

PJ-BAC 427

Project 660-0059

ZAIRE

North SHAKA Rural
DEVELOPMENT

Project PAPER

FY 76

UNCLASSIFIED

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D.C. 20523

PROJECT PAPER

Proposal and Recommendations
For the Review of the
Development Loan Committee

ZAIRE - North Shaba Maize Production

AID-CLC/P-2204

UNCLASSIFIED

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

UNCLASSIFIED
AID-DLC/P-2204

MEMORANDUM FOR THE DEVELOPMENT LOAN COMMITTEE

SUBJECT: ZAIRE - North Shaba Maize Production

Attached for your review are the recommendations for authorization of a loan in an amount not to exceed Three Million Five Hundred Thousand United States Dollars (\$3,500,000) to the Government of Zaire to assist in financing the United States dollar cost of the infrastructure development component of the Borrower's program to increase maize production in Northern Shaba Region in Zaire. In addition to this loan, the project involves a grant in an amount not to exceed Six Million Two Hundred Ninety-One Thousand United States Dollars (\$6,291,000) which will cover the cost of the technical assistance components of the project.

No meeting has been scheduled for this project. Please note that your views are requested by close of business on Wednesday, September 28, 1976. If you are a voting member a poll sheet has been enclosed for your response.

Development Loan Committee
Office of Development Program Review
and Evaluation

Attachment:
Summary and Recommendations
Project Analysis
Annexes

AGENCY FOR INTERNATIONAL DEVELOPMENT PROJECT PAPER FACESHEET TO BE COMPLETED BY ORIGINATING OFFICE		1. TRANSACTION CODE ("X" appropriate box) <input checked="" type="checkbox"/> Original <input type="checkbox"/> Change <input type="checkbox"/> Add <input type="checkbox"/> Delete		PP DOCUMENT CODE 3.		
2. COUNTRY/ENTITY <p style="text-align: center;">ZAIRE</p>		3. DOCUMENT REVISION NUMBER				
4. PROJECT NUMBER 660-11-199-059	5. BUREAU <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; border-bottom: 1px solid black;">a. Symbol AFR</td> <td style="width:50%; border-bottom: 1px solid black;">b. Code 06</td> </tr> </table>		a. Symbol AFR	b. Code 06	6. ESTIMATED FY OF PROJECT COMPLETION <p style="text-align: center;">FY 8 2 </p>	
a. Symbol AFR	b. Code 06					
7. PROJECT TITLE - SHORT (may utilize brackets) <div style="border: 1px solid black; padding: 2px; display: inline-block;">North Shaba Maize Production</div>		8. ESTIMATED FY OF AUTHORIZATION/OBLIGATION <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; text-align: center;">a. INITIAL ^{mo. yr.} 9 76 </td> <td style="width:50%; text-align: center;">b. FINAL FY 8 2 </td> </tr> </table>			a. INITIAL ^{mo. yr.} 9 76	b. FINAL FY 8 2
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9. ESTIMATED TOTAL COST (\$000 or equivalent, \$1 =)						
a. FUNDING SOURCE	FIRST YEAR FY _____			ALL YEARS		
	b. FX	c. L/C	d. Total	e. FX	f. L/C	g. Total
AID APPROPRIATED TOTAL	6,611	343	6,954	9,304	487	9,791
(Grant)	(3,271)	(183)	(3,454)	(5,964)	(327)	(6,291)
(Loan)	(3,340)	(160)	(3,500)	(3,340)	(160)	(3,500)
Other						
1.						
U.S.						
2.						
HOST GOVERNMENT			2,635			2,635
OTHER DONOR(S)						9,279
TOTALS						19,070

10. ESTIMATED COSTS/AID APPROPRIATED FUNDS (\$000)										
a. Appor- tation (Alpha Code)	b. Primary Purpose Code	c. Primary Tech. Code	FY <u>79</u>		FY <u>80</u>		FY <u>81</u>		ALL YEARS	
			d. Grant	e. Loan	f. Grant	g. Loan	h. Grant	i. Loan	j. Grant	k. Loan
FN	143	072	3,450	3,500	-	-	-	-	6,291	3,500
TOTALS										

11. ESTIMATED EXPENDITURES - - 1,319 2,200 1,099 74

12. PROJECT PURPOSE(S) (may utilize brackets) Check if different from PID/PRP

To identify an effective rural development process for improving small farmer production and income which is replicable in other parts of Zaire.

13. WERE CHANGES MADE IN BLOCKS 12, 13, 14, or 15 OF THE PID FACESHEET? IF YES, ATTACH CHANGED PID FACESHEET.

Yes No

14. ORIGINATING OFFICE CLEARANCE		15. Date Received in AID/W, or For AID/W Documents, Date of Distribution							
Signature <div style="font-family: cursive; font-size: 1.2em;">Fernando J. Spencer</div>									
Title Mission Director USAID/Zaire		Date Signed <table style="width:100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">mo.</td> <td style="text-align: center;">day</td> <td style="text-align: center;">yr.</td> </tr> <tr> <td style="text-align: center;"> 9 </td> <td style="text-align: center;"> 17 </td> <td style="text-align: center;"> 76 </td> </tr> </table>		mo.	day	yr.	9	17	76
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TABLE OF CONTENTS

	<u>Page</u>
PART I: SUMMARY RECOMMENDATIONS	1
PART II: PROJECT BACKGROUND	12
A. Economic Overview	12
B. The Agricultural Situation	15
C. The Department of Agriculture_(DOA)	18
*D. Description of the Project Area	24
1. Overview	24
2. Agricultural Development History	25
3. Physical Environment	26
4. Demography	29
5. Cropping Systems	31
6. Infrastructure	46
7. Commercial Activity.	54
8. Social/Cultural Context.	58
9. Administrative/Political . Structure	61
PART III: DESCRIPTION OF THE PROJECT	64
A. Summary Description	64
1. Project Goal	64
2. Project Purpose	64
3. Project Strategy.	65
4. Project Organization.	66

	<u>Page</u>
B. Detailed Description	71
1. A Sub-System of Research and Extension . . .	71
2. A Sub-System for Encouraging the Development of Farmer Group/Pre-Cooperatives	86
3. A Sub-System for the Development and Production of Intermediate Technology. . . .	93
4. Sub-System for Marketing and Credit	99
5. A Sub-System for Infrastructure Development.	113
6. A Sub-System for Project Monitoring and Evaluation	138
PART IV: PROJECT ANALYSIS	159
*A. Technical Analysis	159
1. Infrastructure Development	159
2. Infrastructure Development Technical Soundness	169
3. Technical Soundness	170
B. Financial Analysis	172
*C. Social Soundness Analysis	201
1. Overview	201
2. Critical Socio-Cultural Factors in Project Implementation	202
3. Social Consequence and Benefits Incidence	228

	<u>Page</u>
D. Economic Evaluation of the Project	230
1. Introduction	230
2. Major Assumptions	230
3. Major Benefits Quantification	231
4. Benefit Calculation	232
5. Project Costs	239
6. Internal Rate of Return Calculations	241
PART V: IMPLEMENTATION PLANNING	243
A. Administrative Arrangements	243
1. Recipient	243
2. Project Management Unit (PMU)	246
3. AID	248
4. Contracting Procedures	250
B. Implementation Plan	251
1. Project Start-Up, Pre-Contract Activities	251
2. Implementation Schedule	252
C. Evaluation	254
D. Conditions Precedent and Covenants	257
1. Conditions Precedent	257
2. Covenants	259

ANNEXES:

- *Annex A: PRP Approval Message
- *Annex B: Infrastructure Development
- Annex C: Initial Environmental Evaluation

ANNEXES: (cont'd)

- Annex D: Logical Framework
- Annex E: Project Performance Tracking Network
- *Annex F: Statutory Checklist
- Annex G: Mission Director's Certification
- *Annex H: Borrower's Application for Assistance
- *Annex I: Maize Marketing
- *Annex J: Farmer Centers
- *Annex K: Part I: Negative Constraints on
Increased Agricultural Production
Part II: Demographic Considerations

*These sections are not included in this copy. They are on file with AFR/DR, Room 2497 NS.

