through measures in members of trained personnel but also through improved management and utilization of existing resources and through varying the diffusion techniques practiced by the extension staff. While direct farmer contacts are the traditional core of the diffusion process, such contacts may only represent 35 percent of an extension agent's workweek.2/ Other diffusion techniques include mass communication, group training techniques, and semi-formal training programs. The GOK is planning to strengthen its Rural Development Support Communications Center during the next Plan through an expenditure of approximately $3 million. The Farmer Training Centers are crucial for the in-service training of extension agents as well as for the training of selected farmers. Budget constraints have hampered FTC operations in the past, but over the last year the MOA has provided a massive, funds infusion into the ETC's, removing the budget constraint. Over the next Plan the GOK has tentively decided to spend some $5 million for development activities at the existing 34 FTC's and at four new FTC's being planned. Diploma and certificate holders provide the bulk of the training staff at FTC's. Expansion of FTC activities and improved training's being available will require expanded numbers of diploma holders and curricula renovations.

The existing extension service has been evaluated numerous times. The general conclusion is that the basic structure is sound but that certain improvements are necessary, such as improved management, improved in-service training, and improved motivation.3/

1/ S. Schonherr and E. Mbugua, "Managing Extension Staff-Two Experiments in Kenya" IDS Discussion Paper No. 230, February 1976.

2/ D. Leonard, Some Hypotheses Concerning the Organization of Communication in Agricultural Extention, IDS Staff Paper No. 72, June 1970.

3/ See D. Leonard, op.cit.
S. Schonherr, op. cit.
N. Roling, op. cit.
D. Hunt, op. cit.

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If the GOK is to achieve its six percent per annum GDP growth targets in the new Plan Period, with 3.5 percent growth for the non-monetary sector (primarily the smallholder), then the GOK must make every effort possible to maximize the effectiveness and efficiency of its agricultural support services systems. Central to these systems is the extension service. Redirecting the extension service to the needs of the smallholders will require considerable redirection of the 6,800 JAA's by the supervisory staff. Schonherr has indicated how important proper supervision can be. In addition to supervision technical support must be provided to the extension staff.

Effecting these changes will require a considerable increase in the quantity and quality of the extension staff, with special emphasis on the diploma and certificate holders.

The ASSP will provide a significant input into the GOK's agricultural education program, with special emphasis on the expansion of the number of Egerton College diploma holders. These graduates occupy the "first-level" supervisory and technical roles in the extension staff, provide essential services to the Research Division, and are generally highly active and visible throughout the agricultural sector. Design activities for a new agricultural institute will support the expansion of the number of certificate holders entering the sector and will complement IBRD efforts to increase the numbers of certificate-level graduates. Certificate holders are being placed into farmer-contact agent roles and are expected to eventually replace the current stock of Junior Agricultural Assistants. Studies and design activities for a further expansion of the Faculty of Agriculture, University of Nairobi, address higher level management and technical support problems within the extension service and the Ministry of Agriculture in general.

2. Research

The development of appropriate agricultural technologies is one function of the Ministry of Agriculture Research Division. The ATAC Research report provides an assessment of current research activities, finds the major constraint to be trained manpower, and also recommends research areas which require additional strengthening.[1/] GOK planning includes a major expansion of the Agricultural Documents Center, and in-service training programs in order to improve the dissemination of research results from the research centers into the field. Under the ASSP AID will provide inputs into the area of range research; under the Food Crops Research Project, AID is providing assistance for drylands research, and other donors are heavily involved in such areas as plant production

1/ATAC. Agricultural Research in Kenya, November 1977

AID is providing assistance for drylands research, and other donors are heavily involved in such areas as plant production, sorghum research, farm equipment development, crop rotations, and the like.

3. Inputs, Credit, Storage and Marketing

Through support to the cooperative movement improvements are being made in the delivery of inputs and marketing services as well as smallholder credit. Under the ASSP assistance to the Agricultural Finance Corporation and the Ministry of Cooperative Development will increase the manpower and managerial capability of both institutions to provide credit to smallholders and through assistance to the MOCD, will strengthen general cooperative input services. In the storage and marketing component of the ASSP, AID will investigate and subsequently finance development activities aimed at improving real farm income through decreasing storage losses, developing on farm and cooperatives' storage capacities, and improving the farmer's marketing position in order to increase actual prices received by the farmer.

B. USAID Program in Agriculture

The purpose of the review is not to set forth a litany of all agriculture-related projects, but rather to relate the on-going and proposed Mission activities to the overall sector strategy developed in the DAP (1974) and DAP Supplement (1975), which identified four key constraints to Kenya's agricultural development. (As will become apparent, this project complements the on-going USAID activities in the agricultural sector as was recommended in these documents.)

The overall USAID program in agriculture can, in addition, be analyzed in relation to the AID "Agriculture Development Policy Paper" (1977) which, among other things, identifies five functional categories which typically need to be examined in the process of developing an overall stragety in Agriculture. Although the ASSP is only one component of the agricultural strategy of one country, there is merit in examining this project in relation to the more general policy paper.

That paper suggests that in most developing countries it makes sense to pursue a broadly participatory, employment-oriented agricultural production strategy. The paper points out that if countries attempt to increase agricultural production solely through the large farm subsector, poverty will not be alleviated because those who are poor will not have the income to purchase the food produced on the large farms. Because the alleviation of poverty is expected to be the single most important objective of Kenya's Fourth Plan (as indicated above),

it is essential--as the GOK recognizes--that smallholders and pastoralists increase their productivity. In the process they may consume some of their increased production and thereby improve their nutritional well-being, and--given the opportunity--they will market the surplus. With their increased incomes, they will purchase consumer goods, thereby increasing the demand for labor and boosting employment. For those who are not smallholders--the landless and near-landless--the policy paper envisions increased employment opportunities on other's land (including large farms), (although there is the danger that inappropriate policies may cause their displacement if machines are substituted for labor); or in small-scale industries which often accompany a growing agriculture to manufacture agriculture-related tools; or, as in the case of Kenya, through settlement programs. The increased money incomes of the landless also create demand for increased production of agricultural and non-agricultural goods and services.

Implementation of this overall approach requires a careful examination of the current country situation concerning five key elements of the strategy, with the view to identifying problems and potential areas in need of assistance: (1) Asset distribution and local participatory institutions; (2) planning and policy analysis; (3) research, education, and extension; (4) rural physical infrastructure, including rural access roads, irrigation facilities, and electrification, and (5) marketing and storage, input supply, small-scale rural industry, and credit. The following table lists these five functional categories identified in the policy paper (column 1) and the four key constraints inhibiting Kenya's agricultural development as identified in the DAP Supplement (column 2). It then suggests how current USAID activities in agriculture (column 3) and activities proposed under this project (column 4) relate to each other to constitute a well reasoned, integrated program in agriculture.

USAID/Kenya is currently providing assistance, in some cases major assistance, in all five functional categories:

First, under the Rural Planning Project (615-0162), USAID is helping to finance contracts between the GOK and the Harvard Institute for International Development which provide 11 advisors to the Ministry of Agriculture (MOA) and three to the Ministry of Finance and Planning (MOFP). Assistance to the MOA is designed to improve its capability to formulate agricultural policy and plan and manage agricultural projects; this includes identifying programs to meet needs, setting priorities among programs, gathering data for analysis, and monitoring and evaluating projects that are implemented. These advisory services have been particularly timely in assisting the GOK prepare the Fourth Plan (1979-83). Assistance to the MOFP supports the Rural Planning Unit which implements GOK policy to decentralize development planning to the district level. Thus, while the MOA effect focuses largely on sectoral level policy and program planning, the MOFP effort focuses more on participatory planning of agricultural and rural development projects at the local level.

Table A-9

Global Agricultural Sector Constraints[a]	Kenya Agricultural Sector Constraints[b]	Mission On-Going Agriculture Program[c]	Agricultural System Support Project
1st: asset distribution local participatory institutions		Rural Planning (615-0162) Agriculture Credit Project (615-0148) Agriculture Sector Loan I (615-0171) National Range Ranch Development (615-0157) Livestock Loan (015-0160)	cooperative development agricultural credit institution development
2nd: planning and policy analysis	2nd: macro-economic policies	Rural Planning (615-0162) Marginal Lands Pre-Investment Study (615-0164)	
3rd: research education extension	1st: trained manpower (education) 3rd: access to knowledge (extension) 4th: research	Veterinary Faculty (615-0158) Food Cropa Research (618-0657)	agricultural manpower range research cooperative development
4th: roads irrigation electrification	3rd: access to roads access to water	Rural Roads Systems Project (615-0168) Roads Gravelling Project (615-0170)	
5th: marketing and storage input supply rural industry credit	3rd: access to markets and storage access to inputs access to credit	Agriculture Sector Loan I (615-0171) National Range Ranch Development (615-0157) Agricultural Credit (615-0148) Livestock Loan (615-0160)	storage and marketing agricultural credit institutions development

[a] Identified in AID "Agricultural Development Policy Paper"

[b] Identified in USAID/Kenya "DAP Supplement"

[c] FY 79 Congressional Presentation

Second, in part growing out of Mission experience with labor-intensive roads construction, USAID is providing major assistance (615-0168 and 615-0170) to the Ministry of Works to help implement two national rural roads programs, thereby alleviating a key constraint to smallholder access to agricultural inputs, services, and markets. Of the overall national program which involves 22,000 km of various types of rural roads, USAID is financing the construction of 1,000 km of access roads using labor-intensive techniques, and the upgrading of 4,000 km of secondary and minor roads. These activities are taking place in the two provinces (Western and Nyanza) where 43 percent of the smallholders operate their farms.

