

AIRGRAM

DEPARTMENT OF STATE

UNCLASSIFIED

CLASSIFICATION

For each address check one ACTION | INFO

TO. AID/W TOAID A 18

1977 FEB 23 PM 3 41

DATE RECD.

DATE SENT

6750164-4
615 0165
0157
0158 4p.
0164
0162
0171

2/18/77

4

DISTRIBUTION

ACTION

Mail
INFO.

Room

35W

FROM. NAIROBI

E.O. 11652: N/A

SUBJECT. Project Performance Tracking System - USAID/Kenya January
CPI Report

REFERENCE.

A) POP Studies Center (0165)

1. CPI Number 5 - missed (AID/W)

Event: Contract team leader arrives to assist in organization of PRSC and later to assure research and training responsibility.

Problem: Although ProAg and PIO/T were signed June 29, 1976 and sent to AID/W, RFP was not issued until October 26, 1976. Technical review of proposals completed December 17, 1976 in AID/W. To date contractor has not been selected. Reason unknown.

Assessment: If Chief of Party (contractor team leader) can arrive by mid-February, work can be speeded up to achieve most tasks Chief of Party involved in.

Action: Contract must be signed ASAP and firm early date of arrival of Chief of Party must be established.

B) NRRD (0157) and Livestock Loan (615-T-008)

1. CPI Number 9 - missed (GOK)

Event: Meat processing study required by Livestock Loan completed.

Problem: Contractor has requested, and been granted additional 30 days to complete study report.

PAGE 1 OF 4 PAGES 4

DRAFTED BY NKanyuo: rma	OFFICE PROG	PHONE NO. 230	DATE 2-11-77	APPROVED BY: Charles J. Nelson Director, USAID/K
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AID/IS/ST/LE/DO/SH/MA/DES

PROG: CHPeandori (draft) UNCLASSIFIED

" : LEichards (")
A/D: W/Sigler

CLASSIFICATION

Assessment: A one month delay will not seriously affect project.

Action: None.

2. CPI Number 10 - missed (USAID-AID/W)

Event: Land capability study for high potential ranching areas underway.

Problem: Delay of Revised project paper approval.

Assessment: This will further delay effective development on 14 small ranches in areas which seriously need assistance.

Action: Recruit team of specialist from USAID to carry out study with the least possible delay. USAID drafting PIO/T.

3. CPI Number 11 - missed (USAID-AID/W)

Event: Contract signed for consultants to range management training institutions.

Problem: Delay in PP approval and resulting delays in new project components.

Assessment: Will not affect present on-going project activity but affect future training programs for Kenyan personnel.

Action: Recruit consultants with least possible delay after PP approval. USAID drafting PIO/T.

4. CPI Number 12 - missed (USAID-AID/W)

Event: ILCA to have all elements of project monitoring program started.

Problem: ILCA Recruitment of staff delayed, presently Team leader and one team member on board out of five member-team.

Assessment: Further delays in monitoring will reduce effectiveness as much baseline data for start up will not be available.

Action: Through GOK urge ILCA to increase recruitment efforts.

C) Vet. Faculty (0158) ✓

CPI Number 8, 9 and 10 - achieved.

D) Marginal/Semi-Arid Lands (0164) ✓

1. CPI Number 2 - ~~missed~~ ^{achieved} (USAID-AID/W)

Action: Efforts to hire additional field supervisors will continue.

2. CPI Number 19 - missed USAID.

Event: First crop year evaluation underway.

Problem: Evaluation not undertaken.

Assessment: Evaluation will probably commence March. Delays in generation of evaluation information will result in delays in finalizing program plans for CY 1977.

Action: Press contractor to identify and field evaluation team ASAP.

3. CPI Number 20 - missed (GOK)

Event: Agricultural inputs in place for CY 1977.

Problem: Cereals and Sugar Finance Corporation has not released funds for purchase of inputs.

Assessment: Believe funds will be released shortly. Impact on program is negligible as bulk of inputs are reported to have been moved to project areas by MK KNFC and will be released to farmers immediately upon release of funds to Co-operative Bank.

Action: Will monitor progress of fund release and if release not made by February 7, will take up this issue with appropriate GOK officials.

4. CPI Number ~~XIX~~ 21 - missed - USAID.

Event: Baseline survey II commences.

Problem: Baseline survey ~~I~~ II not initiated.

Assessment: Mission has not yet received and evaluated result of Baseline I. Project planning and evaluation will be delayed and quality may be impaired by lack of baseline information.

Action: Baseline I scheduled to be delivered within next ten days. Upon receipt, will discuss with contractor and determine when it most appropriate to undertake Baseline II.

MARSHALL

6150104 - (5)

A.D. 1977-1 (7-71)	DEPARTMENT OF STATE AGENCY FOR INTERNATIONAL DEVELOPMENT	1. Cooperating Country Kenya PD-AAC-222 1 of 10 Pages
		2. PIO/T No. 615-164-2-70022
PIO/T	PROJECT IMPLEMENTATION ORDER/TECHNICAL SERVICES	3. <input type="checkbox"/> Original or Amendment No. <u>2</u>
		4. Project/Activity No. and Title 615-0164 615-0164 - 25p. Marginal/Semi Arid Land Pre-Investment Study

DISTRIBUTION:	5. Appropriation Symbol 72-11X1031	6.A. Allotment Symbol and Charge 431-50-615-00-67-71	6.B. Funds Allotted to: <input type="checkbox"/> A.I.D./W <input checked="" type="checkbox"/> Mission		
	7. Obligation Status <input type="checkbox"/> Administrative Reservation <input checked="" type="checkbox"/> Action Document <input type="checkbox"/> Implementing Document	8. Funding Period (Mo., Day, Yr.) From 9/1/77, To 6/30/78		9. Completion Date of Services (Mo., Day, Yr.) 6/30/78	
9.A. Services to Start (Mo., Day, Yr.) Begin on 9/1/77		9.B. Services to End (Mo., Day, Yr.) end 2/1/78			
10.A. Type of Action <input type="checkbox"/> I.D. Contract <input type="checkbox"/> Cooperating Country Contract <input checked="" type="checkbox"/> Participating Agency Service Agreement <input type="checkbox"/> Other		10.B. Authorized Agent AID/W			
Estimated Financing		(1)	(2)	(3)	(4)
\$1,000 = K. Shs. 8.23		Previous Total	Increase	Decrease	Total to Date
11. Maximum A.I.D. Financing	A. Dollars	\$30,000	\$8,000		\$38,000
	B. U.S.-Owned Local Currency				
12. Cooperating Country Contributions	A. Counterpart				
	B. Other		2,600		2,600

13. Mission Reference Pro/Ag No. 164-2-701 Revision 6	14. Instructions to Authorized Agent The purpose of this PIO/T is to provide funding and authorization for AID/W to amend PASA AG/KEN-164-1-76 with Soil Conservation Service (USDA) to provide the services of a Soil Classification Specialist for the period September 20 to October 20, 1977, who will work with the U.S./Kenya Resource Inventory Team in carrying out a pre-investment survey of marginal and semi-arid lands.
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15. Clearances - Show Office Symbol, Signature and Date for all Necessary Clearances.	
A. The specifications in the scope of work are technically adequate TSS: WCO/EE/KFO'Donnell	B. Funds for the services requested are available CONF: SLispis
C. The scope of work lies within the purview of the initiating and approved Agency Programs PROG: LRichards	D. <input checked="" type="checkbox"/> EXO: HBrandt
E.	

16. For the cooperating country: The terms and conditions set forth herein are hereby agreed to Signature and Date: <i>[Signature]</i> 2/1/78 Title: Dep. Sec. Min. of Agriculture	17. For the Agency for International Development Signature: Charles J. Nelson Title: Director, US-AID/Kenya	18. Date of Completion 31 Aug 1977
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AID 1820-1 (8-63)

DEPARTMENT OF STATE
AGENCY FOR
INTERNATIONAL DEVELOPMENT

Worksheet Issuance

PAGE 2 OF 10 PAGES

CONTINUATION
SHEET

1. Cooperating Country
Kenya

2.a. Code No.
615-164-2-70022

FORM SYMBOL

TITLE OF FORM

2.b. Effective Date

2.c. Amendment
 Original Alt No. 2

PIO/T

Project Implementation
Order/Technical Services

3. Project/Activity No. and Title

615-0164
Marginal/Semi-Arid Land Pre-Investment Study

Indicate block numbers.

Use this form to complete the information required in any block of a PIO or PAA form.

Block 16
(t'd)

Signature: [Signature]
Title: Permanent Secretary, Ministry of Water Development
Date: 30. VIII. 77

Signature: [Signature]
Title: Permanent Secretary, Ministry of Natural Resources
Date: 30-8-77

Signature: [Signature]
Title: Permanent Secretary, Ministry of Finance and Planning
Date: 30. 8. 77

Kenya *1-1/77* *8/9/77*
[Signature] *20/1/77* *[Signature]* *8/29/77*
[Signature] *20/1/77* *[Signature]* *21/11/77*

AID 1000-1 (6-70)	Cooperating Country Kenya	PIOT No. 615-164-2-70022	Page 3 of 10 Pages
	Project/Activity No. and Title 615-0164 Marginal/Semi Arid Lands Pre-Investment Study		
PIO/T			

SCOPE OF WORK

1A. Scope of Technical Services

A. Objective for which the Technical Services are Requested To enable the Government of Kenya to identify, evaluate, and quantify the developable agricultural resources of its marginal and semi-arid lands.

B. Description

This project is to assist the Government of Kenya to increase agricultural production and improve land management in selected marginal and semi-arid lands, specifically the Machakos/Kirui and Baringo/Kerio areas. Increasing population pressure on a limited amount of marginal potential land has led to serious problems of soil and vegetation degradation and declining agricultural yields. This project is designed to identify the development potential in two selected areas and will utilize technical expertise in carrying out a multi-disciplined pre-investment resource inventory and in conducting a mid-point review of data collected and possible projects identified.