ABBREVIATIONS

- APPA: Producing & marketing cooperative located to the east of Nyunzu.
- BCZ: Banque Commerciale Zairoise.
- CEROTEX & TARICA: Flour mills located in Kasaj and Shaba.
- CIMMYT: International Maize and Wheat Improvement Center located at Londres, Mexico, sponsored by Ford and Rockefeller Foundations.
- COVAPA: Marketing cooperative in Nyunzu.
- DCA: Data Collection and Analysis Unit.
- DOA: Department of Agriculture.
- ERTS/Zaire: Earth Resource Technology Satellite.
- GECAMINES: International copper consortium.
- INERA: National Institute for Study and Agronomic Research.
- MINOKA: Chain of corn flour mills located in Kolwezi, Likasi, and Kamina.
- ONACER: National Office of Cereals.
- ONAFITEX: National Office of Fibers and Textiles.
- OZAC: Office Zairoise de Controle (handles weight and quality control of grain).
- PMU: Project Monitoring Unit.
- PNM: National maize program.
- SAKINA: Leading corn-buying group in Kongolo.
- SGMTP: Service de Gestion du Material des Travaux Publics.
- SNCZ: National railway system.
- SOFIDAG: Local Agricultural Development Bank with international banking support.

ABBREVIATIONS (cont'd)

SOFIDE: Societe Financiere du Developement (Zaire's private economic development bank).

TISSAKIN: Jute sack factory located in Kinshasa.

UNAZA: Zairian National University.

PART I. - SUMMARY RECOMMENDATIONS

A. BORROWER/GRANTEE AND IMPLEMENTING AGENCY:

The Borrower/Grantee will be the Government of Zaire (GOZ) and the primary executing agency will be the Department of Agriculture (DOA). The Office of Roads (OR) will collaborate with the DOA with respect to the rehabilitation and maintenance of the primary roads and ultimately in terms of the maintenance of secondary roads rehabilitated under the project. The Bank of Kinshasa will be responsible for administering the credit programs to be carried out by the project.

B. RECOMMENDATIONS:

Grant	\$6,291,000
Loan (six-year disbursement period) (Terms: 40 years, 10 years grace two percent grace and three percent thereafter)	3,500,000
	<hr/>
Total AID	\$9,791,000
GOZ Contribution	<u>9,279,000</u>
Grand Total Project Cost	<u>19,070,000</u>

C. DESCRIPTION OF THE PROJECT:

The purpose of the project is to identify a rural development process for improving small farmer production and incomes for replication in other parts of Zaire.

PART I. (cont'd)

There are three major constraints to Zaire's reversing its growing maize deficit and achieving self-sufficiency in maize production: (a) the lack of an effective system for testing and disseminating improved technical packages which are compatible with the production systems of small farmers; (b) the lack of an adequate transportation network which provides reliable access to production inputs and markets for outputs; and (c) the lack of a reliable grain marketing system.

This project is designed to identify and initiate processes which will alleviate these constraints and bring about sustained increases in small farmer production and income through:

- the development and extension of improved maize and other crop technologies suitable to the project area;
- the development of viable farmer groups/pre-cooperatives;
- the development of an intermediate technology production and maintenance capacity;
- the rehabilitation and maintenance of secondary and farm feeder roads;
- the expansion of the project area's marketing capacity;
- the development of an effective data collection and analysis system; and
- the integration of the Department of Agriculture's operations in the project area.

PART I (cont'd)

D. PROJECT ACTIVITIES:

Under the project a system will be developed for achieving the specific outputs outlined above. This system has six components:

1. A Sub-System for Research and Extension Operations:

The project will establish a research and training center where basic farming systems in use in the project area will be replicated. Innovations will be tested within the context of these systems. Initially, improved practices currently being used by the more productive farmers will be identified for dissemination to other farmers in their area to help increase yields.

In addition, early in the project basic agronomic research to develop more advanced technology (including fertilizer, modifying rotation patterns, etc.,) will be carried out. As appropriate, advanced technologies which have proven acceptable to farmers will be introduced.

The research program will emphasize maximum farmer involvement through an effective (i.e., collaborative) extension effort. It will also emphasize the development of the extension system from the local level upward. Under this program the project will train agricultural assistants to be stationed at each of the Farmers' Centers to be established under the project.

2. A Sub-System for Encouraging the Development of Farmer Groups/Pre-Cooperatives:

The project will encourage the development of farmer groups or pre-cooperatives within the context of popularly defined needs and opportunities based on existing patterns of cooperation.

It will aim at establishing about 75 Farmers' Centers over the project life. At the outset farmer groups will be established to carry out one or two simple functions (e.g., the sale of intermediate technology, the collection of data regarding small farmer practices and demonstration of improved practices.)

As organization and financial capabilities improve, groups will be encouraged to expand their activities (e.g., to include the marketing function).

PART I (cont'd)

Ultimately, a multi-tiered organizational structure will be developed which will greatly facilitate the channeling of project resources.

3. A Sub-System for the Development and Production of Intermediate Technology:

Under this component project funding will be aimed at establishing an intermediate technology development, production and training center at Kongolo. It will produce such items as corn shellers, hand mills, peanut and rice decorticators, etc.; the project will recruit and train Zairois to operate the center and will train village blacksmiths to maintain the items produced at the center. The basic objective of this component will be to facilitate expanded production by alleviating critical labor constraints during peak work periods (e.g., during field-clearing and harvest periods).

4. A Sub-System for Marketing and Credit:

The project will provide funds for : (a) credit to small grain merchants to enable them to buy trucks and spare parts and to cover the cost of their grain purchases from farmers, and if needed, production credit for small farmers; (b) improved and expanded loading facilities at key railheads; (c) training programs for small grain commercants; (d) assistance to small merchants in market communications; and (e) assistance to ONACER, including grain-purchasing credit, procurement of equipment, training of ONACER agents, etc.

The project will also provide supervision and formal, as well as on-the-job, training to ONACER agents. The basic objective of this component is to facilitate the development of an expanded, more competitive private sector role in the project area grain marketing sub-sector.

5. A Sub-System for Infrastructure Development:

Under the project, financing will be provided for the rehabilitation of 724 Kms. of secondary roads, 100 kms. of farm penetration roads using paid hand labor, and 500 kms. of farm roads with unpaid hand labor using project-provided equipment.

In addition, funds will be provided for the construction of project facilities.

PART 1 (cont'd)

6. A Sub-System for Project Monitoring and Evaluation:

Under this component, funds will be provided for the establishment of an information system in the project area. This will be accomplished by providing full-time and short-term technical assistance.

In addition, the project will train Zairois who will assist in the development and utilization of the information system.

The objectives of this sub-system are: (a) to monitor project implementation and achievement; (b) to analyze this data to determine causal relationships; and (c) to evaluate project performance and the project implementation experience.