Third, under Part C of Agricultural Sector Loan I (615-0171) AID is providing agricultural credit, services, and marketing to smallholders through the cooperative system. Eligible farmers own less than 20 acres of land; do not receive more than $100 gross per capita farm income per year, but have the potential to do so; have not previously received technical assistance or credit; agree to attend a course at the local Farmer's Training Center to learn about the new technological package and about credit; agree to adopt the crop and credit package as advised by MOA and MOCD technicians, and agree to join a cooperative society through which their surplus output must be marketed. Notwithstanding these criteria, serious manpower and institutional problems have been identified (ATAC, "Evaluation of the Smallholder Production Services and Credit Program," October 31, 1977).

While Part C of ASL I is designed to assist smallholders, the Mission is also providing agricultural assistance to help pastoralists through the National Range-Ranch Development Project (615-0157), the Livestock Loan (615-0160), assistance to the Veterinary Faculty,1/ (615-0158), and the Marginal/Semi-arid Lands Pre-investment Study (615-0164). Excluding these activities, the Mission is currently providing assistance to the GOK (Rural Planning Project, (615-0162) in the areas of "planning and policy analysis" (which includes substantial strengthening of "local participatory institutions" as well); "rural infrastructure" (roads); and "credit" (which also includes some strengthening of "local participatory institutions." Regarding the livestock sub-sector, assistance is provided in the areas of "planning and policy analysis;" "education;" and "marketing" (which includes strengthening of "local participatory institutions." Comparision of these on-going Mission activities (column 3) with the four sector constraints identified in

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1/ In the recent survey conducted by the CID team carrying out the marginal lands development study, farmers in these areas identified three major problems; animal health ranked second (after drinking water and before soil erosion)

the DAP Supplement (column 2) reveals several gaps. This proposed project provides broad institutional, systemic support to strengthen various aspects of the first, third and fourth of these four bottlenecks to agricultural development (column 4). Specifically, it provides assistance in five areas: (1) manpower (including extension, research and cooperative staff); (2) research; (3) credit institutions; (4) cooperatives,and (5) storage/marketing. Because components three and five will be strengthened, in part, through the cooperative system, cooperative development is viewed as an important direct and by-product of the project. Thus, this analysis suggests (1) a broad program in agriculture, rather than a series of unrelated projects, and (2) because of the complementarity among the various elements, each will reinforce the other, in a synergistic fashion.

The Role of Other Donors. UNDP has aggregated information concerning all donor activity in Kenya.1/ A review of donor commitments as of December 31, 1976, suggests the following relative allocation of external resources among the various agricultural sector components broadly defined. The analysis is highly qualitative, especially in the case of disaggregating multi-purpose projects among the various categories. Nevertheless, it is suggestive of the role of other donors in agriculture.

1/ UNDP, Compendium on Development Assistance to Kenya as of 31 December 1976, Nairobi, June, 1977.

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Percentage Allocation of External Assistance to Agriculture, Kenya, 1976

Category	Percent Share
1. Asset Distribution and Local Participatory Institutions	26.0
a. asset distribution (including settlement	(22.4)
b. local participatory institutions	(3.6)
2. Planning and Policy Analysis	11.8
3. Research, Education, and Extension	15.4
a. research	(3.7)
b. education	(9.9)
c. extension	(1.8)
4. Rural Infrastructure	19.3
a. land and water development (excluding settlement)	(9.1)
b. roads	(9.1)
c. electrification	(1.1)
5. Marketing and Storage, Input Supply, Rural Industry and Credit	27.5
a. marketing and storage	(5.5)
b. input supply	(6.8)
c. rural industry	(4.3)
d. credit	(10.9)

To the extent this rough appraisal is valid, it suggests that among the areas of relative de-emphasis--local participatory institutions (category 1b.), research and extension (category 3), electrification (category 4), and marketing and storage, and rural industry (category 5) --this Agricultural Systems Support Project will provide major assistance in all but rural infrastructure and rural industry.

Detailed Cost Estimates

AGRICULTURE MANPOWER SYSTEMS SUPPORT

I. AID CONTRIBUTION

A. Egerton College Expansion

1.	Long Term Technical Assistance - see Annex IX.C for detailed description of projected 28 technicians/91 worker years; - see Annex XVII for technical assistance cost details of $7,200 per worker month	$ 7,862,400
	Sub-Total	$ 7,862,400
2.	Egerton College Capital Investment	
	a. Construction [1/]	$ 12,990,000
	b. Equipment - delivered on site [2/]	2,184,000
	c. Inflation @ 35 percent	5,311,000
	d. Contingency @ 15 percent - rounded	3,073,000
	Sub-Total	$ 23,558,000
3.	Residential Furnishings for long term TA group, including appliances @ $18,000 each set delivered - 28 sets	$ 504,000
4.	Academic Training - U.S. 43 participants from Egerton College for a total of 139 training years (1,668 months @ $1,400 plus one-way air fare)	$ 2,378,200
5.	Sub-Total: Egerton College	$ 34,302,600

1/ See Annex XVIIfor all cost details, Annex IX.B and Mutiso Menezes' Egerton College Expansion Report for description of items.

2/ See Annex XVII for cost details and Annex IX.B Mutiso Menezes, ibid, for description of items.

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B. Coast Institute Establishment

Stage I (see Annex XVII for Short Term TA cost details)

1.	Two person academic planning team for three months - 6 WM	$ 52,000
2.	Three person technical feasibility design team for three months - 9 WM	78,000
3.	Local contract services, Quantity Serveyor/ Engineering Services	20,000
		$ 150,000

C. University of Nairobi Expansion Stage I

1.	Academic Design Team - two persons, one month each - 2 WM	$ 20,000
2.	Technical Feasibility Design Team - two persons, two months each - 4 WM	36,000
3.	Local Contract Services - Quantity Surveyor/ Engineering Services	10,000
		$ 66,000

D. Ministry of Agriculture Training Fund (Academic Training - US)

25 participants each year for four years - 100 participants for 24 months' training each @ $1,400 per month plus one-way air fare	$ 3,460,000

E. TOTAL AID CONTRIBUTION: $37,978,600

II. GOK CONTRIBUTION

A. Egerton College Expansion

1.	Housing for TA (until new construction completed) 27 p.y. @ $5,000	$	135,000
2.	Incremental Staff Salaries (see Annex XVII)		3,522,000
3.	Incremental Administrative Costs (see Annex XVII)		394,600
4.	Miscellaneous Teaching Expenses (see Annex XVII)		312,440
5.	Dispensary, Sundries (see Annex XVII)		269,900
6.	General Maintenance (see Annex XVII)		514,200
7.	Meals, Water, Services (see Annex XVII)		1,512,600
8.	Trading Account (see annex XVII)		605,400
9.	Construction		
	a. A&E Fees (includes contingency)		2,319,000
	b. Preliminary A&E work (Mutiso)		70,000
	c. Furnishings		1,095,000
	d. Construction & Equipment		475,070
10.	Academic Training 43 one-way air fares		43,000
11.	Egerton TA Group Support-Guard Services and in-country travel		110,200
	Sub-Total: Egerton	$	11,378,410

B. Coast Institute Establishment Stage I

1.	Office space, secretarial support @ $300 per WM	$	4,500
2.	Field transportation @ $150 WM		2,250
3.	Technician counterparts		15,000
		$	21,750

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C.	University of Nairobi Expansion, Stage I		
	- see above	$	10,200
D.	MOA Training Fund		
	1. Salaries contribution, 200 per son years @ $5,000/year		1,000,000
	2. 100 one-way air fares		100,000
		$	1,100,000
E.	TOTAL GOK CONTRIBUTION	$	12,510,360

RESEARCH COMPONENT

I. AID CONTRIBUTION

A.	Long Term Technical Assistant (KIBOKO) 1/		
	1. Animal Scientist - 60 wm	$	508,500
	2. Range Conservationist - 60 wm		508,500
	3. Hydrology Engineer - 60 wm		508,500
	4. Plant Materials Specialists - 60 wm		508,500
	5. Range Ecologist - 60 wm		508,500
	6. Range Management Specialist - Team Leader - 72 wm		610,200
	Sub-Total	$	3,152,700
B.	Short Term Consultants - 84 wm 1/		608,400
C.	Commodities		
	1. Land Rover, 4-WD @ $15,000 each x 6		90,000
	2. 5-ton truck, 2WD		23,000
	3. 7-ton truck, 4WD		40,000
	4. Water Trailer, towed x 2		10,000
	5. 65-hp Tractor		15,000
	6. Base radio station/three mobile units		7,000
	7. Farm Machinery - combine (6-ft head) offset disc plow and chisel plow		30,000
	8. Drafting and Laboratory Equipment		10,000
	9. Research Publications		5,000
	10. 65-KVA Generators x 2		18,000
	11. Eight sets of Camping Gear		6,000
	12. Fast Moving Spares for items 7 and 10 (10 percent)		5,000
	13. AAPC Procurement Fees, items 4 through 10 @ 7 percent		7,000
		$	266,000

1/ See Annex XVII for detailed worker month cost estimates.