A resource inventory team will identify, evaluate, and quantify the developable resources and establish targets for development in the project area. The team members will include two PASA soil scientists and CID contract staff, which includes one agricultural engineer, one livestock specialist, one agronomist,

(Cont'd page 7)

C. Personnel

(1) (a) Number	(b) Job/Expert Field	(c) Grade and/or Entry	(d) Duration of Assignment (Month/Months)
1	Soil Classification Specialist	GS-14	One month

(2) Duty Post and Duration of Technical Services

Nairobi

(3) Language Requirements

English

(4) Access to Classified Information

N/A

(5) Dependents Will Will Not Be Permitted to Accompany Technician

D. Financing of Technical Services

U.S. AID - \$ 8,000

(6) By Cooperating Country -

AID 1570-1 (2-70)	Cooperating Country Kenya	PIO/T No. 615-164-2-70022	Page 4 of 10 Pages
PIO/T	Project/Activity, No. and Title 615-0164 Marginal/Semi-Arid Lands Pre-Investment Study		

20. Equipment and Supplies (Related to the services described in Block 19 and to be procured outside the Cooperating Country by the supplier of those services)

A. (1) Quantity (2) Description (3) Estimated Cost (4) Special instructions.

N/A

B. Financing of Equipment and Supplies

(1) By AID - \$ N/A

(2) By Cooperating Country - N/A

21. Special Provisions

- A. This PIO/T is subject to AID (administrative) (PASA implementation) regulations.
- B. Except as specifically authorized by AID, or when local hire is authorized under the terms of a contract with a U.S. Supplier, services authorized under this PIO/T must be obtained from U.S. sources.
- C. Except as specifically authorized by AID/W, the purchase of commodities authorized under this PIO/T will be limited to the U.S. under Geographic Code 000. N/A
- D. Other (specify): 1/ AID/W is directed to incorporate within the terms of the PASA the requirement that quarterly vouchers for expenditures submitted to AID/W for reimbursement and contract budgets be copied to the Mission. The vouchers and budgets should be air mailed to the following address:

Controller
Nairobi (ID)
Department of State
Washington, D.C. 20520

2/ AID/W will include in the amended PASA a covenant that the PASA personnel will work under the supervision of a project coordinator, one of the technicians under the CID Contract who acts in this capacity. The Soil Classification Specialist will perform as an integral member of a Resource Inventory Team composed of two other PASA soil scientists and six contract technicians, including the Project Coordinator.

AID (330-1 10-70)	Cooperating Country Kenya	Proj. No. 615-0164-2-70022	Page 5 of 10 Pages
PIO/T	Project/Activity No. and title 615-0164 Marginal/Semi Arid Lands Pre-Investment Study		

22. Reports by Contractor or Participating Agency (Indicate type, content and format of reports required, including language to be used if other than English, frequency or timing of reports, and any special requirements)

A final report will be required from the specialist upon completion of his 30 day assignment. Other reports may be required upon the request of the Project Coordinator or USAID.

23. Background Information (Add local information useful to Authorized Agent and Prospective Contractors or Participating Agency if necessary cross reference Sheet 19-C(4) above.)

Mission Files

Revised Scope of Work - December 5, 1975 - USAID/Kenya

"Procedures for Planning Integrated Range/Livestock Programs",
Abercrombie and McLeRoy, USAID. September 1974.

Agriculture Sector Review-Kenya Kenya/IBRD 1973

24. Relationship of Contractor or Participating Agency to Cooperating Country and to AID

A. Relationships and Responsibilities: The Soil Classification Specialist will work with the two long-term PASA soil scientists, who in conjunction with the six CID contract technicians, form an integral Resource Inventory Team. One of the contract technicians acts as Project Coordinator. The work carried out by this team

B. Cooperating Country Liaison Official

(Cont'd page 8)

Head, Land and Farm Management Division, Ministry of Agriculture.

C. AID Liaison Officials

General Development Officer or his designee.

LOGISTIC SUPPORT

25. Provisions for Logistic Support	In Kind Supplied By		From Local Currency Supplied By	
	AID	Cooperating Country	AID	Cooperating Country
A. Specific Items (Insert "N/A" in appropriate column as right. If entry needs qualification, insert explanation and explain below in C. "Comments")				
(1) Office Space		X		
(2) Office Equipment		Y		
(3) Housing and Utilities N/A				
(4) Furniture N/A				
(5) Household Equipment (Stoves, Refrig., etc.) N/A				
(6) Transportation in Cooperating Country	X	X		
(7) Interpreter Services N/A				
Other (Specify) (8) International travel to post	X			
(9) funded by PASA and return by USAID/Kenya				
(10) Post Diem	X			
(11)				
(12)				
(13)				
(14)				
(15)				

B. Additional Facilities Available From Other Sources

The PASA technicians will be entitled to allowances, logistic support, and privileges equivalent to those extended to AID direct-hire employees of comparable grade, including post medical advisory and dispensary facilities and pouch facilities and duty free purchase of imported goods.

C. Comments

- The Government of Kenya and USAID/Kenya shall make available ground and air transport for the conduct of project activities when and as needed.
- Standard workweek and holidays - The PASA employees will be required to work the standard GOK workweek, which has been established as 0815 - 1245 and 1400 - 1630 hours, Monday through Friday, and 0815 - 1215 hours on Saturdays. PASA employees are entitled to observe all official American holidays.

AID 1800-1 (8-63)	DEPARTMENT OF STATE AGENCY FOR INTERNATIONAL DEVELOPMENT	<input type="checkbox"/> Worksheet <input checked="" type="checkbox"/> Issuance	PAGE <u>7</u> OF <u>10</u> PAGES
CONTINUATION SHEET		1. Cooperating Country Kenya	2.c. Code No. 615-164-2-70022
FORM SYMBOL PIO/T	TITLE OF FORM Project Implementation Order/Technical Services	2.b. Effective Date	2.c. Amendment <input type="checkbox"/> Original CR No. <u>2</u>
		3. Project/Activity No. and Title 615-0164 Marginal/Semi-Arid Lands Pre-Investment Study	
Indicate block number.	Use this form to complete the information required in any block of a PIO or PAA form.		

Block 19.B.
(Cont'd)

one rural sociologist and a project coordinator (agricultural engineer).

A group of short-term consultants are required to supplement the work of the above long-term members of the study team. They are needed to complete the resource inventory of the Marginal Lands Study area, and will be responsible for accumulating, organizing and interpreting existing data and for collecting small field samples to supplement and verify the existing data. Short-term expertise is required in the following areas:

1. Soil Classification Specialist - to be funded under this PIO/T through a PASA
2. Sociologist)
3. Range Management)
4. Geohydrology) to be funded under a separate
5. Population & Geography) PIO/T through the CID contract
6. Seed Production)
7. Regional Economist)

The GOK will provide counterpart members for the resource inventory team including the above short-term consultants.

The resource inventory will include quantitative, narrative, and graphic descriptions of the project areas' human and natural resources and existing infrastructure. Core problems that constrain development will be identified, including population, migration patterns, erosion, desertification, water availability, deforestation, credit, production technology, marketing, extension, education, institutional infrastructure and potential cultural constraints.

A mid-point review of basic data collected and analyzed from the Machakos/Kitui area will be used to identify particular problem areas and possible supporting investments such as roads, soil conservation measures, water development, and public services required to realize the agricultural production potential of this geographic area.

DEPARTMENT OF STATE
AGENCY FOR
INTERNATIONAL DEVELOPMENT

Worksheet

Issuance

PAGE 8 OF 10 PAGES

CONTINUATION
SHEET

1. Cooperating Country
Kenya

2.a. Cont. No.
615-164-2-70022

FORM SYMBOL

TITLE OF FORM

2.b. Effective Date

2.c. Amendment
 Original CR No. _____

PIO/T

Project Implementation
Order/Technical Services

3. Project/Activity No. and Title

615-0164

Marginal/Semi-Arid Lands Pre-Investment Study

Indicate block
numbers.

Use this form to complete the information required in any block of a PIO or PAA form.

Block 19. B
(Cont'd)

Job Descriptions:

See Annex A.

Block 24.A.
(Cont'd)

will be in cooperation with a Kenyan Resources Inventory Team also headed by a project coordinator. The two coordinators shall be responsible for the internal and inter-team coordination of project activities and shall be respectively responsible to the USAID and the liaison officials designated in Blocks B and C.

AID 1800-1 (0-63) CONTINUATION SHEET FORM SYMBOL PIO/T	DEPARTMENT OF STATE AGENCY FOR INTERNATIONAL DEVELOPMENT	<input type="checkbox"/> Worksheet	<input checked="" type="checkbox"/> Issuance	PAGE 9 OF 10 PAGES
		1. Cooperating Country Kenya		2.a. Code No. 615-164-2-70022
		2.b. Effective Date		2.c. Amendment <input type="checkbox"/> Original <input checked="" type="checkbox"/> 2
		3. Project/Activity No. and Title 615-0164 Marginal/Semi Arid Lands Pre-Investment Study		
Indicate block numbers.	Use this form to complete the information required in any block of a PIO or PAA form.			

Annex A

Job Description

Soil Classification Specialist

Qualifications:

The specialist shall have at least a degree at the bachelor level in soil science and have a knowledge of the FAO soil classification system. He must be in robust health.

Experience Requirements:

The specialist should be actively employed as a professional scientist with at least twenty years of experience, five of which should have been in the area of management and supervision at the U.S. state level. Experience with tropical soils is essential.

Relationships:

The specialist will report to the Project Coordinator and will work directly with the two U.S. PASA and two Kenyan soil scientists in the Study Team. Additional contacts with administrators in the Kenya Soil Survey will be required. He will participate in a seminar with the other members of the Marginal Lands Study Team.

Duties and Responsibilities

The specialist shall:

- critically review the field work of the American and Kenyan soil scientists for adequacy and accuracy.
- consider, discuss and make recommendations as to the appropriate direction and utilization of the remaining project time available for soil survey work.
- review the legend being used for compliance with USDA requirements and for adherence to Kenya Soil Survey needs.
- appraise methodology being used to interpret the map units for the needs of the entire study team.
- evaluate the sampling and analysis program for completeness and needs.
- assist in development of a report format that will adequately convey the soil survey information to the professional and non-professional user.