E. SUMMARY FINDINGS:

The Project Committee has reviewed the technical, economic, financial and sociological aspects of the proposed program. On the basis of this review and the investigations of specialized consultants during the project design, the Committee recommends that a grant not to exceed \$6,291,000 and a loan not to exceed \$3,500,000 be authorized to the Government of Zaire.

The need for the assistance proposed herein, as well as the appropriateness of the strategy for increasing small farmer production, is clearly identified in the DAP.

F. PROJECT ISSUES:

The following issues were identified by the Project Design Team with respect to the proposed program. Comments are provided as to their expected impact on project implementation and the realization of program objectives:

1. Zaire's Financial Crisis:

The discussion of the macro situation presented in Section II, A, points out that Zaire is experiencing financial difficulties of major proportion. As a result, more than 50% of Zaire's foreign exchange earnings are required for debt servicing (which requirement has been considerably reduced

PART 1 (cont'd)

following debt rescheduling agreed upon in principle with donor governments).

Commercial credit has virtually dried up. In addition, the GOZ, with support from the IMF and donor governments, has instituted a stabilization program designed to relieve its balance of payments problems which will have further deflating effects on earnings.

The net impact of this situation has been, among other things, to reduce imports of capital and consumption goods (including fuel, vehicles, spare parts, etc.); to decrease the money supply and credit availability; and to reduce GOZ budgeting outlays. Each of these reductions has had a deflationary impact on the economy of Zaire, but most dramatically in the rural areas, including the project zones. Of specific concern to the project will be the impact of this deflationary situation on marketing activities, as well as the GOZ's ability to provide budgetary support for project personnel.

In response to this situation, the following specific elements have been incorporated into the project design:

- The Marketing and Credit Sub-System includes credit programs to enable small commercants to purchase trucks, spare parts, equipment and materials. In addition, credit for grain purchasing by small commercants and ONACER is being provided. (See Section III, B., 4., Sub-System for Marketing and Credit.)
- The project proposes that GOZ budgetary inputs be financed through the use of counterpart funds generated under the CIP loan and P.L.-480, Title I, Grain Sales. (See Section IV., D., Financial Analysis.)

2. Delivery of Project Inputs

Concern was expressed during the PRP review that there would be insurmountable logistical difficulties in supplying required inputs to the project because of its remote location.

PART 1 (cont'd)

However, there is considerable evidence that this problem is completely manageable.

As described in Annex B-6 (Logistical Support), inputs for all sub-systems will be delivered through the services of SGNTP, the logistical arm of the Office des Routes. An assessment of SGNTP's capability is presented in Section IV, A., 1., (Technical Analysis).

Assuming the worst of all possible circumstances, it is estimated that up to 10 weeks will be required for delivery of vehicles and equipment from Kinshasa.

In planning project implementation, maximum delivery time has been assumed. In addition, the AID project manager will work closely with ONATRA and the Office des Routes to expedite the handling of commodities at the port.

Maximum use will be made of the radio communication system to advise the project management staff of the arrival of project commodities at Matadi, of their clearance through the port and of the estimated time of departure for transshipment to the project area. Also, close attention will be paid to insuring that commodities are appropriately packaged.

Finally, the requirements for insuring adequate logistical support of the project will be closely scrutinized prior to delivery of major project inputs, e.g., heavy equipment and vehicles.

Current plans will be appropriately modified to account for any new developments.

3. Cereal Pricing:

As is clearly pointed out in Annex I, Description of the Maize Marketing Situation in Zaire, serious marketing problems are being encountered as a result of the improper timing, integration and coordination of decisions regarding maize pricing.

The GOZ is aware of these problems. In discussions with the Directors General of the office of National Economy (EN) and the Department of Agriculture, the agencies responsible for setting prices on major agricultural crops, there was a

PART 1 (cont'd)

frank admission that serious problems have developed as a result of recent maize pricing decisions. In this context, the Director General of EN welcomed suggestions for improving the pricing system, including the possibility of introducing differential pricing as a function of transport costs. At the same time, there is under active discussion within the GOZ a recommendation by ONACER to create an ad hoc committee to advise EN and the DOA regarding pricing decisions.

The USAID Mission is contemplating providing assistance to improve the price-making mechanism under the grain marketing project. Such assistance will likely include the funding of technical advisors and training for EN's technical staff.

The DOA is already receiving technical assistance under project 050 aimed at improving the Department's planning capability under the Bureau d'Etude. As the policy arm of the DOA, its responsibilities include providing guidance on pricing.

Notwithstanding these pricing problems, it is important to emphasize that a dramatic change in policy has recently occurred regarding agriculture prices.

Although the basic objective of the pricing mechanism is to insure adequate and low-cost food supplies to the urban population, recent pricing decisions suggest an acute awareness of the need to provide adequate price incentives to farmers as an inducement to expanded production. For example, in the period from August 1975 to June 1976, maize prices were increased from Z40/ton to Z120/ton. The prices of virtually all major crops have recently been increased, in many cases by over 100%.

Further, GECAMINES, which operates the Minoka grain mill and which must absorb the cost of the maize flour subsidy, has a vested interest in assuring that maize prices are adequate to insure maximum domestic production, and at the same time are not excessive so as to increase unnecessarily the size of the subsidy. In this context, GECAMINES, through the Commissioner of the Shaba Region who is responsible for announcing maize prices, has played a moderating role with respect to the price structure in Shaba Region. This role was demonstrated in July of this year when the Regional Commissioner, in part under pressure from GECAMINES, declined to enforce an increase in the price of maize at the farm gate from Z75/MT to the new

PART 1 (cont'd)

price of Z120/MT established by Economie Nationale and announced throughout the rest of the country. (It should be noted that Economie Nationale did not simultaneously increase the price at the mill, as of the team's departure in late August.)

As a result, the market mechanism functioned effectively in Shaba Region (estimated 16,000 MT marketed in N. Shaba), while there were massive breakdowns in maize marketing in the rest of the country.

Therefore, within the context of (a) the GOZ desire to improve the pricing structure; (b) the technical advisory assistance and training to be financed under the Grain Marketing Project and the Agriculture Economic Planning Project (052); and (c) GECAMINES', the problems related to the timing and coordination of maize pricing decisions appear to be manageable.

4. Completion of Primary Road Rehabilitation:

The Office des Routes has agreed to rehabilitate approximately 240 kilometers of primary roads within the project area.

Notwithstanding the substantial budget cut (possibly 50%-60%) which the OR has apparently suffered, it has continued operations on these roads which began in July 1976. (Brigade 19, which is responsible for rehabilitating roads in the N. Shaba area, is operating at less than full capacity due to shortages of fuel.) The project design team was advised informally that a budget supplement is being processed for OR. However, no confirmation could be obtained regarding the authenticity, the amount or the timing of the supplement.

To insure that adequate levels of support will be provided to the OR operations in the project area, a formal agreement will be entered into between the OR and the DOA under which the OR commits itself to the timely completion of the rehabilitation of primary roads in the project area. (The precedent for this type of agreement was established under the IERT cotton production project in the Equator Region.) Such an agreement will include a commitment to give priority to providing fuels to Brigade 19.

Part 1 (cont'd)

The Office of Political Affairs will be required to sign such an agreement since the Commissioner of the Sub-Region exercises administrative control over fuel allocations in the Sub-Region when there are shortages.

To provide further assurances that adequate fuels are always available for the brigade's operations, it has been proposed that fuel procured by the project be sold to OR to meet shortfalls should they occur.

The OR would pay for such fuels with local currencies which would be utilized by the project to meet local currency needs.