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D.	In-country computer analysis services @ $ 16,000/year for 5 years	$	80,000
E.	Academic research training for 18 participants for three years @ $1,400 per month plus travel		925,200
F.	Short-term non-academic training for 18 participants for 2 months each @ $2,550 per month plus one way travel air fare		109,800
	TOTAL AID CONTRIBUTION	$	5,142,100

II. GOK CONTRIBUTION

A.	GOK recurrent operations costs for Kiboko research complex see Annex XV		3,772,175
B.	One way participant travel		36,000
C.	Construction of 19 houses at Kiboko		216,320
	TOTAL GOK CONTRIBUTION	$	4,024,495

AGRICULTURE CREDIT SYSTEM SUPPORT

1. AID CONTRIBUTION

A.	Technical Assistance - AFC [1/]		
	1. Financial Management Advisor - 24 wm	$	182,400
	2. Internal Auditor - 24 wm		182,400
	3. Credit Review Advisor - 24 wm		182,400
	4. Training Advisor - 24 wm		182,400
	5. Two Data Processing Advisors - 48 wm		364,800
	6. Loan Appraisal Instructor - 24 wm		182,400
	Sub-Total	$	1,276,800
B.	Academic Training - U.S.		
	1. Loan Officer - three per year over five years for 24 months of training (360 training months) @ $1,400 per month		519,000
	2. Financial Management - one per year over five years for 24 months of training (120 training months)		173,000
	3. Specialized Agriculture Finance - five participants over three years for 24 months (120 training months)		173,000
	Sub-Total	$	865,000
C.	Non-Academic Training - U.S.		
	1. Specialized Management Training - four per year over five years for 6 months (120 training months) @ 2,550 per month		326,000
	2. Training for Trainers - Eight over three years for 3 months (24 training months)		69,200
	Sub-Total	$	395,200

1/ See Annex XVII for detailed T.A. cost estimate

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D. In-Country Training 1/

1. Year 1 - 4 USDA courses conducted in Nairobi by USDA personnel, 6 wm ($28,000) plus two specialised courses ($6,000) and training materials ($2,000)	$	36,800
2. Year 2 - 2 USDA courses conducted in Nairobi by USDA personnel, 3wm ($16,400) plus three specialized courses ($10,000) and training materials ($2,000)	$	28,400
3. Year 3 - repeat training courses of year 2	$	31,000
4. Year 4 - repeat training courses of year 2	$	34,000
TOTAL	$	130,200
TOTAL AID CONTRIBUTION	$	2,667,200

II. GOK CONTRIBUTION

A. Technical Assistance - AFC

1. Office space, office furnishings secretarial support @300 per wm	$	50,400
2. Partial housing allowance @ 260 per wm	$	43,680
3. In-Country travel per diem and transportation @ $3,000 per worker year	$	42,000
4. Technician counterparts @ $5,000 per technician year	$	70,000
	$	206,080

1/ Loan appraisal courses conducted by on board long term TA staff member.

B.	Academic Training		
	1. One way participant travel		25,000
	2. Participant's salary for 50 training years @ $5,000 per year		250,000
		$	275,000
C.	Non-Academic Training		
	1. One way participant travel		28,000
	2. Participant's salary for 12 training years @ $5,000 per year		60,000
			88,000
D.	In-Country Training		
	1. Classroom facilities @ $1,500 per course for 21 courses		31,000
	2. Participant's salary for 33 course months with average course size of 20 participants or 55 participants years @ $5,000 per year		275,000
	TOTAL	$	306,500
	TOTAL GOK CONTRIBUTION	$	875,580

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COOPERATIVE SYSTEM SUPPORT

I. AID CONTRIBUTION

A.	Cooperative Training Advisory Services 1/	
1.	Cooperative Education Specialist - 24 wm $	199,200
2.	Cooperative Business Management Instructor - 18 wm	149,400
3.	Cooperative Training Materials Specialist - 6 wm	49,000
4.	Cooperative Credit Specialist - 7 wm	57,100
5.	Audio Visual Specialist - 6 wm	49,000
6.	Training Materials	6,000
	Sub-Total $	509,700
B.	Cooperative Bank, Union Banking Sections Management Study Team	
1.	Cooperative Credit Administration Specialist - 1.5 wm	14,000
2.	Cooperative Financial Systems Specialist - 7 wm	58,000
3.	Cooperative Banking Management Specialist - 1 wm	10,000
	Sub-Total $	82,000
C.	Cooperative Education and Training Evaluation Team	
1.	Agricultural Economist/Teacher - 1.5 wm	14,000
2.	Cooperative Input Supply/Marketing Advisor - 1.5 wm	14,000
	Sub-Total: Training/Education Team $	28,000

1/ See Annex XVII for detailed long term TA cost. Short term TA cost at $200 per day plus per diem, $2,000 per month and travel.

D.	Cooperative Professional/Sub-Professional Manpower Study		
	1. Agricultural Manpower Economist - 1 wm	$	10,000
	2. Public Administrator - 1wm		10,000
	3. Local Secretarial Support - 1 wm		500
	4. Transport Rental		1,300
	Sub-Total	$	21,800
E.	Cooperative College Technical Feasibility Study Team		
	1. Curriculum Specialist - 1 wm		10,000
	2. Space Utilization Specialist - 1 wm		10,000
	3. Education Architect (2) - 1 wm each		20,000
	4. Local Quantity Surveyor Services		1,500
	5. Local Draftsman Services		1,500
	6. Local Civil Engineer Services		1,500
	7. Local Secretarial Support		500
	Sub-Total: Cooperative College Study	$	45,000
F.	Academic Training - U.S.		
	1. 50 participants over five years in various selected specialized co-operative fields for 24 months of training each - 1,200 training months plus one way travel		1,730,000
G.	Non-Academic - U.S.		
	1. 5 members of Cooperative Bank Board of Directors for two months each, 10 training months plus one way travel		30,500
	2. 40 participants over five years in various selected specialized fields for six months each, 240 training months plus one way travel		652,000
	Sub-Total: Non-Academic Training	$	682,500
	TOTAL AID CONTRIBUTION	$	3,099,000

II. GOK CONTRIBUTION

A.	Cooperative Training Advisory Services	
	1. Office space, office furnishings secretarial support @ $300 per wm	$ 18,300
	2. Field transportation @ $150 per wm	9,150
	3. Technician counterparts @ $5,000 per worker year	25,400
B.	Management Study - as above	8,250
C.	Cooperative Education/Training Evaluation - as above	2,600
D.	Manpower Study - as above	2,600
E.	Cooperative College Feasibility Study - as above	3,400
F.	Academic Training	
	1. One way participant travel	50,000
	2. Participants salary	250,000
G.	Non-Academic Training	
	1. One way participant travel	45,000
	2. Participants' salary	52,000
H.	In-Country Training Costs	
	1. Classroom facilities @ $1,200 per course for 15 courses	15,000
	2. Participants'salary - 12 training months for an average of 20 participants per month or 20 participant years @ $5,000 per year	100,000
	Total: GOK CONTRIBUTION	$ 581,700

STORAGE AND MARKETING COMPONENT

I.	AID CONTRIBUTION		
	A. National Food Storage Study		
	1. Team Leader - 6 wm [1/]	$	49,710
	2. Agricultural Engineer - 6 wm		49,710
	3. Agricultural Economist - 6 wm		49,710
	4. Entomologist - 6 wm		49,710
	5. Procurement of Local Drafting services		5,160
	Sub-Total: STUDY COST	$	204,000
	B. Academic Training		
	1. Six participants for 14 months of training each @ $1,500/mo	$	126,000
	2. One participant for 26 motnhs of training (M.Sc) @ $1,500/mo		39,000
	3. One way travel		7,000
	C. Non-Academic Training		
	1. Five participants for 3 months each		43,250
	Sub-Total: TRAINING COST	$	215,250
	TOTAL AID CONTRIBUTION	$	419,250
II.	GOK CONTRIBUTION		
	A. National Grain Storage Study		
	1. Office space	$	12,000
	2. In country transportation (three vehicles with drivers)		15,000
	3. Professional counterparts and secretarial support		12,000
	Sub-Total: STUDY COST		39,000
	B. Participants Training (one way air fare x twelve)		12,000
	TOTAL GOK CONTRIBUTION	$	51,000

1/ See Annex XVII for cost estimate details.

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COMPREHENSIVE EVALUATION

I. AID CONTRIBUTION

A.	Evaluation system design - four consultants, three months each @ $ 8,000 per month plus international transportation	$	104,000
B.	First evaluation (FY 1980) - three consultants, three months each @ $8,500 per month plus international transportation		82,500
C.	Second evaluation (FY 1982) - three consultants, three months each @ $ 9,000 per month plus international transportation		87,000
D.	Final evaluation (FY 1984) - three consultants, three months each @ $9,500 per month plus international transportation		91,500
E.	Component specific evaluation as required by evaluation design - 10 worker months		100,000
	TOTAL AID CONTRIBUTION	$	465,000

II. GOK CONTRIBUTION

A.	Office facilities and secretarial support @ $300 per worker month x 49 total worker months	$	14,700
B.	Field transportation @ $150 per worker month		7,350
C.	Technician counterparts @ $800 per worker month		39,200
	TOTAL GOK CONTRIBUTION	$	61,250

INPUT/OUTPUT ANALYSIS

INPUTS	OUTPUTS
1. Egerton Long Term TA 2. Egerton Capital Investment 3. Egerton Participant Training	- 1.A Egerton College Expansion Completed
4. Coast Institute Study	- 1.B Coast Institute designed
5. University of Nairobi Expansion Study	- 1.C University of Nairobi Expansion designed
6. MO Training Fund	- 1.D MOA Training Fund operational
7. Kiboko Long Term TA 8. Kiboko Short Term TA 9. Research Commodity and Services Procurement 10. Academic Participant Training 11. Non-Academic Research Training	- 2. Functioning Range Research Program at Kiboko
12. AFC Long Term TA 13. AFC Academic Training 14. AFC Non-Academic Training 15. AFC in-Country Training	- 3. AFC Operations upgraded and staff trained
16. Cooperative Training Advisory Services 17. Cooperative Education and Training Evaluation 18. Cooperative Manpower Study 19. Cooperative Academic Training 20. Cooperative Non-Academic Training	- 4.A Cooperative Staff Training and Cooperative Movement Training improved
21. Cooperative College Feasibility Study	- 4.B Cooperative College Expansion Design completed
22. Cooperative Banking Sector Study	- 4.C Cooperative Banking Sector evaluated
23. Storage Academic Training 24. Storage Non-Academic Training	- 5.A Grain Storage Extension and Research Staff trained
25. National Grain Storage Study	- 5.B Food Storage Assistance Activity designed
26. Comprehensive ASSP Evaluation	- 6. Evaluation Data generated.