CONTINUATION SHEET

FORM SYMBOL

PIO/T

DEPARTMENT OF STATE
AGENCY FOR
INTERNATIONAL DEVELOPMENT

TITLE OF FORM

Project Implementation
Order/Technical Services

<input type="checkbox"/> Worksheet <input checked="" type="checkbox"/> Issuance		PAGE <u>10</u> OF <u>10</u> PAGES
1. Cooperating Country Kenya		2.c. Code No. 615-0164-2-70022
2.b. Effective Date		2.c. Amendment <input type="checkbox"/> Original OR No. <u>2</u>
2. Project/Activity No. and Title 615-0164 Marginal/Semi Arid Lands Pre-Investment Study		

Indicate block numbers.

Use this form to complete the information required in any block of a PIO or PAA form.

Annex A.
(Cont'd)

Location

Headquarters - Nairobi

Period of Assignment:

September 20 - October 20, 1977

A final report will be required from the specialist one week prior to his leaving Kenya and upon completion of his 30 day assignment.

DEPARTMENT OF STATE
INTERNATIONAL DEVELOPMENT
PROJECT IMPLEMENTATION
ORDER/TECHNICAL
SERVICE

PIO/T

1. Cooperating Country: **KENYA**
2. F.R.T.N. No.: **615-164-5-70002**

Page 1 of 14 Pages **U**
3. Original
Amendment No. **2**

4. Project/Activity No. and Title
615-0166
Marginal/Semi-Arid Lands Pre-Investment Study

DISTRIBUTION

5. Application Symbol: **72-11X1031**
6. Attachment Symbol and Change: **431-50-615-00-01-72**
7. Funds Allotted Date: A.I.D./W Mission

8. Corporate Order: Administrative Financial
9. Planning Period (Month, Day, Year): **9/30/76 - 6/30/78**
10. Date of Services: **9/1/77** and **5/1/78**

10.A. Type of Action: A.I.D. Contract Cooperating Country Contract Participating Agency Service Agreement Other
10.B. Authorized Agency: **AID/W**

Estimate Financing		(1)	(2)	(3)	(4)
K.S.S. U.S.		Finance Total	Interest	Exchange	Total to Date
11. Mission A.I.D. Financing	A. Dollars	\$139,300	92,000		231,300
	B. U.S.-Owned Local Currency				
12. Cooperating Country Contributions	A. Counterpart				
	B. Other		23,000		23,000

13. Mission Reference

14. Instructions to Authorized Agent
The purpose of this PIO/T is to provide funding and authorization for AID/W to negotiate an amendment to the Consortium for International Development (CID) contract (No. AID/Afr-C-1275). This amendment makes available an additional 92,000 which will be used to obtain the services of six short-term consultants who will work with the U.S./Kenya Resource Inventory Team in providing expertise in specific areas essential for the timely completion of the resource inventory of the Marginal Lands Study area.

Program 164-1-701, Rev. 6

15. Clearances - Show Office Symbol, Signature, and Date for all Necessary Clearances.

A. For specifications in the scope of work are technically adequate: **TSS:WOLSE/KFO'Donnell**
B. Funds for the services are available: **CON:SLiepis**

C. The scope of work lies within the purview of the existing and approved Agency Programs: **PROG:LRichards** *8/28/77*
D. **EXO:EBrandt** *8/28/77*

E. **A/D:EMHoon**

16. For the cooperating country: The terms and conditions set forth herein are hereby accepted: *[Signature]*
17. For the Agency for International Development: **Charles J. Nelson** *[Signature]*
18. Date of Signature: **31 Aug 1977**

Signature: **Charles J. Nelson**
Title: **Director, USAID/Kenya**

CONTINUATION SHEET TITLE OF FORM PROJECT	GOVERNMENT OF KENYA AGENCY FOR INTERNATIONAL DEVELOPMENT	<input type="checkbox"/> Worksheet <input checked="" type="checkbox"/> Issuance PAGE <u>1A</u> OF <u>14</u> PAGES
	PROJECT IMPLEMENTATION ORDER/TECHNICAL SERVICES	1. Cooperating Country <u>KENYA</u> 2. Code No. <u>615-164-3-70002</u>
		2. Effective Date 3. Project/Activity, No. and Title <u>615-0164</u> <u>Organic/Semi-Arid Lands Pre-Investment Study</u>

Block 16
continued

Signature: [Signature]
 Title: Permanent Secretary, Ministry of Water Development
 Date: 30.8.77

Signature: [Signature]
 Title: Permanent Secretary, Ministry of Natural Resources
 Date: 30.8.77

Signature: [Signature]
 Title: Permanent Secretary, Ministry of Finance and Planning
 Date: 31.8.77

[Signature]
31/8/77

[Signature]
31/8/77

PROJECT (WFO)	PROJECT ORIGIN	PROJECT NO.	PAGE NO. OF 14 PAGES
NO/T	PROJECT TITLE	615-0164	615-164-3-70002
Marginal/Semi-Arid Lands Pre-Investment Study			

12. **Steps of Investment:**
 A. **Objectives of the Project:** To enable the Government of Kenya to identify, evaluate, and quantify the developable agricultural resources of its marginal and semi-arid lands.

B. **Description:**
 This project is to assist the Government of Kenya to increase agricultural production and improve land management in selected marginal and semi-arid lands, specifically the Machakos/Hitui and Baringo/Kisumu areas. Increasing population pressure on a limited amount of marginal potential land has led to serious problems of soil and vegetation degradation and declining agricultural yields. This project is designed to identify the development potential in two selected areas and will utilize technical expertise in carrying out a multi-disciplined pre-investment resource inventory and in conducting a mid-point review of data collected and possible projects identified.

A resource inventory team will identify, evaluate, and quantify the resources and establish targets for development in the project area. The team members now include two PASA soil scientists and CID contract staff, which includes one agricultural engineer, one livestock specialist, one agronomist, one rural sociologist, one

(Cont'd on page 6)

(a) No. of Staff	(b) Position/Title	(c) Estimated Salary	(d) Duration of Project (Months)
1	Sociologist	\$32,000/yr	3
1	Range Management	36,000/yr	1
1	Seed Specialist	32,000/yr	2
1	Hydrogeologist	36,000/yr	3
1	Regional Economist	34,000/yr	2
1	Population Geographer	34,000/yr	1

(e) Key Personnel Location of the Project Office
 Nairobi

(f) Language of Report
 English

(g) Access to Country Information
 N/A

(h) Dependents Will Will Not Be Permitted to Accompany Technicians

D. **Financing of Technical Services**

(i) By AID -	92,000	(j) By Cooperating Country -	23,000
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AID No. 1 (278)	Cooperating Country KENYA	PIO/T No. 615-144-3-70002	Page 0 of 14 Pages
PIO/T	Project, Activity No. and Title 615-0164 Marginal/Semi-Arid Lands Pre-Investment Study		

20. Equipment and Supplies (related to the services described in Block 19 and to be procured outside the Cooperating Country by the supplier of these services)

A. (1) Quantity (2) Description (3) Estimated Cost (4) Special Instructions

N/A

Financing of Equipment and Supplies

(1) By AID - \$ **N/A**

(2) By Cooperating Country - **N/A**

21. Special Provisions

A. This PIO/T is subject to AID (contracting) ~~regulations~~ regulations.

B. Except as specifically authorized by AID, or when local hire is authorized under the terms of a contract with a U.S. Supplier, services authorized under this PIO/T must be obtained from U.S. sources.

C. Except as specifically authorized by AID, the purchase of commodities authorized under this PIO/T will be limited to the U.S. under Geographic Code 000. **N/A**

D. Other (specify): **The Contractor will forward two sets of one original and two copies of Contractor's invoice with SF-1034 in accordance with standard contract payment provisions to the East Africa Accounting Center (EAAC). One set will be mailed via international mail using the following address:**

**Controller
East Africa Accounting Center
USAID/Kenya
P.O. Box 30261, Nairobi, Kenya**

or set will be mailed with unclassified air pouch using the following address:

**Controller
Nairobi (ID)
Department of State
Washington, D.C. 20520**

AID 1250-1 (9-76)	Cooperating Country KENYA	PIO/T No. 615-164-3-70002	Page 4 of 14 Pages
PIO/T	Project/Activity No. and Title 615-0164 Marginal/Semi-Arid Lands Pre-Investment Study		

22. Reports by Contractor or Participating Agency (Indicate type, content and format of reports required, including language to be used if other than English, frequency of filing of reports, and any special requirements)

A final report will be required from each technician upon completion of the technician's portion of the resource inventory field studies.

Other reports may be required from time to time upon request of the project coordinator or USAID.

23. Background Information (Additional information useful to Authorized Agent and Prospective Contractor or Participating Agency; if necessary cross reference Div. 19.C(1) above.)

Mission files

Revised Scope of Work, December 5, 1975, USAID/Kenya

Agricultural Sector Review, Kenya IBRD, 1973

24. Relationship of Contractor or Participating Agency to Cooperating Country and to AID

A. Relationships and Responsibilities The seven short-term consultants (six under this PIO/T and one PASA under a separate PIO/T) in conjunction with the eight long-term technicians (six CID technicians and two PASA experts), form an integral Resource Inventory Team in cooperation with a Kenyan Resources Inventory Team also headed by a Project Coordinator. The two

B. Cooperating Country Liaison Official

(cont'd on page 6)

Head, Land and Farm Management Division, Ministry of Agriculture

C. AID Liaison Officials

General Development Officer or his designee

LOGISTIC SUPPORT

25. Provisions for Logistic Support.		In Kind Supplied By		From Local Currency Supplied By	
		AID	Cooperating Country	AID	Cooperating Country
<i>A. Specific Items (Insert "X" in applicable column as right. If entry needs qualification, insert a footnote or explain below in C. "Comments")</i>					
	(1) Office Space		X		
	(2) Office Equipment		X		
	(3) Messing and Utilities <u>1/</u>				
	(4) Furniture				
	(5) Household Equipment (Stoves, Dishes, etc.)				
	(6) Transportation in Cooperating Country	X	X <u>2/A 3/</u>		
	(7) Interpreter Services				
Other (Specify)	(8) International Travel	X			
	(9) Per Diem	X			
	(10)				
	(11)				
	(12)				
	(13)				
	(14)				
	(15)				

B. Additional Facilities Available From Other Sources

U.S. medical advisory and dispensary facilities are not available to contract personnel.