G. PROJECT DEVELOPMENT TEAM:USAID/ZAIRE:

William Garvey, Food & Ag.
Officer
David Frederick, Program
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Harold Green, Information
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GOZ:

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PART I (cont'd)

CONSULTANTS:

Charles Sweet, Rural Development Specialist (Development Alternatives, Inc.)
Alan Roth, Development Administration Specialist (Development Alternatives, Inc.)
Pamela Blakely, Anthropologist
Thomas Blakely, Anthropologist

PART II

PART II: PROJECT BACKGROUNDA. Economic Overview:

Zaire is the third-largest country in Africa, with an area of 2.4 million square kilometers (about the size of the U.S. east of the Mississippi River) and a population of 22 million. A country of great diversity in terms of climate, topography, and soils, Zaire has good economic development potential. It possesses extensive forest resources and important deposits of copper, zinc, lead, cobalt, industrial diamonds, cadmium and manganese, plus scattered deposits of gold, tin, and tungsten-bearing ores and unexploited deposits of iron ore and oil. The country has vast hydro-electric power reserve potential which is currently being developed.

In spite of this potential, Zaire's economy has not been able to achieve sustained growth. At Independence in 1960, it faced formidable social, political, and administrative problems. After Independence, the country experienced years of turmoil characterized by internal strife, ineffective administration, declining production, deterioration of finances and attendant inflation. United Nations intervention restored order and unity, and put an end to the Katanga secession and widespread anarchy.

By the end of 1963 the political and economic situation began to improve as a government budget was drawn up for the first time, and the Zairian franc was devalued by 300% to compensate for the inflation. However, the government deficit had more than doubled from the 1960 level, and revenues covered only 43% of expenditures. By 1964 the government's deficit had been reduced by more than 85%.

The improvement did not last, however. Extensive rebellions erupted again, and this time the agricultural regions of the east and northeast were affected. Under the impact of rising military expenditures and the failure to control provincial and other expenditures, the government deficit increased rapidly. By the end of 1965 and early 1966, the rebellions were brought to an end, and General Mobutu Sese Seko took over the presidency. Since then, he has provided an element of continuity and stability which had previously been lacking. By the late 1960's internal security had been restored.

PART II (cont'd)

In 1967 the government adopted, after consultation with the IMF, a series of monetary and fiscal reforms. These included devaluation of the Zairian franc, the simultaneous introduction of a new monetary unit (the zaire), government control on wages and prices, liberalization of foreign trade, and a substantial increase in taxation. The balance of payments and government revenues improved following these reforms, and a combination of excess productive capacity and unsatisfied demand spurred rapid economic growth through 1970. A slowdown in economic growth in 1971 reflected in part a decrease in copper prices and in part a return to more normal growth rates. With copper prices rising, performance of the economy was good in 1973; GNP at factor cost increased by 6.6%.

Zaire suffered a serious economic decline beginning in late 1974 with a sharp drop in copper prices resulting from the worldwide economic downturn. This situation was exacerbated by rising import costs due to inflation abroad, especially the quadrupling of oil prices. The government's budget deficit more than doubled to \$414 million, and net foreign assets dropped nearly two-thirds from the \$286 million high in mid-1974 to \$120 million. The inflation rate was around 40% on an annual basis, and real purchasing power declined across the board, especially in the lower-income brackets.

During 1975, Zaire's financial crisis worsened. The price of copper declined still further from the all-time high 1974 average of 92¢ per pound to a 1975 average of 57¢. Net foreign assets dropped to practically nil by April 1975. The resulting drop in foreign exchange earnings meant that Zaire was unable to cover all of its current obligations abroad; credit lines began to dry up; and the consequent drastic reduction in imports of spare parts and raw materials further aggravated the decline in agricultural and industrial production.

This situation was further complicated by the results of the "Zairianization" and "Radicalization" decrees of 1973 and 1974, respectively. These programs involved the takeover and subsequent nationalization of most expatriate businesses by Zairois. The result was a rapid exodus of expatriate owners and managers at all levels, and their replacement by Zairois unfamiliar with the technical, financial, and managerial requirements of operating a business enterprise. The major impact of these programs

PART II (cont'd)

was to reduce agricultural and small manufacturing production, disrupt commercial circuits, and cloud the investment climate.

In addition to the severe impact of the downturn in the economies of the major industrial countries and the rising import costs due to worldwide inflation, Zaire's economy was seriously affected by still another external event, the civil war in Angola. The major factor in this regard was the closing of the Benguela Railroad in August 1975. Historically, the Benguela Railroad has been the chief supply route for Shaba, Zaire's important minerals-producing area. Zaire was successful in rerouting its copper exports via other routes, primarily the Voie Nationale, Zaire's internal rail/river system, but had more difficulty in furnishing essential imports, such as petroleum, to Shaba. Another alternate supply route was eventually worked out, but the effects of the petroleum shortage in 1975 are still adversely affecting Zaire's copper production. While the Benguela route was officially reopened in August 1976, informed sources indicate that normal use of this route by Zaire may not be possible for some time due to the political situation in Angola. Overall, these events meant that there was a negative growth rate in 1975.

The outlook for the balance of payments in 1976 remains poor. Copper prices, though improved somewhat from 1975 levels, have still not made a full recovery. Furthermore, production in many export- and import-substitution industries has been hindered by shortages of imported spare parts and raw materials, especially oil. Zaire hopes to gain some relief from its balance of payments problems by rescheduling a portion of its external debt and through external balance of payments assistance. Zaire has already drawn funds from the Compensatory Financing Facility and the Oil Facility of the International Monetary Fund. Total drawdowns from these two funds and from an IMF standby agreement will provide \$163 million in balance of payments support. The United States has extended \$28 million in credits for the importation of agricultural goods, and further assistance during 1976 and 1977 is a distinct possibility. It is hoped that short-term balance of payments relief will help Zaire buy time to reform its fiscal and monetary policies and to stabilize its economy. It is recognized, however, that with an outstanding foreign debt of \$2-\$3 billion, full recovery of the balance of payments will depend heavily on further consistent improvements in the price of copper.

PART II (cont'd)

It is important to emphasize that the economy of Zaire is showing signs of severe strain as a result of the financial constraints under which it is currently (and probably for the near future) forced to operate. For example, fuel supplies are very limited, with priority being given to the Kinshasa, Lubumbashi, Likasi, and Kolwezi areas. Vehicles and spare parts are very scarce, and government workers from a few departments are experiencing long delays (up to three months in some cases) in receipt of salary payments.

Even the most optimistic economic projections point to a protracted period of recovery involving 3-4 years. It is in the long-run interest of the GOZ to reduce its import requirements, especially in the agriculture sector. Based on discussions with GOZ representatives at all levels, there is a clear awareness of this need.

B. The Agricultural Situation:

The reader should refer to the Development Assistance Plan (DAP) for Zaire, dated December 1974, for a more complete discussion of Zairian agriculture. Salient features of that agricultural system may be summarized as follows:

- Seventy percent of the total population is employed in agriculture.
- There is a fairly steady movement of people out of the countryside. GOZ planners estimate that the ratio of agricultural producers to urban consumers will have declined to 1.3:1 by 1980.
- The contribution of agriculture to monetized GDP is low (18%).
- Agricultural exports account for less than 17% of total export earnings. (At independence, agricultural exports accounted for 39 percent of Zaire's total exports.)
- Total agricultural production declines sharply in post-independence years, and did not attain pre-independence levels for most crops until the late 1960's; it has leveled off or declined since 1975.