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NOTES

1. Input number 2, Egerton College Investment, includes construction equipment procurement and residential furnishings procurement.

2. Input number 9, Research Commodity and Service Procurement, includes all research commodity costs and local computer analysis services.

3. Input number 16, Cooperative Training Advisory Services, includes long and short term technical assistance and training materials.

SUMMARY COST ESTIMATE
AND
FINANCIAL PLAN ($000)

SOURCE:	AID						GOK			TOTAL		
	LOAN			GRANT								
	FX	LC	TOTAL	FX	LC	TOTAL	FX	LC	TOTAL	FX	LC	TOTAL
USE:												
1. Egerton Long Term TA				5,896.8		5,896.8	5,863.7	5,863.7		5,896.8	5,863.7	11,760.5
2. Egerton Capital Investment	3,917	11,259	15,174	504		504	5,471.7	5,471		4,421	16,728.7	21,149.7
3. Egerton Academic Training				2,378.2		2,378.2	43	43		2,378.2	43	2,421.2
4. Coast Institute Study				150		150	21.8	21.8		150	21.8	171.8
5. Univ. of Nairobi Expansion study				66		66	10.2	10.2		66	10.2	76.2
6. MOA Participant Training				3,460		3,460	1,100	1,100		3,460	1,100	4,560
7. Kiboko Long Term TA				2,343.6		2,343.6	3,988.5	3,988.5		2,343.6	3,988.5	6,332.1

SUMMARY COST ESTIMATE
AND
FINANCIAL PLAN
($000)

SOURCE:	AID						GOK			TOTAL		
	LOAN			GRANT								
	FX	LC	TOTAL	FX	LC	TOTAL	FX	LC	TOTAL	FX	LC	TOTAL
USE:												
8. Kiboko Short term TA				608.4		608.4				608.4		608.4
9. Research Commodity and services procurement				107	239	346				107	239	346
10. Academic Research Training				925.2		925.2	18	18		925.2	18	943.2
11. Non-Academic Research Training				109.8		109.8	18	18		109.8	18	127.8
12. AFC Long-Term TA				1,075.2		1,075.2	206.1	206.1		1,075.2	206.1	1,281.3
13. AFC Academic Training				865		865	275	275		865	275	1,140
14. AFC Non-Academic Training				395.2		395.2	88	88		395.2	88	483.2

SUMMARY COST ESTIMATE
AND
FINANCIAL PLAN
($000)

SOURCE:	AID						GOK			TOTAL		
	LOAN			GRANT								
	FX	LC	TOTAL	FX	LC	TOTAL	FX	LC	TOTAL	FX	FC	TOTAL
USE:												
15. AFC In Country Training				130.2		130.2		306.5	306.5	130.2	306.5	436.7
16. Coop. Training Advisory Services				424.3		424.3		52.8	52.8	424.3	52.8	477.1
17. Coop. Education and Training Evaluation				28		28		2.6	2.6	28	2.6	30.6
18. Coop. Manpower Study				21.8		21.8		2.6	2.6	21.8	2.6	24.4
19. Coop. Academic Training				1,730		1,730		300	300	1,730	300	2,030
20. Coop. Non-Academic Training				682.5		682.5		212	212	682.5	212	894.5
21. Coop. College Feasibility Study				45		45		3.4	3.4	45	3.4	48.4
22 Coop. Banking Sector Study				82		82		8.3	8.3	82	8.3	90.3

SOURCE:	AID						GOK			TOTAL		
	LOAN			GRANT								
	FX	LC	TOTAL	FX	LC	TOTAL	FX	LC	TOTAL	FX	LC	TOTAL
USE:												
23. Grain Storage Academic Training				172		172		7	7	172	7	179
24. Grain Storage Non-Academic Training				43.3		43.3		5	5	43.3	5	48.3
25. National Food Storage Study				198.8	5.2	204		39	39	198.8	44.2	243
26. Comprehensive Evaluation				465		465		61.3	61.3	465	61.3	526.3
27. Inflation	1,371	3,940	5,311	2,149		2,149				3,520	3,940	7,460
28. Contingency	793	2,280	3,073	912.7		912.7				1,705.7	2,280	3,985.7
TOTAL	6,081	17,477	23,558	25,969	244.2	26,213.2	18,104.5		18,104.5	32,050	35,825.7	67,875.7

COSTING OF PROJECT INPUTS/OUTPUTS

($'000)

	Project Outputs[1/]				
	Egerton (1.A.)	Coast (1.B.)	Univ. (1.C.)	Training (1.D.)	Total
A. AID APPROPRIATED INPUTS					
1. Egerton Long Term TA	7,862.4				7,862.4
2. Egerton Capital Investment	24,062.0				24,062.0
3. Egerton Academic Training	2,378.2				2,378.2
4. Coast Institute Study		150.0			150.0
5. Univ. of Nairobi Expansion Study			66.0		66.0
6. MOA Participant Training Fund				3,460.0	3,460.0
Subtotal	34,302.6	150.0	66.0	3,460.0	37,978.6
B. GOK Inputs					
1. Egerton TA Support	5,863.7				5,863.7
2. Egerton Capital Investment	5,471.7				5,471.7
3. Participant Training Costs	43.0			1,100.0	1,143.0
4. Coast Institute Study		21.8			21.8
5. Univ. of Nairobi Study			10.2		10.2
Subtotal	11,378.4	21.8	10.2	1,100.0	12,510.4
Total Outputs 1A thru 1D	45,681.0	171.8	76.2	4,560.0	50,489.0

1/ Refer to Page 206 for titles of project outputs.

COSTING OF PROJECT INPUTS/OUTPUTS
($'000)

	Project Outputs[1/]					
	Range (2)	AFC (3)	MOCD (4.A.)	College (4.B)	Banking (4.C)	Total
A. AID APPROPRIATED INPUTS						
7. Kiboko Long Term TA	3,152.7					3,152.7
8. Kiboko Short Term TA	608.4					608.4
9. Research Commodity/ Services Proc.	346.0					346.0
10. Academic Research Training	925.2					925.2
11. Non-Academic Research Training	109.8					109.8
12 AFC Long Term TA		1,276.8				1,276.8
13 AFC Short Term TA						
14. AFC Academic Training		865.0				865.0
15. AFC Non-Academic Training		395.2				395.2
16. AFC In-country Training		130.2				130.2
17. Coop. Training Advisory Services			509.7			509.7
18. Coop. Education/ Training Eval.			28.0			28.0
19. Coop. Manpower Study			21.8			21.8
20. Coop. Academic Training			1,730.0			1,730.0
21. Coop. Non-academic Training			682.5			682.5
22. Coop. College Study				45.0		45.0
23. Coop. Banking Sector Study					82.0	82.0
Subtotal	5,142.1	2,667.2	2,972.0	45.0	82.0	10,908.3

1/ Refer to Page 206 for titles of project outputs.

COSTING OF PROJECT INPUTS/OUTPUTS

($'000)

	Project Outputs[1/]					
	Range (2)	AFC (3)	MOCD (4.A.)	College (4.B.)	Banking (4.C.)	Total
B. GOK INPUTS						
6. Kiboko Station Operations	3,988.5					3,988.5
7. Research Participant Costs	36.0					36.0
8. AFC TA Support		206.1				206.1
9. AFC Participant Costs		669.5				669.5
10. Cooperative TA Support			58.0	3.4	8.3	69.7
11. Cooperative Training Costs			512.0			512.0
Subtotal	4,024.5	875.6	570.0	3.4	8.3	5,481.8
Total, Outputs 2 thru 4C	9,166.6	3,542.8	3,542.0	48.4	30.3	16,390.1

1/ Refer to Page 206 for titles of outputs

Continued .....

COSTING OF PROJECT INPUTS/OUTPUTS

($'000)

	Project Outputs[1/]			
	Training (5.A.)	Storage (5.B.)	Evaluation (6)	Total
A. AID APPROPRIATED INPUTS				
23. Grain Storage Academic Training	172.0			172.0
24. Grain Starage Non-Academic Training	43.3			43.3
25. National Grain Storage Study		204.0		204.0
26. Comprehensive ASSP Evaluation			465.0	465.0
Subtotal	215.3	204.0	465.0	884.3
B. GOK INPUTS				
12. Grain Storage Study Support		39.0		39.0
13. Participant Training Costs	12.0			12.0
14. Comprehensive Evaluation Support			61.3	61.3
Total, Outputs 5A thru 6	227.3	243.0	526.3	996.6

1/ Refer to Page 206 for titles of outputs.

PROJECTION OF EXPENDITURES
BY FISCAL YEAR
($ 000)

FISCAL YEAR	AID		GOK	
	Loan	Grant		Total
FY 1979	4,645.0	1,893.8	2,670.0	9,208.8
FY 1980	4,212.0	4,665.6	3,915.2	12,792.8
FY 1981	4,148.0	5,199.6	4,154.3	13,501.9
FY 1982	1,321.0	4,774.8	3,136.6	9,232.4
FY 1983	848.0	4,101.5	2,643.7	7,593.2
FY 1984		2,288.7	1,394.5	3,683.2
FY 1985		227.5	190.2	417.7
INFLATION	5,311.0	2,149.0		7,460.0
CONTINGENCY	3,073.0	912.7		3,985.7
TOTAL	23,558.0	26,213.2	18,104.5	67,875.7

AGRICULTURAL MANPOWER SYSTEMS
COST ESTIMATE DETAILS

A. Long Term Technical Assistance - Duty Station

Egerton College, Njoro

Family of Four
Two Worker Years

			Estimated Cost
1.	Salary	$	56,000
2.	Benefits		5,600
3.	Post Differential		5,600
4.	Travel to Post (RT)		8,000
5.	Air Freight/POV/HHE/RT		16,000
6.	Storage		6,000
7.	Medical/Workman's Compensation		4,000
8.	Quarters Allowance		GOK
9.	Education Allowance		14,000
10.	R&R Athens		4,000
11.	Guard Services		GOK
12.	In Country Travel		GOK
	Sub-Total	$	119,200
13.	Contingency at 10 percent		11,900
14.	General Administration/Overhead at 10 percent 1/		11,900
15.	Inflation - @ 25 percent		29,800
	Total Estimated Two Year Cost	$	172,800
	Average monthly cost per technician ($ 172,800 - 24)	$	7,200

1/ Overhead estimate covers all contract costs, including management of participant training activities.