Post pouch and U.S. Government transportation facilities are not available to contract personnel.

C. Comments

- 1/ USAID will not provide housing.
- 2/ The Government of Kenya and contractor shall make available necessary ground and air transportation for the conduct of project activities when and as needed.
- 3/ No duty free entry of vehicles or major household effects will be permitted. Each technician will be permitted initial duty free entry of personal effects.
- 4/ Contracts issued pursuant to this order shall expressly provide the following:
 - a. Standard Workweek and Holidays - The employees hired under the contract will be required to work the standard GOK workweek, which has been established as 0815 - 1245 and 1400 - 1630 hours, Monday through Friday, and 0830 - 1215 on Saturday. The employees will be entitled to observe all official GOK holidays as well as the U.S. holidays of Thanksgiving and Christmas.
 - b. Per Diem - The contract employees will be paid per diem in accordance with approved U.S. Government rates which are \$49.00 per day in Nairobi, which will be paid while they are in temporary housing status, and \$20.00 per day in the field. It is anticipated the employee will spend a major portion of their time in the field.

AID 1800-1 (Rev. 11-67)	DEPARTMENT OF STATE AGENCY FOR INTERNATIONAL DEVELOPMENT	<input type="checkbox"/> Mod. Incl. <input checked="" type="checkbox"/> Issued.	PAGE <u>6</u> OF <u>14</u> PAGES
		1. Cooperating Country <u>KENYA</u>	2. Cont. No. <u>615-164-3-70002</u>
		3. Project/Activity No. and Title <u>615-0164</u>	<u>Marginal/Semi-Arid Lands Pre-Investment Study</u>
CONTINUATION SHEET	TITLE OF FORM		
FORM SYMBOL	PROJECT IMPLEMENTATION ORDER/TECHNICAL SERVICES		
PIO/T			

Indicate Block numbers.

Use this form to complete the information required in any block of a PIO or PASA form.

Block 19.5
Continued

agricultural economist, and one project coordinator (agricultural engineer). The work of these long-term consultants will be supplemented by seven short-term consultants, six of which will be funded through the CID contract under this PIO/T (the seventh will be funded through a PASA under a separate PIO/T). The short-term consultants will be responsible for accumulating, organizing and interpreting existing data and for collecting small field samples to supplement and verify the existing data. Short-term expertise in the following areas is required:

1. Sociologist
2. Range Management
3. Hydrogeology
4. Population Geography
5. Seed Production
6. Regional Economics
7. Soil Classification (PASA - not funded under this PIO/T)

The GOK will provide counterpart members for the resource inventory team, including the above short-term consultants.

The resource inventory will include quantitative, narrative, and graphic descriptions of the project areas' human and natural resources and existing infrastructure. Core problems that constrain development will be identified, including population, migration patterns, erosion, desertification, water availability, deforestation, credit, production technology, marketing, extension, education, institutional infrastructure and potential cultural constraints.

A mid-point review of basic data collected and analyzed from the Machakos/Kitui area will be used to identify particular problem areas and possible supporting investments such as roads, soil conservation measures, water development, and public services required to realize the agricultural production potential of this geographic area.

Job Descriptions:
(See Annex A)

Block 24.A
Continued

coordinators are responsible for the internal and inter-team coordination of project activities and are respectively responsible to the USAID and the GOK liaison officials designated in Block B and C.

DEPARTMENT OF STATE
AGENCY FOR
INTERNATIONAL DEVELOPMENT

Worksheet Instance

CONTINUATION
SHEET

1. Cooperating Country
Kenya

2. Grant No.
615-164-3-70002

FORM SYMBOL

TITLE OF FORM

2a. Relative No.

Original OR Noted 2

PIO/T

PROJECT IMPLEMENTATION
ORDER/TECHNICAL SERVICES

3. Project/Activity No. and Title
615-0164
Marginal/Semi-Arid Lands Pre-Investment Study

Indicate block
numbers.

Use this form to complete the information required in any block of a PIO or PAJ for a:

Annex A

Job Description

Sociologist

Qualifications:

The specialist shall have a Ph.D. in sociology or political science with expertise in institutions and institutional arrangements as related to Kenya. He must be in robust health.

Experience Requirements:

A thorough knowledge of Kenya institutions gained through appropriate institutional research in Kenya.

Relationships:

The specialist will work closely with the two Study Team sociologists (one U.S. and one Kenyan to be appointed) as well as the other disciplinary team members. Additional relationships will be developed with others whose studies will complement the specialists' work, especially researchers at the University of Nairobi and officials in several ministries of the GOK. He will also develop relationships with district, division and location planning officials and others.

Duties and Responsibilities:

The specialist will report to the Project Coordinator and will, through collection of existing data and field observations, thoroughly familiarize himself with the institutions directly related to the farming activities of the target farmers in the study area. Based on this data, he will prepare a report describing the relevant institutions and suggesting how project implementation can be carried out through traditional institutions, predicting the effect of projects on those institutions and noting where, in his opinion, new institutions or major modifications to existing institutions may be needed to successfully implement proposed projects.

Location: Headquarters, Nairobi, Kenya.

Period of Assignment: Three months beginning after September 15, 1977 and ending before March 1, 1978.

The consultant shall present a written report, including appropriate recommendations, to the Project Coordinator one week before leaving Kenya.

AID 1300-1 (2-63)	DEPARTMENT OF STATE AGENCY FOR INTERNATIONAL DEVELOPMENT	<input type="checkbox"/> Worksheet <input checked="" type="checkbox"/> Insurance	PAGE <u>8</u> OF <u>14</u> PAGES
CONTINUATION SHEET		1. Cooperating Country Kenya	2.c. Cont. No. 615-164-3-70002
FORM SYMBOL	TITLE OF FORM	2.b. Effective Date	2.c. <input type="checkbox"/> Original <input checked="" type="checkbox"/> Amendment OR No. <u>2</u>
PIO/T	Project Implementation Order/Technical Services	3. Project/Activity No. and Title 615-0164 Marginal/Semi-Arid Lands Pre-Investment Study	
In this block enter:	Use this form to complete the information required in any block of a PIO or EA form.		

Section A
Continued

Range Management Specialist

Qualifications:

The specialist shall have at least a degree in Range Management at the MSC level, and shall have worked with East African range management problems sufficiently to be thoroughly familiar with them. He must be in robust health.

Experience Requirements:

The specialist shall have served on range management evaluation teams in developing country situations sufficiently to be thoroughly familiar with the social and climatological problems involved in optimizing stocking rates on grazing land and in recognizing the ecological consequences of alternative range management practices.

Relationships:

The specialist will work closely with the U.S. and Kenyan study team members, especially the two livestock specialists, Mr. Rex Ottley and Mr. Hero Ogora. In addition he will consult with other government staff, particularly in the Ministry of Natural Resources Division of Range Management, area ranchers and pastoralists. He will seek opportunities to familiarize Kenyan professionals with his techniques of range evaluation.

Duties and Responsibilities:

field

The specialist will report to the Project Coordinator, and will, through observations, the study of existing reports, maps and photographs and discussions with staff of the study team and GOX officials determine and report on:

1. The current status of the range lands in the study areas - quantitatively and qualitatively.
2. The rate of change of the range land cover and area.
3. Interrelationships between range land and other agricultural and wild life activities.

The specialist will then participate with other members of the team in considering the consequences of alternative land use options to the range areas.

AID 1800-1 10-651 CONTINUATION SHEET FORM SYMBOL PIO/T	DEPARTMENT OF STATE AGENCY FOR INTERNATIONAL DEVELOPMENT TITLE OF FORM Project Implementation Order/Technical Services	<input type="checkbox"/> Worksheet <input checked="" type="checkbox"/> Issuance 1. Cooperating Country Kenya 2.b. Effective Date 3. Project/Activity No. and Title 615-0164 Marginal/Semi-Arid Lands Pre-Investment Study	PAGE 9 OF 14 PAGES 2.a. Code No. 615-164-3-70002 2.c. Amendment <input type="checkbox"/> Original CR No.: 2
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Indicate block number.

Use this form to complete the information required in any block of a PIO or PAA form.

Annex A
(Cont'd)

Location:

Headquarters, Nairobi, Kenya

Period of Assignment:

November 1 - 30, 1977

The consultant shall present a written report, including appropriate recommendations, to the Project Coordinator one week before leaving Kenya.

AID 196C-1 (R-03)	DEPARTMENT OF STATE AGENCY FOR INTERNATIONAL DEVELOPMENT	<input type="checkbox"/> Worksheet <input checked="" type="checkbox"/> Issuance	PAGE 10 OF 14 PAGES
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FORM SYMBOL	TITLE OF FORM	2.b. Effective Date	2.c. <input type="checkbox"/> Original OR Amendment No. 2
PIO/T	Project Implementation Order/Technical Services	3. Project/Activity No. and Title 615-0164 Marginal/Semi-Arid Lands Pre-Investment Study	

Indicate block numbers.

Use this form to complete the information required in any Block of a PIO or FAI Form.

Annex A
(Cont'd)

Seeds Specialist

Qualifications:

The consultant shall have at least the equivalent of an M.S. degree in seed technology with a minimum of 10 years of experience. The officer should also have a broad knowledge of crop production under marginal semi-arid, sub-tropical conditions. He must be in robust health.

Experience Requirements:

The consultant shall have had experience in developing seed production programs and maintenance of genetic purity of seed crops as well as experience in setting up seed processing plants and storage facilities. The technician should also be experienced in ways and means of seed distribution.

Relationships:

The seed specialist will consult with the present agronomist of the study team to determine needs involved in seed production for marginal areas. He will also work closely with Kenya Crop research personnel, district agricultural officers, Kenya Farmers' Association and Kenya Seed Company Ltd.