PART II (cont'd)

- Per capita production is declining as total production stagnates and population increases.
- Declining per capita production has necessitated the importation of immense tonnages of food (e.g., 150,000 to 200,000 MT of corn per year in the 1973-1975 period), all of which, except for wheat, Zaire has the resource potential to produce.
- There is a shortage of trained manpower to fill professional, managerial, and technical posts in government agencies and private enterprises.
- The problem of cadre is particularly severe in the Department of Agriculture, where the salary scale is generally lower than many other GOZ agencies.
- The rural transportation network has never recovered from post-Independence destruction and has been inadequately maintained; thus, much potential agricultural production has no way to reach consumer markets.
- Agricultural extension services are ineffective due to lack of direction, inexperienced personnel, few resources, and little new information to extend.
- Agricultural research, with the exception of limited programs in corn, manioc, and a few of the export crops, is held to almost a stand-by basis, due largely to the scarcity of trained, experienced researchers, and limited financial resources.
- Marketing has been hampered by confused pricing policies, and inexperienced, inadequately supported commodity agencies.
- Government policies designed to achieve political or social objectives have been in some cases counterproductive to agricultural production (e.g., the Zairianization decrees of late 1973 seriously affected numerous small traders who brought most agricultural products to market.)
- Limited Department of Agriculture operational (non-salary) and investment budgets.

GOZ officials, particularly those of the Department of Agriculture, are painfully aware of these deficiencies, and have undertaken a number of measures to improve the agricultural situation. They have:

PART II (cont'd)

- established an Agricultural Stabilization Committee at the highest level of the government to study and coordinate agricultural policy and investment;
- stated an intent to substantially increase government attention and investment in agriculture (a five-fold increase in the GOZDA budget is a frequently cited figure).
- revised Zairianization decrees to a degree sufficient to induce expatriate management to return.
- reduced most import taxes on agricultural inputs.
- increased farmer floor prices for most crops, and in general attempted to improve pricing policy (though much remains to be done to improve coordination and timing).
- strengthened the statistical and planning services of the Department of Agriculture.
- recognized the need to strengthen food production, in contrast to earlier emphasis largely on export crop production.
- encouraged aid agencies to concentrate development efforts in the food production sector.
- coordinated road and transport rehabilitation priorities to conform to agricultural development and food production efforts.

In normal times these measures would contribute to a substantial improvement in agricultural production at an early date. Unfortunately, their implementation coincides with a national economic crisis of immense proportions. Impinging most directly on agriculture is the current drastic shortage of foreign exchange. Neither new equipment and trucks nor the spare parts needed to keep old equipment operational can be purchased. Gasoline and diesel fuel are disappearing from the countryside, and when available, may cost \$5 a gallon. Foreign technicians, welcome again with the relaxation of Zairianization, cannot be paid. These conditions, though considered temporary, have existed long enough to seriously affect the rural economy.

C. Department of Agriculture (DOA)

The Department of Agriculture is responsible for carrying out the following activities aimed at expanding agricultural production:

1. Establish general agricultural production policy;
2. Establish policies regarding the pricing, marketing and storage of agricultural crops;
3. Assist organizations under its control and to support the operation of an adequate extension service; and
4. Carry out agricultural research on all crops.

The Department is headed by a Commissioner of State for Agriculture. Under him, a Director General is in charge of five directions (see figure 1), one administrative and four technical. These include:

- Administration and Finance
- Agricultural Studies and Policy
- Agricultural Production
- Livestock
- Infrastructure

The Department has a total staff of approximately 9,900 nation-wide. Of these, approximately 1,155 are located in Kinshasa with the remainder located in the nine regions. 1/

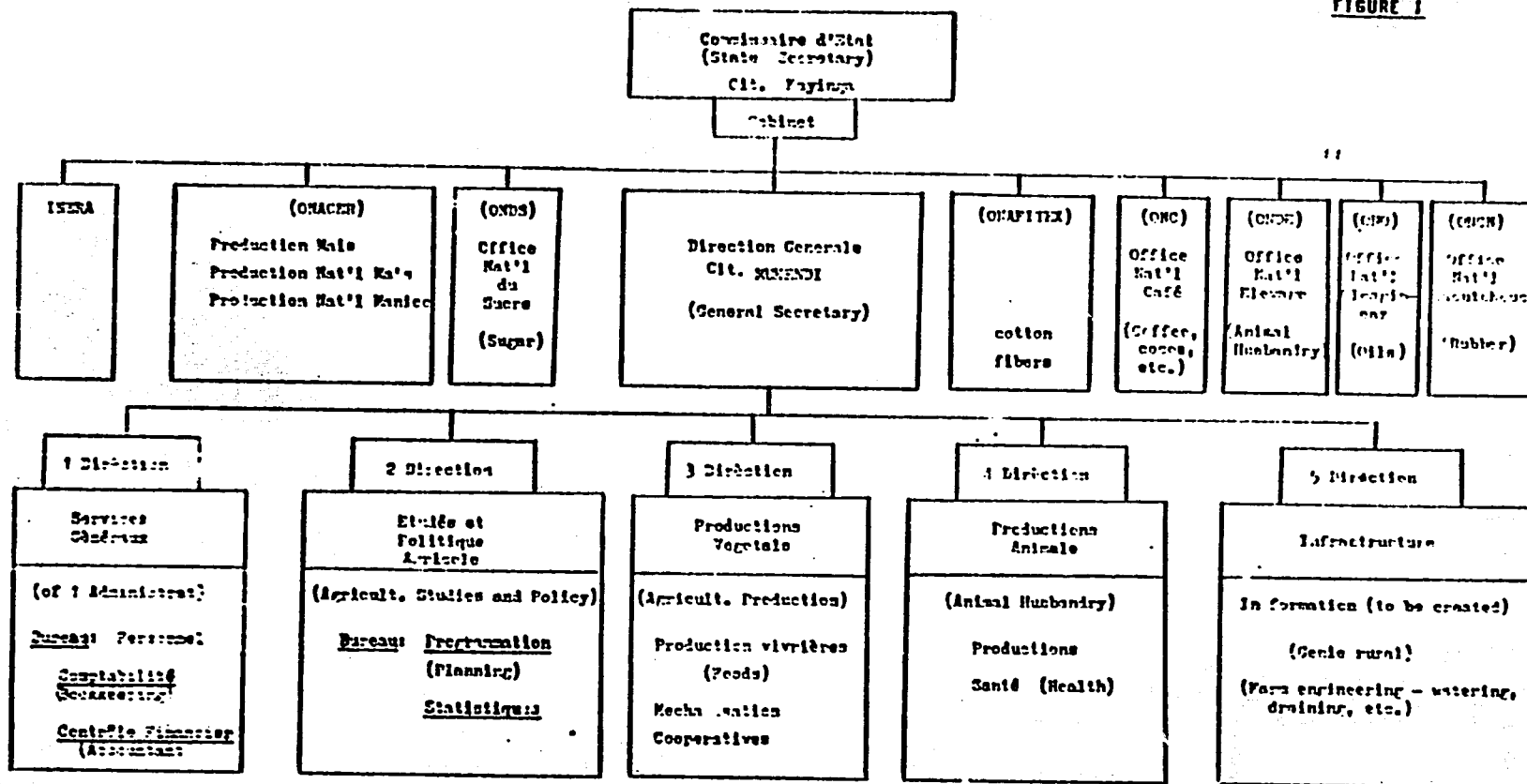
The DOA investment budget expanded nearly tenfold between 1970 and 1976. The most dramatic increase could possibly occur in this fiscal year's budget, which projects a fourfold increase over 1975 (\$-20.3 million vs. \$ 4,96 million). In view of the GOZ's current financial crisis, however, this projected increase may not be fully realized.