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(KHS)

	TOTAL	FX	LC
B. Egerton College New Construction			
1. Animal Science			
Construction	2,931,840	840,680	2,091,160
Equipment	850,000	810,000	40,000
Furnishings	50,000	-	50,000
	3,831,840	1,650,680	2,181,160
2. Biology			
Construction	735,300	90,000	645,300
Equipment	435,000	415,000	20,000
Furnishings	70,000	-	70,000
	1,240,300	505,000	735,300
3. Chemistry			
Construction	910,600	122,000	788,600
Equipment	535,000	510,000	25,000
Furnishings	75,000	-	75,000
	1,520,600	632,000	888,600
4. Crop Production			
Construction	616,800	61,700	555,100
Equipment	131,000	125,000	6,000
Furnishings	25,000	-	25,000
	772,800	186,700	586,100
5. Economics			
Equipment	220,000	210,000	10,000
Furnishings	25,000	-	25,000
	245,000	210,000	35,000
6. Dairy Technology			
Construction	42,000	3,000	39,000
7. Education/Extension			
Equipment	383,000	365,000	18,000
Furnishings	25,000	-	25,000
	408,000	365,000	43,000

(KSH)

		TOTAL	FX	LC
8.	Home Economics			
	Construction	342,800	34,280	308,520
	Equipment	16,000	15,000	1,000
		358,800	49,280	309,520
9.	Agriculture Engineering			
	Construction	1,548,950	249,000	1,299,950
	Equipment	4,356,000	4,148,000	208,000
	Furnishings	140,000	-	140,000
		6,044,950	4,397,000	1,647,950
10.	Range Management			
	Equipment	63,000	60,000	3,000
	Furnishings	10,000	-	10,000
		73,000	60,000	13,000
11.	Studies			
	Construction	432,000	43,200	388,800
12.	Library			
	Construction	3,132,800	219,296	2,913,504
	Equipment	3,386,000	3,225,000	161,000
	Furnishings	210,000	-	210,000
		6,728,800	3,444,296	3,284,504
13.	Administration			
	Construction	2,147,100	214,710	1,932,390
	Equipment	346,000	330,000	16,000
	Furnishings	160,000	-	160,000
		2,653,100	544,710	2,108,390
14.	Sports Facilities 1/			
	Construction	574,000	20,550	553,450
15.	Sanitorium/Dispensary			638,000
	Construction	725,000	87,000	
	Equipment	27,000	26,000	1,000
	Furnishings	35,000	-	35,000
		787,000	113,000	674,000

1/ Financed by GOK.

		(KSH)		
		TOTAL	FX	LC
16.	Halls of Residence			
	Construction	21,096,000	2,109,600	18,986,400
	Furnishings	504,000	-	504,000
		21,600,000	2,109,600	19,490,400
17.	Stores			
	Construction	1,080,000	32,400	1,047,600
	Equipment	73,000	70,000	3,000
	Furnishings	40,000	-	40,000
		1,193,000	102,400	1,090,600
18.	Estates			
	Construction	975,800	48,790	927,010
	Equipment	435,000	415,000	20,000
	Furnishings	85,000	-	85,000
		1,495,800	463,790	1,032,010
19.	Transport			
	Construction	1,216,500	62,250	1,154,250
	Equipment/Spares	3,665,000	3,504,000	161,000
	Furnishings	48,000	-	48,000
		4,929,500	3,566,250	1,363,250
20.	Tatton Farm			
	Construction	765,600	8,640	756,960
	Equipment	820,000	780,000	40,000
		1,585,600	788,640	796,960
21.	Kitchen/Dining			
	Construction	4,816,000	501,600	4,314,400
	Equipment	714,000	680,000	34,000
	Furnishings	530,000	-	530,000
		6,060,000	1,181,600	4,878,400
22.	Staff Housing			
	Construction	31,514,400	3,151,440	28,362,960
	Furnishings	3,509,000	2,052,000	1,457,000
		35,023,400	5,203,440	29,819,960

		(KHS)	
	TOTAL	FX	LC
23. Chemeron Range.			
Construction	913,000	91,300	821,700
24. Education Building			
Construction	676,000	97,600	608,400
25. Links/Covered Ways			
Construction	160,000	-	160,000
C. Up-Grading of Existing Buildings			
1. 'C' Block (dormitory)			
Construction	585,750	62,700	523,050
2. 'B' Block (Dean's Office)			
Construction	241,400	25,840	215,560
3. Library			
Construction	125,000	28,210	96,790
4. Lecture Hall			
Construction	223,570	8,070	215,500
5. Assembly Hall			
Construction	598,700	38,290	560,410
6. Biology			
Construction	438,840	183,400	255,440
7. Economics/Range Management			
Construction	239,125	32,940	206,185
8. Chemistry			
Construction	266,175	110,780	155,395
9. Junior Common Room (DORM)			
Construction	208,745	-	208,745
10. Agriculture Engineering			
Construction	356,800	147,720	209,080
11. Kitchen/Dining Hall			
Construction	313,650	56,785	256,865

12.	Crops			
	Construction	385,725	79,100	306,625
13.	Administration			
	Construction	27,240	14,300	12,940
14.	Lecture Rooms/Canteen			
	Construction	371,280	57,100	314,180
15.	Transport			
	Construction	122,470	41,540	80,930
16.	Education Extension			
	Construction	477,175	49,500	427,675
17.	Animal Science			
	Construction	162,565	83,681	78,884
18.	Halls of Residence (Women's)			
	Construction	35,075	-	35,075
19.	Halls of Residence (Men's)			
	Construction	101,025	-	101,025
20.	Staff Housing			
	Construction	334,660	-	334,660
21	Tatton Farm			
	Construction	100,000	-	100,000
D.	Infrastructures and Site Services			
1.	Water Supply System			
	Construction	10,690,000	4,800,000	5,890,000
2.	Sewerage System			
	Construction	6,045,500	-	6,045,500
3.	Irrigation System			
	Construction	220,000	-	220,000

4.	Electrical System			
	Construction	3,126,000	410,000	2,716,000
5.	Telephone System			
	Equipment	700,000	700,000	-
6.	Roads	420,500	-	420,500
	TOTAL: Shg	126,245,460	32,728,992	93,516,468
	ALL EGERTON IMPROVEMENTS $	16,185,000	4,196,000	11,989,000

E. Summary: All Egerton Capital Improvements - U.S. $

1. Construction	13,275,000	1,832,000	11,443,000
2. Equipment	2,200,000	2,101,000	99,000
3. Furnishings	710,000	263,000	447,000
Sub-Total:	$ 16,185,000	$ 4,196,000	$ 11,989,000

F. Egerton Improvements - AID Financed

1. Construction	$	12,990,000
2. Equipment		2,184,000
Sub-Total:	$	15,174,000
3. Inflation @ 35 percent		5,311,000
Sub-Total:	$	20,485,000
4. Contingency @ 15 percent (cost plus inflation)		3,073,000
	$	23,558,000

G. Egerton Improvements - GOK Financed

1.	Construction 1/	$	285,000
2.	Equipment (vehicles)		16,000
3.	Furnishing		710,000
	Sub-Total	$	1,011,000
4.	Inflation @ 35 percent		354,000
	Sub-Total	$	1,365,000
5.	Contingency @ 15 percent (cost plus inflation)		205,070
	Sub-Total	$	1,570,070
6.	Project Design Architect Expense	$	70,000
7.	A&E Fees - Detailed Design and Construction Supervision @ 11.25 percent total construction cost ($13,275,000) plus inflation ($4,646,250)		2,016,000
8.	A&E Contingency @ 15 percent (cost plus inflation)		303,000
		$	3,959,070

1/ Includes sports facilities (Item C, 14) wholly financed by the GOK.