Duties and Responsibilities:

The technician will report to the Project Coordinator and will work closely with the agronomists of the present study project/^{crop} research personnel of the MOA and District Agricultural Officers to determine which species, lines or varieties of crops should come under a seed production program. He will work closely with Kenya Farmers Association and/or Kenya Seed Company Ltd. to arrive at recommendations for production, collection, processing, storage, and distribution of the seed. The consultant shall, after consultation with KFA and/or KSC as well as appropriate Ministry of Agriculture officials determine recommendations for the necessary physical plant facilities to process and store seed stocks and means to distribute the seed.

The consultant shall present a written report, including recommendations, to the Project Coordinator at the end of his assignment.

Location:

Headquarters, Nairobi, Kenya

Period of Assignment:

Two months during the period beginning after October 1, 1977 and ending prior to March 1, 1978.

The consultant shall present a written report, including appropriate recommendations, to the Project Coordinator one week before leaving Kenya.

AID 1320-1 (8-67) CONTINUATION SHEET FORM SYMBOL PIO/T	DEPARTMENT OF STATE AGENCY FOR INTERNATIONAL DEVELOPMENT TITLE OF FORM Project Implementation Order/Technical Services	<input type="checkbox"/> Worksheet <input checked="" type="checkbox"/> Issuance PAGE 11 of 14 PAGES
		1. Cooperating Country Kenya
		2. Effective Date 2. Project/Activity No. and Title 615-0164 Marginal/Semiarid Lands Pre-Investment Study
		2. Original No. Amendment No.

Indicate block numbers.

Use this form to complete the information required in any block of a PIO or P/A form.

Annex A
(Cont'd)

Hydrogeologist Consultant

Qualifications:

The consultant shall have an advanced degree in some branches of science related to ground water hydrology. He should be in robust health as considerable travel over rough roads in four-wheel drive vehicles will be required.

Experience:Requirements:

The consultant should have been actively involved in ground water exploration for at least 10 years, some of which should have been in East Africa or in areas of geologic and climatologic similarity.

Relationships:

The consultant will receive an initial orientation from the Study Team's agricultural and water development engineers and will work closely with them. He will establish relationships with staff in the Ministry of Water Development, especially those responsible for collecting and processing well logs in the two study areas. Some field contacts with well drillers and local technicians will also be needed.

Duties and Responsibilities:

The consultant will report to the Project Coordinator and confer with and advise the Project Study Team on the possibilities for developing ground water sources for domestic, livestock and small irrigation uses, at particular locations, within the general study area. He will collect and study available aerial photography, satellite imagery, topographic and geologic maps and reports, streamflow records and other hydrologic data, well-logs, etc.; and will make personal field observations of significant surface physican geologic features, indicating the hydraulic character of the underlying geologic materials and their possible relationships to any known regional and local aquifers, and to ground water recharge possibilities.

Location:

Headquarters, Nairobi, Kenya.

Period of Assignment

October 1-January 2, 1978.

The consultant shall present a written report, including appropriate recommendations, to the Project Coordinator one week before leaving Kenya.

DEPARTMENT OF STATE AGENCY FOR INTERNATIONAL DEVELOPMENT	1. Cooperating Country KENYA	2.a. Code No. 615-164-3-70002
TITLE OF FORM PROJECT IMPLEMENTATION OF PER/TECHNICAL SERVICES	2.b. Effective Date	3.a. <input type="checkbox"/> Original <input checked="" type="checkbox"/> Amendment 2
	3. Project/Activity No. and Title 615-0164 Marginal/Semi-Arid Lands Pre-Investment Study	

Use this form to complete the information required in any block of a P/O or PAA form.

Use this form to complete the information required in any block of a P/O or PAA form.

Annex A

(Contd)

Regional Economics Specialist

Qualifications:

The specialist should have at least an M.Sc degree in economics with a minimum of 10 years experience in his profession. Considerable travel over rough roads is expected which will require that the specialist be in robust health.

Experience Requirements:

The specialist will work closely with the Study Team economists (a Kenyan and an American). He will also secure data from the Ministry of Finance and Planning, the Planning Division in the Ministry of Agriculture, and such other agencies as may seem appropriate.

Duties and Responsibilities:

The specialist will report to the Project Coordinator and will become familiar with the flow of agriculturally related money and produce in the two study areas - Machakos/Kitui and Baringo/Kerio Valley and prepare a report describing these flows. He will participate in discussions with the study team members on the likely consequences to these flows of various alternative development strategies. He will pay particular attention to leakage rates of money out of the districts, and income and employment multipliers on both a regional and national basis.

Location: Headquarters, Nairobi, Kenya

Period of Assignment: October 1 - November 30, 1977

The consultant shall present a written report, including appropriate recommendations, to the Project Coordinator one week before leaving Kenya.

AIC 1200-1 (8-63)	DEPARTMENT OF STATE AGENCY FOR INTERNATIONAL DEVELOPMENT	<input type="checkbox"/> Worksheet <input checked="" type="checkbox"/> Issued	PAGE 13 OF 14 PAGES
CONTINUATION SHEET		1. Cooperating Country Kenya	2.a. Code No. 615-164-3-70002
FORM SYMBOL	TITLE OF FORM	2.b. Effective Date	2.c. Amendment <input type="checkbox"/> Original OR No: 2
PIO/T	PROJECT IMPLEMENTATION ORDER/TECHNICAL SERVICES	3. Project/Activity No. and Title 615-0164 Marginal/Semi-Arid Lands Pre-Investment Study	

Indicate block numbers. Use this form to complete the information required in any block of a PIO or PAA form.

Population Geographer

Qualifications:

The consultant shall have a Ph.D in Geography or Demography with expertise in population **pressure**, man-land relationships and human carrying capacity as applied to Kenya. He must be in robust health.

Experience Requirements:

The consultant must have a thorough knowledge of the Kenyan population situation, especially as it relates to the land issue, migration and population pressure. The consultant must have had at least three years research experience in Kenya and must have familiarity with the problem of how population pressure in the high potential areas impinges upon the marginal lands. This means the consultant must have had experience of working in both high potential and medium potential areas. The consultant must also be familiar with the problems of agricultural change and the problems created by the utilization of different technologies in differing ecological zones.

Relationships:

The specialist will work closely with the two Study Team sociologists (one U.S. and one Kenyan, to be appointed) as well as the other multi-disciplinary team members. Additional relationships will be developed with others whose studies will complement the specialist's work, especially researchers at the University of Nairobi and officials in several Ministries of the GOK. The specialist will also develop relationships with district, division and location planning officials and others.

Duties and Responsibilities:

The consultant will report to the Project Coordinator and will contribute to the Marginal Lands Study by preparing a report on the causes of population pressure in the high potential areas of Kenya and how this affects population movement and migration into the marginal lands at differing technologies and assist the team in suggesting ways and means to ameliorate the worst consequences of population - resource imbalances in the area.

Period of Assignment: One month, November/December 1977.

Location: Headquarters, Nairobi, Kenya.

The consultant shall present a written report, including appropriate recommendations, to the Project Coordinator one week before leaving Kenya.

Annex A
(Continued)

DEPARTMENT OF STATE
AGENCY FOR
INTERNATIONAL DEVELOPMENT

Worksheet Issuance

PAGE 14 OF 14 PAGES

CONTINUATION SHEET

1. Cooperating Country
KENYA

2.a. Code No.
615-164-2-70002

FORM SYMBOL

TITLE OF FORM

2.b. Effective Date

2.c. Original Amendment
OR No.:

PIO/T

PROJECT IMPLEMENTATION
ORDER/TECHNICAL
SERVICES

3. Project/Activity No. and Title

615-0164
Marginal/Semi-Arid Lands Pre-Investment Study

Indicate block numbers.

Use this form to complete the information required in any block of a PIO or PAA form.

ANNEX B

ILLUSTRATIVE BUDGET

Position	Salary	Benefits (22%)	Univer- sity (30%)	Over- head (60%)	Interna- tional travel
Sociologist - 3MM	8,000	1,760	2,400	-	2,000
Range Management - 1MM	3,000	660	-	1,800	2,000
Seed Specialist - 2MM	5,340	1,180	1,602	-	2,000
Hydrogeologist - 3MM	9,000	1,980	2,700	-	2,000
Regional Economist - 2MM	5,700	1,254	1,710	-	2,000
Demographer - 1MM	2,800	625	840	-	2,000
	12MM 33,840	7,459	9,242	1,800	12,000

Summary: Salary	33,840
Benefits:	7,450
Travel:	12,000 (International)
Travel:	3,808 (local)
Per Diem:	13,300
Sub Total:	70,398
CID 15%:	10,560
Sub Total:	80,958
Univ Ovhd:	11,042
Total:	92,000

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Project 615-0164

THE DEVELOPMENT OF MARGINAL AREAS
IN KENYA, WITH SPECIAL EMPHASIS
ON EMPLOYMENT AND INCOME

2067

USAID DISTR(7/11)
ACTION: TSS
(DUE:7/19)
INFO:DIR;A/DIE;PROG;CHRON;RF

A PAPER PREPARED FOR
THE NATIONAL SEMINAR ON
EMPLOYMENT IN KENYA, HELD
IN NCHIBASA, KENYA.

APRIL 18-23, 1977

BY

LARRY G. K. NGUTTER

DEVELOPMENT PLANNING DIVISION,
MINISTRY OF AGRICULTURE,
P. O. BOX 30028,
NAIROBI.

APRIL, 1977

DEVELOPMENT OF MARGINAL AREAS IN KENYA,
WITH SPECIAL EMPHASIS ON EMPLOYMENT AND INCOMES.

1. INTRODUCTION

The 1974/78 Kenya Development Plan emphasizes Rural Development as the key strategy in the national development. In an agricultural country such as Kenya, rural development means to a large measure, the development of the Agricultural Sector.

Using a variety of physical criteria, agricultural land in Kenya can be classified into a number of categories. One category includes the areas of low rainfall and is called marginal lands or areas.

This paper is about the development of these marginal areas in Kenya. The paper divides these areas into medium and low potential marginal lands. Emphasis is on the medium potential areas for two reasons:- firstly, a great deal of development effort is already going to the low potential areas under the Livestock Development Programme. Secondly, the medium potential areas offer real opportunities for more intensive agriculture which have not yet been fully exploited. The exploitation of this potential would offer not only increased employment opportunities but would also improve the welfare of the people there.