Its operations nation-wide are carried out within a hierarchical organizational structure reaching from the Department headquarters in Kinshasa down to the village level. (See Figure II.) However, patterns of authority and responsibility between the DOA headquarters and the regional offices appear unclear and, in some cases, inconsistent. Promotions and salary decisions are made at headquarters; budget and technical decisions are made by the Department and sub-regional governments; and allocation decisions are made by regional and sub-regional governments.

With the exodus of foreign Belgian technicians following independence, the Department lost much of its effectiveness because no one had been trained to take their place. Until recently only very slow progress has been made to rectify this situation for one reason because of the relatively low priority which was placed on agricultural development. Qualified personnel are in short supply, and facilities and equipment have deteriorated badly. This has resulted in a steady deterioration in the level of services provided to farmers. In this context, the DOA has

1/ Bas-Zaïre:	1,055	Shaba:	643
Bandundu:	1,823	Kasai Occ:	804
Equakin:	1,225	Kasai Orient:	836
Haut-Zaïre:	807		
Zibu:	1,352		

FIGURE 1



ORGANIZATION OF MINISTRY OF AGRICULTURE

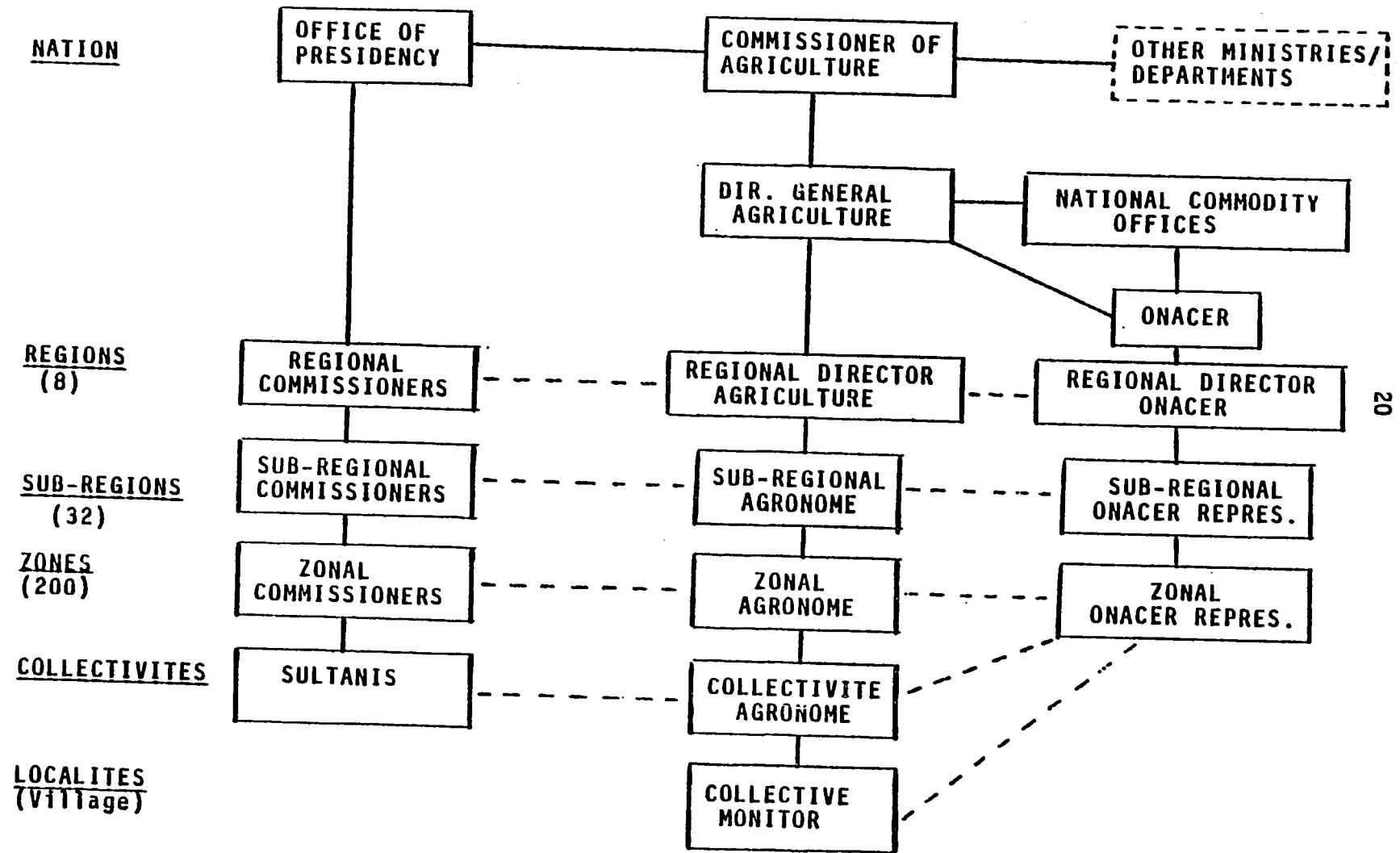


FIGURE II

had to place heavy emphasis on regional or local projects (there are currently more than 30 under way) rather than country-wide development activities .

The GOZ/DOA is acutely aware of its manpower gap and has made a concerted effort, assisted by AID and other donors, to bridge that gap. At the current rate of growth in staff members with university training of nearly 100/year, the DOA will far exceed projections (300 by 1980) contained in the ten-year plan. There are currently 247 staff members with three or more years of university training. There are approximately 700 staff members with at least secondary school degrees.

Notwithstanding the considerable progress being made in terms of improving the education level of its staff, it is important to point out that most of the persons involved are relatively young and inexperienced. The true impact of this effort may therefore not be realized for some time. In the meantime, it is important that staff training continue at a rapid pace.

The DAP and the IBRD agricultural survey as well as other studies have emphasized the serious nature of the trained manpower gap, and the need to integrate disparate activities through the development of a public sector strategy in agriculture.

Since 1972 AID has assisted the DOA to improve its project analysis, design, implementation, and evaluation capability under project 050. An expansion of the objectives of this institution-building project has been proposed under a new project 052. In addition, AID is proposing to assist the DOA in developing its research arm, Institut National pour l'Etude et la Recherche Agronomique (INERA), under project proposal 064. Also Dodrons Management Project.

The objective of this project, to provide a replicable rural development approach, supported by its underlying training and information components, is completely in concert with this training need.

The National Cereals Office (ONACER) under the direction of the Department of Agriculture, has been assigned responsibility for supporting the orderly marketing, and the production of cereal grains in Zaire. The office was formed by presidential decree in January 1974. Its professional staffing was drawn originally for the most part from the National Maize Program (PNM).