H. GOK Financed Incremental Salary and Benefit Costs: Egerton College Staff

FY 1980	New Hires:	12 Lecturers	$ 105,000	
		6 Demonstrators	30,500	
		1 Senior Staff	8,700	
		10 Junior Staff	49,300	
		15 Plant Staff	19,100	
				$ 212,600
FY 1981	FY 1980 x 1.07			227,500
	New Hires:	12 Lecturers	$ 112,400	
		3 Demonstrators	16,200	
		1 Senior Staff	9,300	
		2 Junior Staff	5,300	
		30 Plant Staff	40,900	
				$ 184,100
FY 1982	FY 1981 x 1.07			440,400
	New Hires:	7 Lecturers	$ 70,200	
		9 Demonstrators	52,000	
		2 Senior Staff	19,900	
		20 Junior Staff	56,700	
		70 Plant Staff	102,100	
				$ 300,900
FY 1983	FY 1982 x 1.07			739,200
	New Hires:	8 Demonstrators	$ 49,500	
		2 Senior Staff	21,300	
		20 Junior Staff	60,700	
		25 Plant Staff	39,000	
				$ 170,500
FY 1984	FY 1983 x 1.07			973,400
	New Hires:	3 Lecturers	$ 34,400	
		12 Demonstrators	79,400	
		2 Senior Staff	22,800	
		17 Junior Staff	55,200	
		49 Plant Staff	81,800	
				$ 273,600
		Total: LOP		$3,522.200

I. GOK Financed Incremental Operating Expenses: Egerton College

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85	Increment
	$	$	$	$	$	$	$ FY80/84 (LOP)
1. Administrative Costs Increment 1/	16,100	36,000	83,800	114,300	144,400	179,000	394,600
2. Tuition Expenses Increment 2/	--	19,200	41,740	103,100	148,400	199,800	312,440
3. Other (Sundry/Dispensary) Increment 3/	--	14,000	31,700	78,200	146,000	151,700	269,900
4. General Maintenance Increment 3/	20,000	29,000	64,900	162,700	237,600	322,100	514,200
5. Meals, Water, Etc Increment 3/	71,000	142,000	224,100	452,900	622,600	942,800	1,512,600
6. Trading Account Increment 3/	29,000	58,000	91,700	180,000	246,700	326,000	605,400

Note: Expenditures based on Egerton College, Revenue and Expenditure Estimates 1977/1978

1/ Based on staff increases

2/ Based on student increases

3/ Based on construction/students

Definitions:
Administrative - Stationary,printing,electricity, miscellaneous travel
Tuition Expenses - External examiner's fees, department book expenses, library expenses, Tatton Farm expenses
Other - Dispensary expenses, visual aids entertainment
General Maintenance - Buildings,roads,fenses equipment, vehicles
Meals/Water - Student meals,borehol operations, sports
Trading Account - Milk factory expenses, repairs, operational expenses.

Research Component Cost Estimate
Details

A. Long Term Technical Assistance
Standard Costs - Duty Station Kiboko

Family of Four
Two Worker Years

			Estimated Costs
1.	Salary	$	64,000
2.	Benefits		6,400
3.	Post Differential		6,400
4.	Travel to Post (RT)		8,000
5.	Air Freight/POV/HHE/(RT)		16,000
6.	Storage		6,000
7.	Medical/Workmen's Compensation		4,000
8.	Quarters Allowance		GOK
9.	Education Allowamce		14,000
10.	Households Furnishing Allowance		9,300
11.	R&R Athens		4,000
12.	Guard Services		GOK
13.	In-Country Travel		2,300
	Sub-Total	$	140,400
14.	Contingency @ 10 percent		14,000
15.	General Administration/Overheads @ 10 percent 1/		14,000
16.	Inflation @ 25 percent		35,000
	Total Estimated two year cost	$	203,400
	Average monthly cost per technician ($203,400 ÷ 24)	$	8,475

B. Short Term Consultants Standard Costs - Kiboko

1	Daily burdened rate (salary, benefits overhead & profit) @ $200 per day - $6,000 per month x 84 months		504,000
2.	Per diem @ $20 per day		50,400
3.	International travel - 27 round trips @ $2,000 each		54,000
	Total - 84 consultant months	$	608,400
4.	Average monthly cost ($608,400 - 84) rounded	$	7,250

1/ Overhead estimate covers all contract costs, including management of participant training activities.

C. GOK CONTRIBUTION

1. Recurrent Expenditure

Item	Title/Head	Kenya Pounds 1978/1978
000	Personal Emoluments	83,544
050	House Allowance	3,600
100	Transport Operating Expenses	24,000
110	Travel & Accommodation	6,000
140	Electricity & Water	10,000
150	Drugs, Sera, Vaccines & Pesticides	11,060
153	Farm Inputs	5,600
172	Uniforms & Clothing	3,000
173	Library	1,000
174	Stationery & Printing	1,200
190	Miscellaneous & Other Charges	3,020
200	Replacement of Transport	24,000
220	Plant & Equipment	10,000
222	Office Equipment	5,828
250	Maintenance of Station	14,140
	Total:	205,992
2.	Escalation of 7 percent 1979/1980	220,410
3.	Escalation of 7 percent 1980/1981	235,838
4.	Escalation of 7 percent 1981/1982	252,346
5.	Escalation of 7 percent 1982/1983	270,010
6.	Escalation of 7 percent 1983/1984	288,910
	Sub-Total: Operation Costs - Kenya Pounds	1,473,506
	Kenya Pounds = US $ 2.56 = $	3,772,175
7.	Construction of 19 houses at Kiboko	216,320
	TOTAL GOK CONTRIBUTION $	3,988,495

LONG TERM TECHNICAL ASSISTANCE STANDARD COSTS - DUTY STATION NAIROBI - AFC

Family of Four
Two Worker Years

			Estimated Cost
1.	Salary	$	64,000
2.	Benefits		6,400
3.	Travel to Post (RT)		8,000
4.	Air Freight/POV/HHE/(RT)		16,000
5.	Storage		6,000
6.	Medical/Workmen's Compensation		5,000
7.	Quarters Allowance		12,000 1/
8.	Education Allowance		10,000
9.	Household Furnishing Allowance		9,300
10.	Guard Services		4,100
	Sub-Total:	$	140,800
11.	Contingency @ 10 percent		14,000
12.	General Administration/Overheads @ 10 percent		14,000
13.	Inflation @ 10 percent		14,000
	TOTAL ESTIMATED TWO-YEAR COSTS	$	182,800
	Average monthly cost per technician (182,800 ÷ 24)		7,600

1/ Top off of AFC allowance, includes utilities

COOPERATIVE SYSTEMS SUPPORT

A LONG TERM TECHNICAL ASSISTANCE STANDARD COSTS - DUTY STATION NAIROBI - MOCD

Family of Four
Two Worker Years

			Estimated Cost
1.	Salary		64,000
2.	Benefits		6,400
3.	Travel to Post (RT)		8,000
4.	Air Freight/POV/HHE/(RT)		16,000
5.	Storage		6,000
6.	Medical/Workmen's Compensation		4,000
7.	Quarters Allowance		24,000
8.	Education Allowance		10,000
9.	Household Furnishing Allowance		9,300
10.	In Country Travel		2,500
11.	Guard Services		4,100
	Sub-Total	$	154,300
12.	Contingency @ 10 percent		15,000
13.	General Administration/Overheads @ 10 percent		15,000
14.	Inflation @ 10 percent		15,000
	TOTAL ESTIMATED TWO YEAR COSTS	$	199,300
	Average monthly cost per technician ($199,300 ÷ 24) rounded	$	8.300

STORAGE AND MARKETING COMPONENT
COST ESTIMATE DETAILS

A. National Grain Storage Study - 24 wm

1.	Daily burdened rate of $200 per technician per day or $6,000 per month for 24 months	$	144,000
2.	International travel @ $2,000 for four round trips		8,000
3.	Per diem @ $65 per day for 24 months		46,800
	Total Estimate: 24 worker months	$	198,800
	Average monthly cost per technician ($198,800 ÷ 24)		8,285

Implementation Schedules

Summary implementation schedules are included in each component description. This section details action by component as follows:

Date of Action

1978

JUNE	- Project Paper submitted to AID/W
AUGUST	- Loan and Grant authorized
	- Draft Project Agreement submitted to GOK
	- Project Agreement signed
NOVEMBER	- Initial CPs satisfied

1. Egerton College Expansion

Action

SEPTEMBER	- GOK selects local consultancy team for A & E work.
	- GOK/AID requests proposals for technical assistance (T.A.) contract.
	- Consultants begin final design work.
NOVEMBER	- GOK/AID reviews T.A. proposals, selects contractor.
DECEMBER	- GOK/AID signs T.A. contract.

1979

FEBRUARY	- T.A. team leader arrives, prepares Inception Report.
	- Nominations for first group of participants submitted to AID.
	- AID reviews architect's preliminary plans
	- TDY engineering/architectural arrives to assist in exercise.
MAY	- Contractor submits nominations.
	- GOK/AID review and approve.
JUNE	- AID reviews and approves architectural plans at 60 percent completion stage.
	- Quantity Surveyor (Q.S.) prepares specifications for construction materials and fixtures.
JULY	- First group of participants depart for long-term training (22).
	- AAPC seeks bids on materials identified by the Q.S.
	- GOK advertises for pre-qualificational of construction contractors.

Date of Action	Action
1979 cont'd	
AUGUST	- First contingent of U.S. teaching staff arrives (16). - 3 participants return .
SEPTEMBER	- GOK/architect short-lists buildings contractors. - GOK invites bids from qualified contractors. - AID approves final drawings and bid documents.
OCTOBER	- AAPC reviews bids and forwards "short-list" to USAID and GOK for approval. - Specifications for Stage I equipment prepared.
NOVEMBER	- GOK receives bids from construction contractors.
DECEMBER	- GOK and AID review/approve construction bids. GOK awards construction contract (s).
1980	
JANUARY	- Construction contractor begins mobilization. - AAPC invites bids for Stage I equipment.
FEBRUARY	- Nominations for second group of participants submitted to AID. - Construction begins.
MARCH	- Imported construction materials and fixtures arrive. - AAPC reviews bids, recommends awards, and GOK/AID approve awards for Stage I equipment. - GOK prepares list for Stage II equipment - First in-depth project-wide evaluation 1/
MAY	- AAPC reviews bids, recommends awards and GOK/AID approve awards for Stage II equipment. - Contractor submits nominations, GOK/USAID review and approve.
AUGUST	- Second contingent of U.S. teaching staff arrives (6). - Second group of participants departs (15).