The paper starts with a definition of the various categories of land which are included under the definition of marginal lands. The importance of these lands is then discussed to emphasize the need for urgent attention, particularly in the marginal lands. A brief discussion on the employment potential, including the constraints to the exploitation of this potential in marginal lands follows. This sets the stage for a discussion of the development of these areas.

The development of the marginal areas in the past, at present in the future is discussed, taking the year 1945/46 as the beginning period. This is because that year saw the first attempts to understand the problems of the marginal areas. Next, the shortcomings of the developments upto 1974 is reviewed and the measures being taken now discussed. The paper ends with anticipated measures and a short list of policy recommendations. Issues on irrigation and rural works, though relevant to the development of marginal areas, are not discussed here as they are being considered in other papers at this seminar.

II. THE MARGINAL AREAS

A. Definition

Marginal areas, also known as semi - arid lands, are those agricultural areas in which crop production is constrained mostly by low rainfall. Much of marginal areas is well suited to extensive livestock production. However, increasing population pressure has forced people to start crop production on increasingly smaller landholdings, even though risks of crop failure are great.

There is a continuum of aridity from the wetter to the more arid areas. But, it is possible to distinguish between three different categories of land which, from an agricultural point of view, may be described as marginal. These are:-

1. Medium Potential Agricultural Areas:-

Here arable agriculture is marginally^{1/} possible in the sense that the production of annual field crops is severely limited by lack of available moisture. Nevertheless, the use of out of the ordinary (moisture) conservation methods and specially adapted crop varieties (including fodder crops) would make agricultural production sufficiently reliable for an increasing human population to be gainfully employed and carried^{2/}

2. Low Potential Range Areas:-

These are the areas where forestry, regular or permanent cultivation is not feasible on account of low rainfall, but which carry natural vegetation capable of supporting domestic or wild animals^{3/} Agriculturally, small localized areas of rangelands, particularly along river streams may have some arable potential^{4/} Extensive livestock production is, however, likely to remain the only reliable type of land use on a large scale, under the existing state of technological knowledge.

3. Other Marginal Areas.

For the purposes of employment generation and increases in rural incomes, we may further include those high potential areas at low altitudes (particularly in the coast Province) under the definition of marginal areas. The prospects for development in these lands are limited by lack of a wide range of suitable and valuable cash crops such as is the case in the high potential areas at high altitudes. In tables 1 and 2 below, this category has been combined with category 1 above.

^{1/} The word "Marginal", (from the German GRENZ meaning "border" or "edge") when used to qualify an object, e.g. Marginal Areas, means a "borderline" case.

^{2/} This definition is adapted from Ambrose (1, p.2).

^{3/} Adapted from Pratt (7, p. 178).

^{4/} The idea of an Authority responsible for the Development of Valley Bottoms has been suggested by Ruthenberg (8, p.4 - 5).

The division of marginal areas into the three categories discussed above is important. Failure to recognize the differences between these land types leads to an erroneous assumption of homogeneity in the inherent productive capability of the marginal areas. Development options based on this assumption have, in the past, led to the situation whereby whilst thought and action was concentrated on the problems of the high potential areas during the colonial administration, and while the development of the range areas has received major attention since 1963; the medium potential areas as defined in this paper have been almost entirely unattended to. This situation needs urgent correction as the following section shows, but also because medium potential areas offer real possibility for intensive development.

B. Importance of Marginal Areas in Kenya.

We discuss the importance of marginal areas in the context of their environmental setting, area and population carried.

1. Environmental Setting.

The overriding characteristic of marginal lands is moisture deficiency for crop production. Not only is the absolute amount of rainfall expected low, but its distribution varies greatly both in time and space. This increases risks to, and thus limits the use of yield-increasing-modern inputs. Moreover, these areas are also the most sensitive to bad farming methods. Thus, unless special attention is paid to them now, they are the most likely to turn into unproductive deserts in the near future. Apart from moisture for crop production, the long distances between water points for both human and livestock populations impose serious farm labour bottle-necks.

The soils are often poorly structured, shallow or stony. This prevents use of such intermediate technologies as ox-cultivation. Of greater importance however, is the widespread soil erosion in the marginal areas. There is truth in the adage that "poor soils can only support poor people; and poor people make poor soils poorer". Water, soil and vegetation conservation are major concerns in the area to-day.

2. Area

For the purpose of estimating the extent of marginal areas in Kenya, the rainfall levels are used here:-

- (a) High Potential Areas, being those receiving an average of 900 mm or more of rainfall per year.
- (b) Medium Potential Areas - those receiving between 600 and 900 mm of rainfall per year.
- (c) Low Potential Areas or those receiving less than 600 mm of rainfall per year.

Medium and Low potential areas together form the marginal areas as comprehended in this paper. Strictly, most of the marginal areas are under bimodal rainfall regimes. This means that only one half of the rainfall amounts shown above is expected for agricultural purposes per season.

Using the above definitions Kenya can be divided into high; Medium, and low potential (marginal) areas; as follows:-

TABLE 1: EXTENT OF MARGINAL LANDS IN KENYA

TYPE OF LAND	AREA (km ²)	% OF TOTAL LAND IN KENYA
1. High Potential Areas	67,850	12
2. Marginal areas of which	453,940	80
a) Medium Potential	31,570	6
b) Low, Potential	422,370	74
3. All other land	48,430	8

Source: Ministry of Agriculture Estimates.

It is further estimated that the marginal areas together contain nearly 40 per cent of arable land in Kenya.

3. Population and Labour Force

Estimates indicate that marginal areas carry about 3.3 million people. Of these, some 1.8 are in the medium and 1.5 in the low potential areas. The marginal areas thus carry approximately 25 per cent of the national population. Of greater importance, however, is the fact that marginal areas particularly the medium potential ones in the eastern plateau foreland^{5/} are the major destinations of out-migration from the more densely populated higher potential areas. This in-migration is causing the population in the marginal areas to increase by as much as ten times the national average. As marginal areas are also the most famine-prone the potential famine problem being created by this in-migration is appreciable.

The following table compares current land availability in the marginal and high potential areas.

^{5/} Namely: Large parts of Kwale, Kilifi, Tana River, Voi, Mbera, Kitui and Machakos (3, p. 405).

TABLE 2: ESTIMATED LAND AVAILABILITY IN KENYA BY TYPE OF LAND

TYPE OF LAND	AREA IN '000 ha	ESTIMATED POPULATION ('000)	Ha. PER CAPITA
1. High Potential Areas	6,785	9,700	0.7
2. Marginal Areas	45,394	3,300	13.8
of which			
a) Medium Potential	3,157	1,800	1.8
b) Low Potential	42,237	1,500	28.2

Assuming that there are 6 members in an average family, land availability is 4.2 ha, 10.8 ha. and 169.2 ha. per family in the high, medium and low potential areas respectively.

Turning now to the present and future labour force we find that if potential labour force is taken at 35% of the total population, a potential labour force of just over 1 million is available in the marginal areas. If the total national population grows from about 13.0 million at present to about 30 million by the turn of the century, the total national potential labour force would be about 11 million. If the marginal areas contribute their own share of the total population to the national labour force, the potential labour force in the marginal areas would be around 3 million people by the year 2,000. In reality, this labour force is likely to be higher if present migration rates to the marginal areas continue.

In summary, we see that the marginal areas need special attention if their low rainfall is to support an increasing population at an improving standard of living. Unless this attention is given, these areas are likely to deteriorate into unproductive deserts if current widespread soil erosion is any indication to go by. Furthermore, it is not possible to ignore these lands which carry nearly one quarter of the national population, cover some 80 per cent of the land area and include nearly 40 per cent of the arable land in Kenya.

III. EMPLOYMENT IN MARGINAL AGRICULTURE

The Economy

Increasing human populations and the attendant scarcity of land has led to the abandonment of past practices of semi/nomadic pastoralism and shifting cultivation in favour of settled mixed agriculture especially in the medium potential areas. Here, crops are relied upon more heavily for subsistence, with livestock as the basic cash-source. The importance of livestock increases with decreasing rainfall until the dry districts in the northern and northeastern parts of the country are almost exclusively pastoral rangelands. Here, livestock forms the basis of the economy.

The production system is distinctly drought-evading. This is accomplished in two ways. First, where arable agriculture is possible, the mixed cropping of a food cereal crop (usually maize and where rainfall is low, sorghums and millets); a legume food-cum-cash crop (usually beans, peas and grams and where rainfall is lower, the perennial pigeon pea) and an introduced non-food cash crop (in the past, cotton has received the greatest attention but sunflower is now being introduced) is meant to ensure the maximum security against drought and total crop failure. Secondly crop production is almost always associated with a mixture of livestock. The small East African Zebu type of cattle, with its hardiness and disease resistance is well adapted to this low rainfall agro-climatic zone. Of even greater importance are the sheep and goats. Goats, in particular are very handy during bad agricultural years when crops fail and cattle are the first to succumb to the shortage of pastures and water.

In the low potential range lands cropping is given up altogether. In addition to the major livestock species mentioned above, the hardier camel, with its ability to thrive under harsh environments, becomes increasingly more important; some times more so than the cattle. The latter are the larger East African Zebu with a high growth potential once placed on a better plane of nutrition such as in feedlots or on the better-watered ranches to the south.

B. Employment Potential in Marginal Agriculture.

With the economic base as discussed above, the chances for increasing gainful employment from marginal areas would appear to lie in increasing both yields and production. There are, however, difficulties in quantifying the employment effects of increased agricultural production.

Two such difficulties are:-

- (a) The fact that firm estimates of labour input coefficients are generally not available. When available, such coefficients are specified per crop, and not per hectare.
- (b) To be useful guides to the welfare effects of increased agricultural production, coefficients such as man-months per hectare need to be associated with incomes per man-month. Yet, the determination of the incomes become even more difficult to quantify in the marginal areas due to the extreme vagaries of the climate.

In spite of these difficulties and the constraints discussed in the following section, marginal areas appear to offer some opportunities for increasing gainful employment. The following example illustrates the point.