The conception of the office at the time of its creation was to establish a state organization with the capacity to market all commercialized rice and corn following the Zairianization in late 1973 of all trade and commerce. With the accumulated experience of three buying campaigns behind it, ONACER has changed its basic orientation from establishment of a state marketing monopoly to that of a state marketing board. At the present time the GOZ is considering a revised statute for ONACER (drafted and recommended by the agency itself) which :

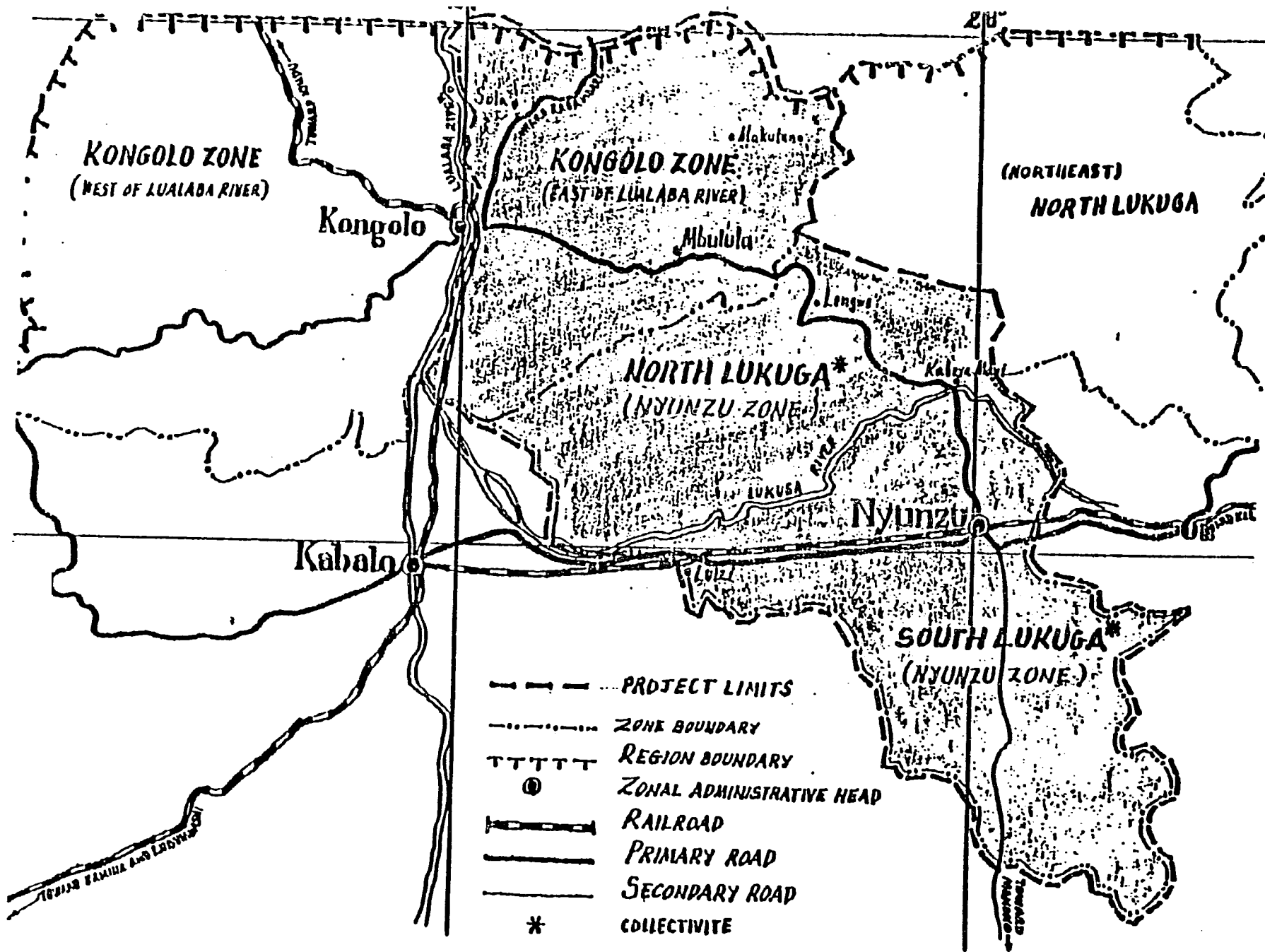
- abandons the idea of monopoly control in favor of direct

participation at substantially reduced levels in producer and consumer markets with the objective of stabilizing prices in those markets.

- provides for the establishment of an ad hoc consultative committee to advise the GOZ, particularly the Department of National Economy, on matters pertaining to pricing of cereals and of milled products. Such a committee would be composed of representatives from the commercial sector, transportation and the milling industry as well as government officials. The responsibility for convening and reporting to the GOZ would be vested in ONACER.

The Office is headed by a young professional who was originally trained by and rose through the ranks of the National Maize Program. He is assisted by a technical advisor in grain marketing provided by USAID. ONACER headquarters is divided into five services: Administration, Finance, Marketing, Technical and Industrial Processing. Seven regional offices directing a total of 18 buying agencies make up the marketing structure in the field. Regional offices are staffed with not over 14 employees (laborers excepted) and agencies not over 6. In an effort to tighten administration and management of the agency the delegate general has:

- reduced the number of employees from 409 to 300 and set specific limit on the staffing of regional offices and agencies;
- strengthened the financial office in Kinshasa; the Unit is now headed by a US trained economist;
- instituted a new system of inventory, stock, and fiscal control which will enable the agency to keep a current account of its financial and stock situation.



PART II (cont')

D. DESCRIPTION OF THE PROJECT AREA1. OVERVIEW

The project area is located 110 to 250 kms. west of Lake Tanganyika, approximately 27° - 28° 10' west, 5° - 6°40' south. It lies in Shaba Region, Tanganyika sub-region, and includes Kongolo Zone east of the Lualaba River and two-thirds of Nyunzu Zone (excluding most of the section northeast of the Kongolo-Nyunzu main road). This area, which has the highest potential for increased maize production in the two zones, covers approximately 15,000 square kms., with a total farm population of 131,500 people.

As early as the 1920's, North Shaba was intended to be the breadbasket for the mining communities of South Shaba. With its varying ecological zones, which range from fertile forest areas to the drier savannah, the area can be, as it was in the 1950's, a major source of maize, manioc, palm oil, rice, peanuts, fruits, and vegetables. Because of neglect, the supporting agricultural services and infrastructure have deteriorated badly and agricultural production has dropped significantly.

Nevertheless, there are many local infrastructural, socio-cultural and agricultural strengths on which to build an integrated agricultural development project. From the colonial period there exists a town and rural infrastructure (including a well-laid-out road network) which will require rehabilitation and a minimum of new construction. Perhaps even more important are the human resources of the project area; there are skilled farmers and workers, as well as strong extended family and traditional groupings with a history of collectively solving local development problems.

PART II. D. (cont'd)

2. AGRICULTURAL DEVELOPMENT HISTORY

In the 1920's the North Shaba area was intended to be the bread basket for South Shaba, sending the produce from Kongolo/Kabalo via river steamer to Bukama and thence by railroad to the mining population. Dry season hindrance of river transport, the completion of the railroad to Kasai (which promptly took over the food market, offering dependable year-round supplies), and the Great Depression in the late 20's forced North Shaba to switch to cotton.

During World War II large manioc quotas were demanded and fulfilled, with the high export level continuing after the war. In the 1950's the area again expanded foodstuff production under increased colonization, agricultural extension efforts, the small-farmer Paysannat system (1954-1960), and the completion of the Kongolo/Kabalo-Lubumbashi railroad link. Thus in 1959, eastern Kongolo Zone alone exported 285,000 MT of manioc; 14,000 MT of maize; 5,000 MT of rice; and 4,600 MT of peanuts. Clearly, the area had started to recover its position as supplier of foodstuffs for the mining area.

Then came seven years of civil wars (1960-1967) which saw the area (located, unfortunately, near the border of the secessionist Katanga Province) become a battleground for the many armies which swept through eastern Zaire during that period.

After nine years of relative neglect, during which time no large reconstruction or development project has been launched in the area, there still remain significant infrastructural, socio-cultural, and agricultural strengths upon which to build a worthwhile and productive integrated agricultural development project.