1/ This relates to all five project components

Date of Action	Action
1981	
FEBRUARY	- Nominations for third group of participants.
AUGUST	- Third group of participants depart (6). - Stage I equipment arrives. - Three participants return. - Stage I construction completed.
SEPTEMBER	- First incremental intake of 118 additional students (College enrollment at 812). - Second in-depth project-wide evaluation 1/
1982	
AUGUST	- 13 participants return. - 4 U.S. teaching staff depart. - Stage II construction completed.
SEPTEMBER	- Second incremental intake of 118 additional students (enrollment at 934).
DECEMBER	- All construction completed.
1983	
AUGUST	- 14 participants return. - 10 U.S. teaching staff depart.
SEPTEMBER	- Incremental intake of 314 students (enrollment at 1,248).
1984	
AUGUST	- Final 8 U.S. teaching staff depart - Final 13 participants return. - Third in-depth project-wide evaluation. 1/
SEPTEMBER	- Incremental intake of 314 students (enrollment at 1,440) - End of project. - End of project evaluation.

1/ This relates to all five project components.

2. Coast Institute - Establishment

Date of Action	Action
1978	
SEPTEMBER	- AID prepares SOW, PIO/Ts issued.
OCTOBER	- AID/GOK invites proposals for architectural and engineering feasilility studies.
DECEMBER	- Bids reviewed and selection made. - Contract negotiated.
1979	
FEBRUARY	- Studies contract signed.
APRIL	- Academic feasibility study begins.
JUNE	- Engineering feasibility study begins. - Academic feasibility study completed. - Study submitted to GOK/AID
AUGUST	- Engineering feasibility study completed - Study submitted to GOK/AID.
SEPTEMBER	- Feasibility studies accepted by GOK and AID.
NOVEMBER	- PP Revision begins.
DECEMBER	- PP Revision submitted to AID/W.

3. Faculty of Agriculture, University of Nairobi - Extension

1978	
SEPTEMBER	- AID prepares SOW, PIO/Ts issued.
OCTOBER	- AID/GOK invites proposals for architectural and engineering feasibility studies.
NOVEMBER	- Bids reviewed and selections made.

3. cont'd

Stage I

Date of Action	Action
DECEMBER	- Contract negotiated.
1979	
MAY	- Academic feasibility study begins (May 1). - Engineering feasibility study begins (May 15).
JUNE	- Academic feasibility study completed (June 1). - Study submitted to GOK/AID.
JULY	- Engineering feasibility study completed (July 15).
AUGUST	- Feasibility studies accepted by GOK and AID
NOVEMBER	- PP Revision begins.
DECEMBER	- PP Revision submitted to AID/W.

4. Ministry of Agriculture Training Fund

1978	
SEPTEMBER	- Preliminary Annual Training Plan (ATP) submitted to AID.
OCTOBER	- ATP reviewed by AID.
NOVEMBER	- MOA and AID review and agree upon ATP. Directorate of Personnel Management (DPM)approves nominations in ATP.
DECEMBER	- PIO/P's prepared by USAID.
1979	
FEBRUARY	- First short-term participants depart.
JUNE	- First long-term participants depart.

4. cont'd

Date of Action	Action
AUGUST	- Majority of first year's long-term participants depart. - Second ATP submitted to AID.
OCTOBER	- ATP reviewed by AID.
NOVEMBER	- MOA and AID agree upon ATP. - DPM approves nominations in ATP.
DECEMBER	- PIO/P's prepared by USAID.
1980	
Repeat 1979	
1981	
Repeat 1979	
1982	
Repeat 1979	- Note that only training completed by September 1984 to be considered in ATP.
1983	
SEPTEMBER	- Final ATP submitted to AID. To include only training which will be completed by September 1984.
OCTOBER	- ATP reviewed by AID.
NOVEMBER	- MOA and AID approve ATP.
DECEMBER	- DPM approved nominations in ATP. - PIO/P's prepared by USAID
1984	
SEPTEMBER	- Final participants return to Kenya.

5. Range Research

Date of Action	Action
1978	
SEPTEMBER	- USAID prepares PIO/T. AID seeks bids for university or consortium contract. Note. contract will be host-country contract.
NOVEMBER	- AID and GOK review bids.
	- Component specific CPs satisfied. - GOK selects, AID approves university or consortium for contract.
1979	
JANUARY	- GOK and contractor sign contracts with AID approval. - Team Leader nominated and approved by USAID/GOK. - Range Research Advisory Committee (RRAC) functioning.
FEBRUARY	- Team Leader on TDY for preparation of inception report. - Two-year staff recruitment plan and long-term training plan for first group of participants prepared by Team Leader and Officer-in-Charge and presented to and approved by RRAC. - First group of participants selected for training. - Second group of participants selected for training. - Research publications for Kiboko Station library are ordered by GOK.
MARCH	- Team Leader finishes TDY.
APRIL	- Social anthropologist (short-term) nominated and approved by USAID/GOK.
JUNE	- Team Leader/U.S. Research Officer arrives at post. - Team Leader, Officer-in-Charge and social anthropologist refine research plan and begin to collect project specific and socio-economic base data for evaluation purposes.

- Two senior GOK Research Officers nominated and approved by USAID/GOK.

AUGUST

- First group of participants depart for U.S. training.

SEPTEMBER

- Two U.S. Research Officers arrive at post and are oriented by USAID/GOK.
- Team Leader, Officer-in-Charge and social anthrologist prepare range research utilization plan.
- First annual report prepared by Team Leader and Officer-in-Charge.
- Second group of participants begin on-the-job training.

NOVEMBER

- Three more U.S. Research Officers nominated and approved by USAID/GOK.
- U.S. Research Officers submit on-the-job training plan.

DECEMBER

- Training plan for remaining two groups of participants completed.
- Complete equipment purchase plan finalized.

1980

JANUARY

- Major research proposals presented to RRAC for review.

FEBRUARY

- Third group of participants selected for training.

MARCH

- Three additional U.S. Research Officers arrive at Post and are oriented by USAID/GOK.

JUNE	- Implementation of activities in range research utilization plan begins.
SEPTEMBER	- Third group of participants begin on-the-job training.
	- Second group of participants depart for U.S. training.
	- Second annual report submitted.
1981	
JUNE	- Range research utilization activities become regularly scheduled part of Research Station's program.
SEPTEMBER	- Third group of participants depart for U.S. training.
	- Third annual report submitted.
	- GOK assigns three more full time Research Officers to Kiboko.
1982	
JUNE	- GOK starts funding library publications.
	- Kenya Research Officers become fully responsible for range research utilization activities.
AUGUST	- First group of participants return to Post.
SEPTEMBER	- Fourth annual report.

1983

AUGUST	- Second group of participants return to Post.
SEPTEMBER	- Range research utilization activities become integral part of Range Research Station's strategy to reach smallholders.
	- Fifth annual report submitted.

1984

AUGUST	- Third group of participants return to Post.
SEPTEMBER	- Two U.S. Research Officers depart Post.
	- Sixth annual report.

1985

MARCH	- Three U.S. Research Officers depart Post.
MAY	- Final report.
	- End-of project in-depth evaluation (actual scheduling will depend on time considered most valuable for conducting this evaluation).
JUNE	- Team Leader departs Post.
	- Project completion.

6. Agricultural Credit - AFC

Date of Action		Action
1978		
AUGUST - SEPTEMBER	-	PIO/T's issued and AID seeks bids for provision of T.A.
OCTOBER	-	T.A. bids reviewed.
NOVEMBER	-	Constractor selected.
	-	AFC submits participant plan for FY79.
	-	PIO/P's issued.
DECEMBER	-	Financial Management Advisor retained under new contract.
1979		
FEBRUARY	-	Internal Audit Advisor retained under new contract.
	-	Training Advisor and one Data Processing Advisor arrive at post.
MARCH	-	Credit Review Advisor retained under new contract.
APRIL	-	Loans Appraisal Trainer arrives at Post.
	-	Second Data Processing Advisor arrives at post.
JUNE	-	First Phase Loan Appraisal Course initiated.
	-	USDA Trainer Training initiated.
SEPTEMBER	-	First Group of participants depart.
	-	First USDA and first specialized in-country training programs initiated.
OCTOBER	-	Second USDA training program initiated.
NOVEMBFR	-	Second year participant plan finalized.

Date of Action	Action
1980	
JANUARY	- Second Phase Loan Appraisals Course initiated.
FEBRUARY	- Second specialized in-country training course offered.
SEPTEMBER	- Second group of participants depart. - Third USDA and specialized in-country training programs initiated.
NOVEMBER	- Third year participant plan finalized.
DECEMBER	- Financial Management Advisor departs.
1981	
FEBRUARY	- Fourth specialized in-country training course offered. - Internal Audit Advisor, Training Advisor and one Data Processing Advisor depart.
MARCH	- Credit Review Advisor departs post.
APRIL	- Loans Appraisal Trainer and Data Processing Advisor depart post.
AUGUST	- First long-term participants return.
SEPTEMBER	- Third long-term participant group departs. - Fourth USDA and fifth specialized in-country training programs initiated.
NOVEMBER	- Fourth year participant plan finalized.
1982	
FEBRUARY	- Sixth specialized in-country training program initiated.
AUGUST	- Second long-term participants return.

Date of Action		Action
1982 (cont'd)		
SEPTEMBER	-	Fourth long-term participant group departs.
	-	Fifth USDA and seventh specialized in-country training program initiated.
NOVEMBER	-	Fifth year participant plan finalized.
1983		
AUGUST	-	Third set of trainees return
SEPTEMBER	-	Fifth set of trainees depart.
1984		
SEPTEMBER	-	Fourth set of trainees return.
1985		
SEPTEMBER	-	Fifth set of trainees return.

7. Cooperatives Systems Support

1978		
SEPTEMBER	-	Bids sought for Coop sector studies.
NOVEMBER	-	Contractor selected
	-	First Annual Training Plan (ATP) developed.
1979		
FEBRUARY	-	Coop Education Advisor arrives at Post.
	-	Coop banking study begins.
	-	Coop education evaluation begins.
MAY	-	Manpower study begins.
	-	Coop Business Management Instructor arrives at Post.
	-	Coop Credit Specialist arrives at Post.
JULY	-	First short-term participant training begins.
	-	Secont ATP prepared.
OCTOBER	-	Coop banking study completed
	-	Coop manpower study completed.
	-	Coop Materials Specialist arrives.
	-	First group long term participants enter training.