Let us assume:-

- (i). That emphasis is placed on the 31.6 million hectares of medium potential lands where intensification of production is possible;
- (ii) that three-quarters of the above area is cultivable. This gives 23.7 million hectares of cultivable land on which intensive production is possible;
- (iii) That suitable crop packages in the manner of the SPSCP/IADP^{6/} can be identified and selected for each agro-climatic zone;
- (iv) That the average farm is 10ha, so that there are about 2.37 family farms altogether;
- (v) That on the average farm only 35% of the area is actually cultivated, labour being the greatest constraint on the area of land cultivated per farm^{7/}. We would then have 8.3 million hectares under cultivation.

If now, on the above area, the technology of production is improved from "traditional" to "intermediate" or better, and using the employment increases envisaged under the IADP, we note that labour demand per farm (10ha of which 3.5 ha. are actually under cultivation) would increase from 96 man-days to 270 man-days per farm, or from 3.2 man-months to 9 man-months per

^{6/} See page 13-14 below

^{7/} Such crop packages would have to be capable of drought-evasion through early maturing, e.g. Katumani composites or have a lower moisture demand, e.g. beans. Peremmiels such as pignon peas are particularly encouraged, as is a shift from maize to sorghums in the low rainfall zones.

^{8/} This is the farm size used under the IADP Scheme for the "low potential zone", equivalent to what we have defined as "medium potential" area in this paper. Actually family labour alone can hardly cope with more than 2.0ha of cultivated land; meaning that hired labour would be necessary in this case.

^{9/} "traditional technology" is defined here after Lunin (6) as the complete absence of use of modern inputs, beyond, perhaps, the ox-plough. "Intermediate technology" means that some modern inputs-improved seed, fertilizers, insecticides etc. are used but at rates below those recommended by researchers.

farm-per-year. If these orders of magnitude are anywhere near feasible, then we would have at least 5 extra man-months per farm-per-year; or a total of about 12 million extra man-months of employment from the 2.37^{10/} farms. Converting, this equals roughly 1 million man-years of extra employment. If each new employee—either as own-farm labour or hired labour, — expects to be employed for 30 years, the above figures suggest that some 33,000 people could be placed under gainful employment if production was intensified in the medium potential areas alone. The figures also suggest that marginal agriculture is inherently a poor generator of employment.

The low potential rangelands and that proportion of the medium potential areas not suitable for cultivation are deemed suitable for extensive livestock production. Here too, some potential for employment does exist, particularly in the livestock marketing and feedlot operations' I.L.O (3 p.409) estimated in their report that these operations should be able to generate adequate employment for about 12,000 people in the medium term.

C. Constraints to Increasing Employment in Marginal Agriculture

The following are the major constraints to increasing employment in marginal agriculture:-

(a) In the lower rainfall areas, use of modern yield-increasing inputs is too risky to allow for their adoption as long-run expected returns are too low.

(b) Although increased output, and therefore generation of more employment, could be secured by putting larger areas per farm under cultivation by use of, e.g. ox-ploughs, this is not always possible for the soils are too stony or the terrain too slopy. Moreover seasonal fodder shortage and livestock pests like the tse-tse fly make the keeping of the oxen more hazardous. Finally landholdings per capita decrease as the population increases meaning that farms will be smaller in future.

(c) Even where ox-cultivation and use of modern inputs could increase yields, family labour acts as a constraint to the area that can be put under crops. In these areas, due to the low farm incomes a large part of adult male labour migrates in search of

^{10/} Again, using figures calculated under I.A.D.P., the levels of income would improve by 40 - 55 per cent (9,p.25)

salaried employment, leaving children and women as the only available labour input. Other chores such as fetching water by women from long distances further reduce the amount of labour actually used for production on the farms.

(d) The level of technical know-how is low. Yields could often be increased by such agronomic techniques as early planting and proper tillage. However, this constraint is probably not greater than the fact that,

(e) Few improvements on present systems of production have been forthcoming from the research stations. There is need at present for problem-oriented research to develop crop varieties with high and stable yields, suitable for marginal areas, backed-up by improved and tested farm management techniques.

(f) The development of improved farming systems which take full account of traditional drought-evading methods is itself constrained by the shortage of a national scientific cadre, capable and interested in selecting, evaluating and modifying the large body of knowledge and innovations developed for similar lands -- mostly in temperate Australia and U.S.A. for marginal areas in Kenya.

(g) Needed also is agro-economic research on production packages which (i) have the highest employment and income potential under marginal conditions; (ii) are divisible enough for widespread adoption by smallholders; (iii) whose benefits are cumulative in the sense that introduced sequentially, earlier innovations enhance farmers' resource capability to adopt subsequent innovations. In this regard, it is important to remember that innovations which need a high proportion of purchased inputs increase the risks to the marginal farmer, something he can ill afford.

IV. THE DEVELOPMENT OF MARGINAL AREAS

Having defined and discussed the importance of marginal lands in Kenya; and having also discussed the employment potential and constraints to exploiting this potential, we now look at the past, present, and anticipated development measures in the marginal areas.

A. Past Development Measures

It is sometimes said that the development of marginal lands has been neglected in the past. In my opinion, this statement is not wholly correct because the neglect alluded to has been rather structural.

During the first Kenya Ten Year Development Plan (1945/46 - 1954/55) and latter under the "Suygnerton Plan" (1954/55 - 1960/61) considerable effort went into the development of the so called semi-arid African areas. At first the problem in these areas was seen as one of over-population. This view was fostered by the considerable land degradation, evidenced by widespread land denudation, overgrazing and soil erosion. Initial effort therefore went to settlement schemes. It was however soon discovered that to develop land, one needs the people on the land. So the emphasis shifted to reconditioning and rehabilitation of the settled land; and latter, to attempts at intensive land use-systems¹¹⁾

As far as the period before 1961 is concerned, the following achievements are cited:

- (a) A large number of families were settled on marginal land previously unused or little used¹²⁾.
- (b) Grazing schemes which attempted to rationalize livestock production systems through the infamous destocking programmes were established¹³⁾.
- (c) A large number of dams, boreholes, catchments and other water facilities were developed.
- (d) Re-forestation of hills which are sources of the water used by people in marginal areas was started.

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- 11) For a detailed account of development in the Marginal Areas during the period 1946 to 1962, see (5)
 - 12) The above source gives the figure of 6,297 families, excluding a further 1,500 settled in irrigation schemes; P.9.
 - 13) By 1962, these schemes covered some 3.7 million hectares, nearly all of them in the marginal areas.

- (e) The Katumani Research Station was established in 1955/56.

Some of these schemes were so ill-designed and executed that they made the Department of Agriculture particularly unpopular with the people whom the schemes were supposed to benefit.

After 1962, the most important measure was the establishment of the Range Management Division of the Ministry of Agriculture in 1963. The expressed mandate of the Division was to "concentrate thought and action towards the upgrading of the total range economy whilst arresting deterioration in land condition" - (through) "the conservation, management and development of the range area in Kenya" (7, p. 179). This Division is now well established, with its own cadre of professional extension, research and other staff. It is this Division which has sponsored the massive investments in the range areas under the Livestock Development Programme, now in its second phase.

It is also important to mention here the research effort which has gone into the breeding of the Sahiwal and the improved Boran - two livestock types suitable for marginal areas.

B. Evaluation of Past Development Measures

Before looking at some of the measures at present being taken, it is useful to examine some of the features of past development measures in the marginal areas.

(a) In the early part of the period reviewed here (1946 - 1974), most of the effort was directed to the land per se, and little to the peoples' welfare. There was no meaningful attempt to link land reconditioning to more productive farming systems. And, for the purpose of this seminar, employment and incomes were no part of the criteria used to design the investment schemes.

(b) In the latter part of the 1950's, intensification of production was explicitly spelt out. This was however, hampered by the lack of better crop varieties and farming systems. The development of the Katumani synthetic composites¹⁴⁾ was in search for suitable crop varieties. Further developments in this line appear to have been side-stopped by unsuccessful attempts to import the "cash-crop" breakthroughs which, although successful in the higher potential areas, may not be the most suitable strategy in the marginal areas. The result of this "cash crop" strategy has been the over emphasis on cotton, even where cotton, clearly, does not out-produce suitable food crops.

14) The advantage of this synthetic is in maturing early and thus evading, not resisting, drought.

(c) Referring more specifically to the medium potential areas it is noteworthy that nothing similar to the "cash crop" technology now available for the high potential areas; or the "Range management, veterinary, water development, and livestock-marketing" technology now being implemented in the range areas has been developed. For this reason it is recommended that a unit be created within the Ministry of Agriculture, and charged specifically with the development of marginal areas in the broader sense as defined in this paper by establishing a branch in the present Land and Farm Management Division, specifically responsible for the development of marginal arable agriculture. Such a branch should be headed by a senior agricultural officer, and should be supported to develop a full complement of extension and research staff, as is presently the case in the Range Management Division.

(d) The greatest shortcoming of the Livestock Development Programme has been the complete absence of any monitoring and evaluation of the programme. What few notes are available have been produced by the donors during their supervision and credit review missions. As a result of this lack of monitoring and evaluation, it is not possible to state what specific employment and other impacts this programme is having on the participants. Moreover, it is not possible to strengthen past success and avoid past misconceptions when planning future phases of this programme.

C. Measures Being Taken

1. The I.L.O. Report and the Development Plan 1971/73

The major observations and recommendations of the I.L.O. on the marginal areas are contained in chapter 10 on "Agriculture" and in "Technical Paper No. 11". Briefly, I.L.O. noted the genuine potential of unplanned migration into marginal areas and the suitability of the Katumani synthetics and other improved crop varieties in dealing with this problem. Drawing attention to the existence of large areas of under-developed medium and high potential areas in Kenya in which more intensive agriculture is possible, the I.L.O. Report called for their development. Finally the Report noted the low level of agricultural and infrastructural support services in the marginal areas.