Date of Action	Action
1979	
DECEMBER	- Coop College Feasibility study completed. - Coop Materials Specialist departs.
1980	
JANUARY	- Audio-Visual Specialist arrives.
APRIL	- Coop Business Management Instructor departs. - Second short-term training participants begin.
MAY	- Coop Materials Specialist arrives for second TDY.
JULY	- Third ATP prepared. - Audio-Visual Specialist departs.
AUGUST	- Coop Materials Specialist departs.
OCTOBER	- Second group long-term participants enter training.
1981	
APRIL	- Coop Education Advisor departs.
JULY	- Fourth ATP prepared. - Third group of short-term participants depart.
OCTOBER	- Third group of long-term participants depart and First group returns.
1982	
APRIL	- Fourth group of short-term participants depart.
JULY	- Fifth ATP prepared.
OCTOBER	- Fourth group long-term participants depart, Second group returns.
1983	
APRIL	- Fifth group short-term participants depart.
OCTOBER	- Fifth group long-term participants depart, Third group returns.

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Date of Action		Action
1984		
OCTOBER	-	Fourth group of long-term participants return.
1985		
OCTOBER	-	Fifth group of long-term participants return.

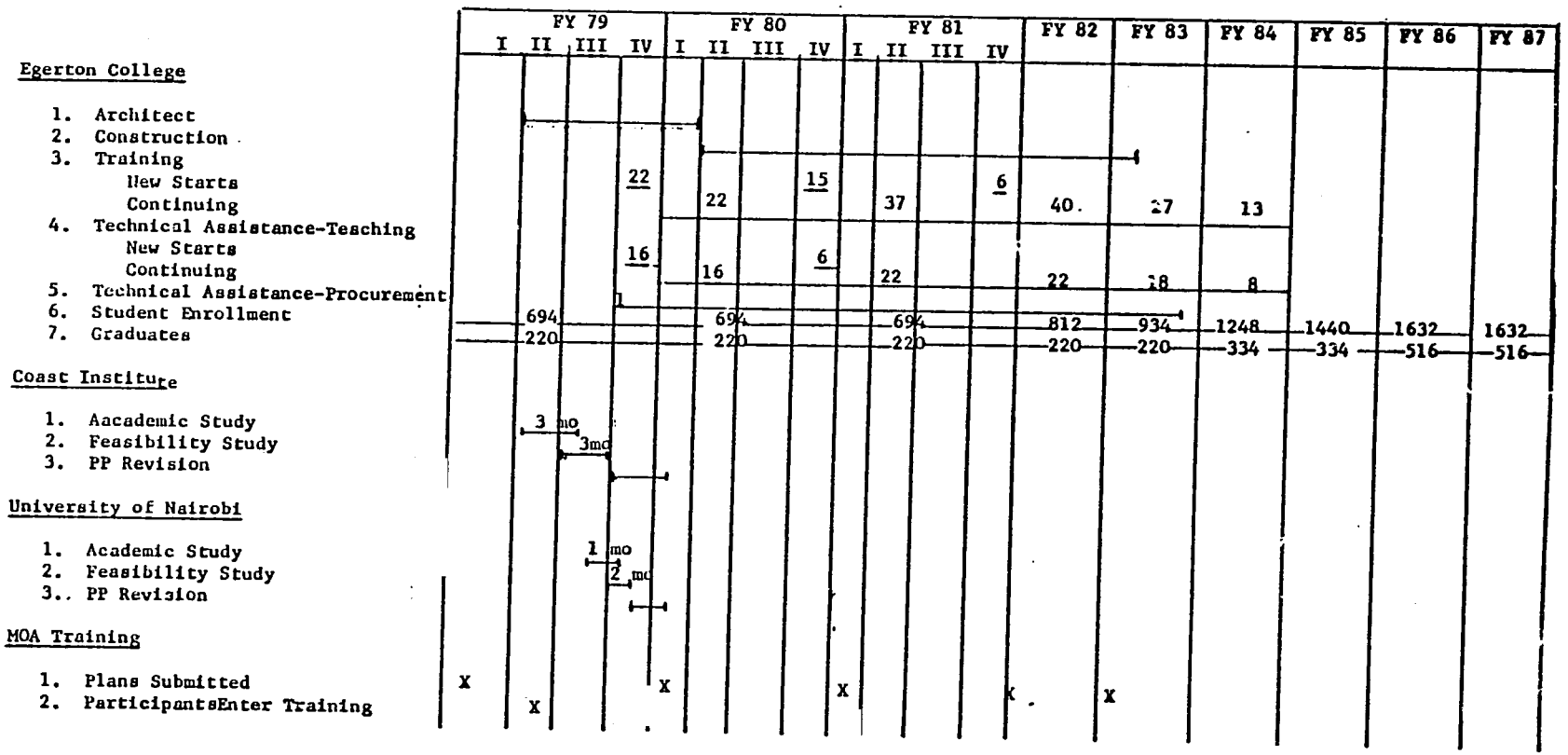
8. Storage and Marketing Support System

1978		
SEPTEMBER	-	AID invites proposals for storage study.
DECEMBER	-	Study contract signed.
1979		
MARCH	-	Storage Study commences.
JUNE	-	M. Sc. participant departs
	-	First one-year participant departs.
	-	Two non-academic participants begin training.
SEPTEMBER	-	Storage study completed.
NOVEMBER	-	PP Revision submitted
1980		
JUNE	-	Two one-year participants depart.
JULY	-	Two non-academic participants depar
	-	First participant returns.
1981		
JUNE	-	One long-term participant departs.
JULY	-	M. Sc. participant returns.
	-	Two long-term participants return.
1982		
JUNE-JULY	-	One long-term participant departs.
JULY	-	One long-term participant returns.

Date of Action		Action
1983		
JUNE	-	One long-term participant departs.
JULY	-	One long-term participant returns.
1984		
JULY	-	One long-term participant returns.

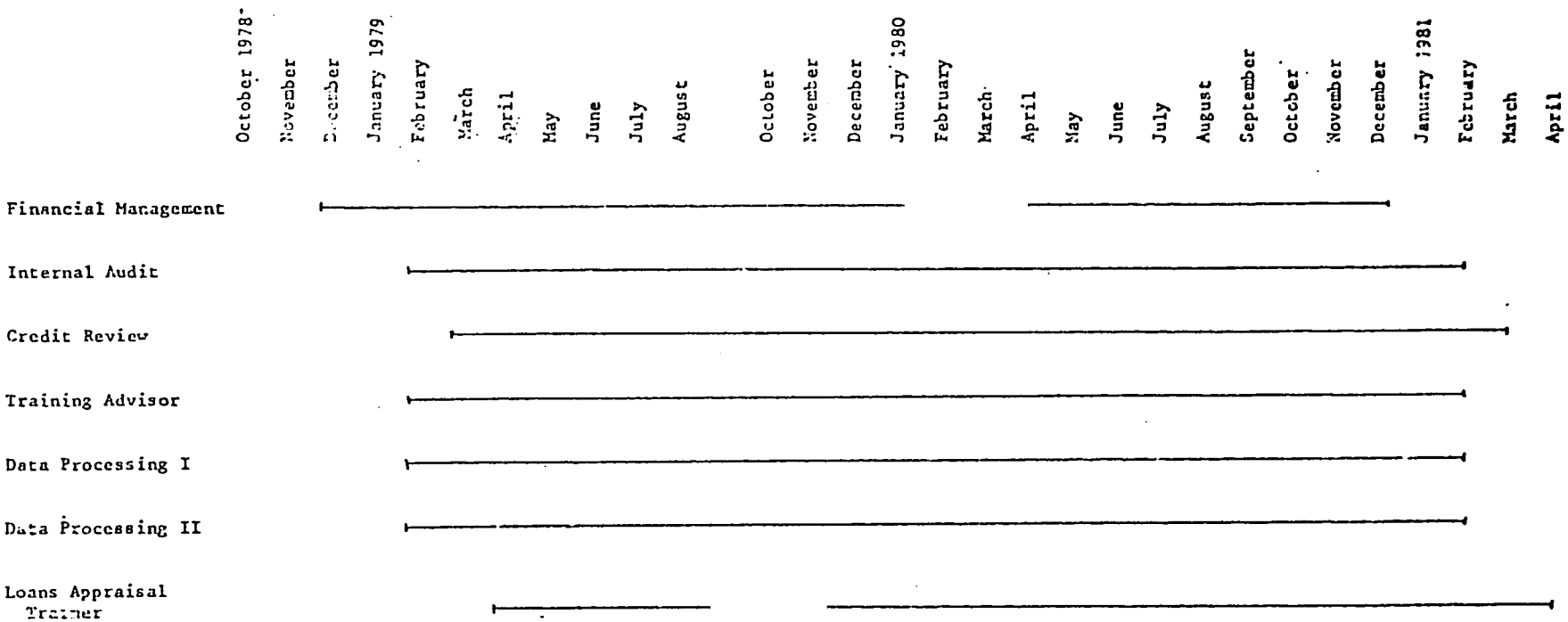
Agricultural Manpower Systems Support

Implementation Summary



Agricultural Credit - AFC

SCHEDULE OF AFC ADVISORY SERVICES



Agricultural Credit - AFC
Participant Training

Agricultural Credit- AFC

3. Specialized In-Country Training Courses

Cooperative Systems Support

COOPERATIVE STUDIES AND TECHNICAL SERVICE IMPLEMENTATION SCHEDULE

Cooperative Systems Support

PARTICIPANT TRAINING SCHEDULE

Storage and Marketing Support System

IMPLEMENTATION SCHEDULE