These recommendations and observations were to a large extent accepted by Government and are contained in various sections of the present plan; mostly in chapters 3 on "Employment, Population and Manpower" and 10 on "Agriculture". Accepting the I.L.O. observations and recommendations, the Plan makes the following statements which are of interest in marginal areas: "Unemployment and low earnings must be attacked simultaneously" (4, p. 89); - "methods of developing the less favoured areas will be devised - (4, p. 197) and - "more attention (will be paid) to development of better crop varieties and improved methods of husbandry". (4, p. 198)

The measures being taken at present take the observations and recommendations of the I.L.C. Report; and the objectives of the current plan into account. They also attempt to attack the constraints to marginal agriculture as discussed earlier, having regard for past omissions and misconceptions. The major measures are briefly discussed below:-

2. Livestock Development Programme

This programme is intended to reach practically every major pastoral district in Kenya. The objective of the programme is to increase meat production from the traditional pastoral areas. Range management extension, backed up by research work at the Kiboko and Buchuma Range Stations are being provided. In addition, water development, disease control and livestock marketing services have absorbed a large amount of investment funds. The past shortcoming of the programme, viz. lack of evaluation and monitoring will soon be corrected. The Government has contracted with the International Livestock Centre for Africa (I.L.C.A.) to undertake the monitoring and evaluation of the social-economic impacts of the programme. The environmental aspects of the programme are being monitored, since last year, by the Kenya Range Land Ecological Monitoring Unit (K.R.L.E.M.U.).

I.L.C. estimates that the implementation of this programme, backed-up by the seedlot industry to absorb some of the immature livestock sold from the pastoral areas, will create some 12,000 additional wage paid jobs (3, p.409-10) at income levels of \$40 - \$100 per year per job. These jobs will be created both in the livestock movement (marketing) and in the additional grazing schemes.

3. The Smallholder Production Services and Credit Project (SPSCP)

The origin of this project was the realization that past formal public sector credit schemes have not reached the poorer smallholders without the land titles which were ordinarily required as security for the loans¹⁵⁾. SPSCP aims at overcoming this problem. Although the project does not limit itself to the marginal areas only, a large part of it is already being implemented in what we have defined as medium potential areas.

The basic strategy is to identify the major agro-climatic zones in each area and then define the crop-combination set which has the highest chance of success in each zone. To the extent possible, traditional crop combinations are followed. At least one crop should preferably be a cash crop, ordinarily marketed through a co-operative.

15) Although most of the marginal areas is unregistered, de facto individual ownership of plots, particularly cultivated plots is generally recognized by the communities.

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It is the cash crop which acts as the "security" for credit to produce the whole set; although part of the debt servicing can be met from the food crops, usually a cereal and a legume.

By October 1976, there were about 4,000 farmers participating in this project. Plans for 1976/77 crop year are for an additional 2,000 farmers.

The departure from requiring land titles to secure production credit could, with some modifications, be extended to the more marginal arable lands. One such modification is being discussed (see p. 15) in the Ministry of Agriculture.

4. The Integrated Agriculture Development Programme (IADP)

It is not intended here to discuss this programme in great detail. IADP is now the major strategy for the development of smallholder agriculture. Designed basically to tackle identified production constraints in the high and medium potential areas, IADP has relevance in the marginal areas in several ways:

- (a) As just stated, part of IADP is aimed at the medium potential areas, which we have insisted in this paper need the greatest attention at present.
- (b) Its approach of planning on a "whole farm" basis is an important innovation that departs from past practice of concentrating on a single crop or farm enterprise. This allows the farmer to participate directly in the planning process by expressing his own desires and fears.
- (c) Intensification of agriculture in the medium and higher potential areas, leading to increased farm incomes, should help stem-off some of the out-migration into the marginal areas.

The first phase of IADP is underway. In the Low Potential Zone,¹⁶⁾ emphasis is being placed on crop combinations containing maize, beans, cotton and sunflower. Milk and beef production are also included. Staff strengthening and training as well as farmer training, input supply, and marketing development through the cooperative movement are important components of the programme.

This programme is expected to have a high labour-absorptive capacity. It is estimated that an average "low potential zone" farm of 2.5 cultivated hectares would need an additional 174 man-days of hired labour during peak periods (9, p. 25). Increases in incomes are estimated to be in the order of 40-55%.

16) Equivalent to the medium potential areas in this paper

5. Research Expenditures

Whereas research expenditures on crops suitable to marginal areas - tree crops, cotton, beans and oil seeds; and on dryland farming methods - accounted for about 15.8 per cent of the total planned research expenditures in 1972/73, this proportion has been increased to 31.3 percent during the current plan. These figures do not include research on maize agronomy. Twenty-three percent of the increased expenditure in research in the current plan was meant for a proposed dryland farming project (see p 16). This project has however not started yet owing to lack of a suitable willing donor-sponsor, and the inadequacy of national resources.

D. Measures Anticipated in Future

In future, increased attention should be paid to the medium potential areas where opportunities for more intensive agriculture have not yet been fully exploited. The envisaged measures may be divided into three:-

1. Improved Agricultural Services

Several improvements in the agricultural services are anticipated of which three will serve as examples. First, it is anticipated that the Dryland Farming Project will be launched. The project has now being fully identified and designed. This multi-disciplinary research and development project has these objectives:-

- (a) The development of improved farming systems suitable for medium potential areas but which take full cognisance of the traditional drought-evading mechanisms.
- (b) Testing and introducing these systems at farm level. Initial emphasis is expected to be on cereal food grain, pulses and root-crops.
- (c) Creating, through training, a competent research and extension scientific cadre, capable of continuing the research and development effort in future.
- (d) Coordinating research and development activities of benefit to this area by liaising with relevant national and international organizations.

The project therefore aims at tackling the technological know-how constraint in marginal agriculture.

Secondly the proposed establishment of a Dryland Farming station by the University of Nairobi is receiving full government support. The station aims at providing facilities of a demonstrational nature for teaching dryland farming techniques and their implications on farm management and social development in the dry areas. This station is particularly useful as our current institutions of higher learning in agriculture are all located outside the marginal areas. It is hoped that the establishment of the station will be accompanied by the development of suitable teaching curriculum in the institutions.

Thirdly the credit granting system needs to be modified to take account of the risky nature of production in marginal agriculture. Although the concept of using security crops is now being implemented, the marginal farmer is always faced with the prospect of total crop failures - including the security crop - due to the low and unreliable rainfall. One modification currently being considered envisages a system of crop-insurance. The basic principle is that in the event of a crop failure due to the vagaries of the climate, neither the credit-source nor the farmer should stand a total loss. This modification is necessary if the marginal farmer is to accept innovations involving higher proportions of purchased inputs - a necessity that increases risks to the farmers.¹⁷⁾

2. Resource Surveys

In the long run useful information on approaches to increasing production in the medium potential areas, will be provided by the Dryland Farming Project. In the shorter run, however, qualitative and quantitative information on the developable resources of marginal areas will be gathered through extensive pre-investment studies.

Two such studies and investigations are just getting off the ground. The first is a pre-investment resource inventory study in the marginal areas. The findings of the study will be used to design investment programmes in selected areas of Western and Rift Valley Provinces. The second is a planned trial settlement investigation in the Coast Province. Here, an area of 40,000km², capable of settling some 6,000 families, has very limited water resources from the information available. The trial phase of the settlement aims at investigating and quantifying the expected amount of water that can be economically developed. Other studies such as on soils and suitable farm enterprises will be undertaken.

3. Integrated Regional Development

In the districts containing a large proportion of marginal areas, investment in agricultural projects could be made more productive by complementary investments in social infrastructure.

17) For a detailed exposition in favour of this argument, see (2) and (10).

In particular, soil erosion prevention and other rural works not only have a high employment component but they enhance the productivity of inputs used in agriculture. Such is clearly the case with rural water supply schemes which cut down on labour used for water collection. In order that the various facets of development in such districts are fully catered for the concept of Integrated Rural Development is now being used to plan for Machakos and Narok Districts. Daringo District will follow soon. This new approach departs from the overemphasis on dry land improvements without paying fuller attention to the complementarity between those improvements and the production schemes. Financing for the Machakos Project has been promised and the project will be submitted to the donors this year. Preliminary estimates indicate that the production, soil conservation and water developments are likely to increase employment in this District by about 23 per cent, with a 9 per cent increase in income over four years.

SUMMARY

This paper takes the view that in order to increase incomes and employment in agriculture, it is necessary to increase yields and production. Marginal areas are no exception. There are, however, conceptual difficulties in quantifying the employment effects of increased agricultural production: Not only are data lacking, but increased agricultural production has benefits over and above those that can be quantified; and more so in the famine-prone marginal areas.

To increase yields and production in agriculture in future, effort should go to intensifying the production system. In the Marginal Areas, medium potential areas should receive top priority in future. There are acknowledged constraints to intensifying agriculture in the medium potential areas. However, less than enough has been done in the past to overcome these constraints.

In this paper, two major measures are suggested for the future. The first is to establish a Marginal Agriculture Branch and the second is to launch the long-awaited Dryland Farming Project in the Ministry of Agriculture.

V. RECOMMENDATIONS:

The following recommendations derive from the discussion in this paper:-

1. Establishment of a Unit responsible for the Development of Marginal Agriculture.

It is recommended that such a unit be established as a branch under the present Land and Farm Management Division. This Unit will develop the skills necessary to undertake the research, extension and training necessary for the development of medium potential agriculture.

2. Modification of the Credit System.

It is recommended that credit granted for agriculture in the marginal areas recognize the greater risks involved by crop failures. It is further recommended that the credit - insurance scheme designed by the Planning Division be tried initially on a pilot basis and evaluated to see if it increases the adoption rate of new seed, fertilizer, insecticide and farming technologies.

3. Dryland Farming Station and Project.

It is recommended that government give all possible support to the establishment of the proposed dryland farming project by granting land and the necessary financial support. It is further recommended that the Proposed Dryland Farming and Research Development Project be launched in the coming year or two to provide the much need data on the possibilities of increasing production and thus employment in the marginal areas. The complementarity between the station and the project should be clearly spelt out.

4. Intensification of Livestock Production in Medium Potential Areas.

It is recommended that more intensive systems of livestock production in the medium potential areas be tried. Fodder production and conservation and install production of beef and milk are probably possible in the better areas of medium potential areas.

5. Availability of Katumani Seed.

The recommendation put forward by the I. L. O. to have small-holders produce this seed on contract (as is done for the hybrid seeds) within the medium potential areas is an important one that should be tried.

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