Much needs to be done. In 1959 -- a year when manioc and cotton were emphasized -- eastern Kongolo Zone still exported seven times the amount of maize it did in 1975, when maize was a priority.

PART II. D. (cont'd)

3. PHYSICAL ENVIRONMENT(A) Climate:

Average annual rainfall is 1100 to 1400 millimeters, higher in Kongolo Zone and lower in Nyunzu Zone. The dry season lasts for 2 1/2 to 3 months, June through August (slightly longer in Nyunzu). There is no record of drought or irregular rainfall in the project area. Temperatures range from 17°C to 32°C, with an annual mean temperature of approximately 25°C.

(B) Soils:

Kongolo is marked by evidence of substantial historic volcanic activity. Volcanic cinders, lava flows, basalt plains, lateritic soils, and collapsed and extant volcanic domes are evident. The dominant soils are oxisoils derived mostly from deeply weathered parent materials. Relief from this soil base has been and is afforded through decomposition of vegetation through time. Soils are richer in organic content in forested and alluvial depressions, valleys, river plains, at the foot of steep hills, and on gently sloped hillsides and benches. The forested areas, and those under systematic rotational cultivation, apparently provide conditions for organic regeneration of the soils. Most of the zone is under heavy to moderate vegetation. Mountainsides and hilltops are not cultivated and natural vegetation here is stunted, since the topsoil has washed down. Throughout the project area, most farm land lies between 600 and 900 meters elevation.

Nyunzu soils are dominated by oxisoils and are generally a sandy loam. Organic content is higher in the clear forest of Shaba than in the savannah, which has a low mineral nutrient reserve and a high capacity to fix phosphorus in unavailable forms. Nyunzu also features narrow strips of alluvial deposits along river beds.

General: Detailed scientific analysis and description of soils has not yet been carried out in the project area. Maximization of project success will require such an analysis within the first year of the project.

PART II. D. (cont'd)

(C) Ecological Zones:

Project area farmers distinguish various ecological zones used for agriculture. Nchi kavu is the "dry land" savannah where weeds grow more tenaciously. In "forested lands" (mwitu/mwihuru) the cultivation of certain foods and cash-crops requires less labor input using existing agricultural technologies. The whole project area includes drier and wetter types of forest. Wet-land farming is done pembeni ya mitoni ("near the rivers/creeks").

-- Dry-land savannah, found throughout the project area, is utilized in most of Nyunzu Zone for the local population's prime food-producing farms, where manioc, peanuts, and certain fruits, legumes, and other vegetables are grown. In most of eastern Kongolo Zone, the savannah is currently a secondary food-producing area, though the full range of crops (including maize) is grown there, with the exception of rice. Cotton is preferentially planted in the savannah throughout the project area. During the period 1930 to 1960, savannah lands provided a major share of the large agricultural export production.

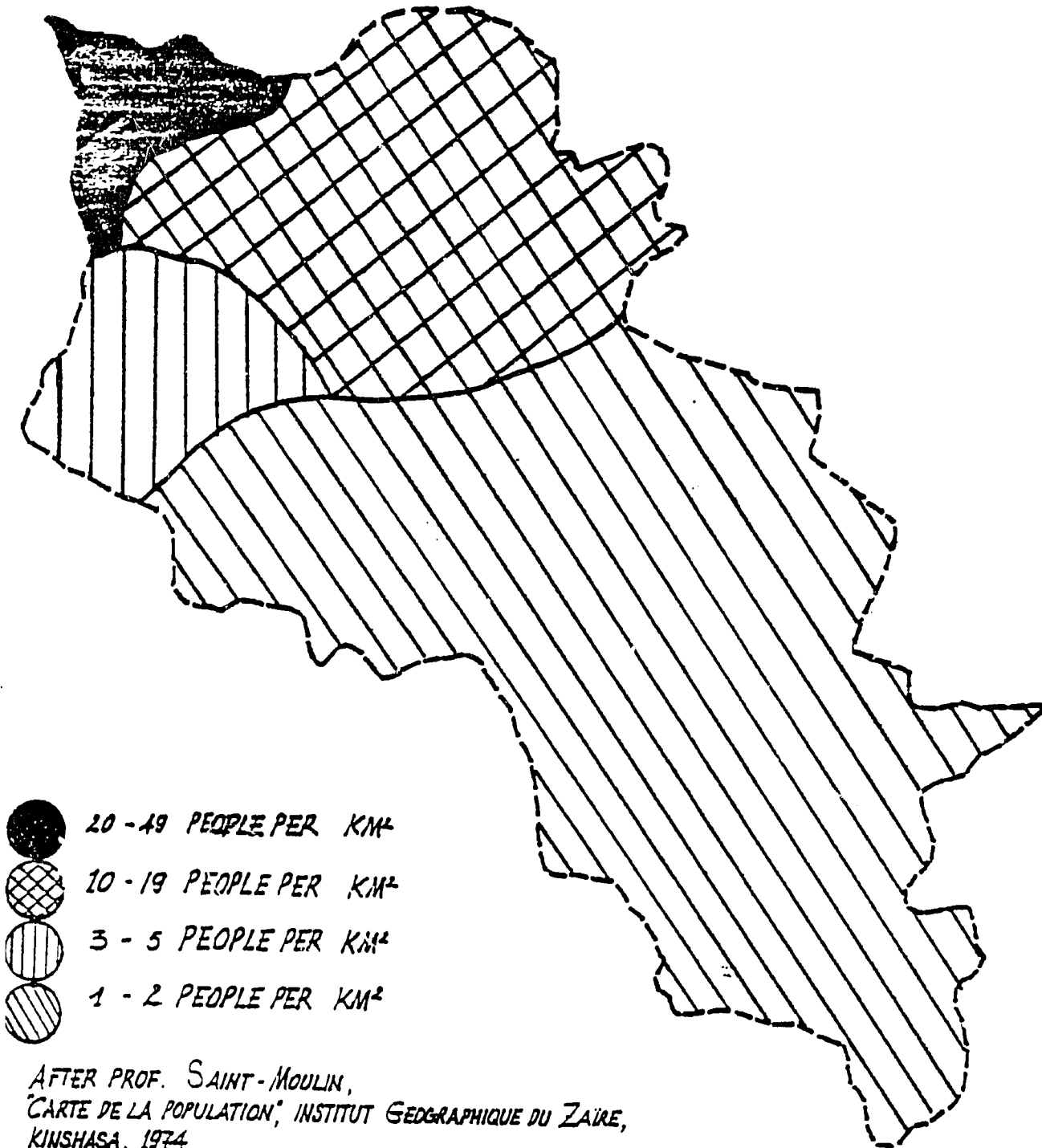
-- Nyunzu and the southwestern Kongolo project area contain the drier forest ("clear forest of Shaba") where maize is cash-cropped once annually, and where some food crops are grown to feed the farm population which lives there six months per year. This forest is rapidly being depleted in South Lukuga, under the onslaught of maize production. After several harvests, the land is usually abandoned, with no intention of re-use, and no special fallowing or other protective measures being followed. Thus, the former fields dry out into a savannah-type land.

-- Wetter forest areas extend throughout Kongolo and a northeastern North Lukuga (Nyunzu) transition area. Two maize crops, rice, palm oil, manioc, cotton, sugar cane, legumes, several fruits, and many vegetables are grown in a rotational and fallow land system where wet forests of oil palms protect and enrich the soil.

-- Kongolo and Nyunzu both have low-land river valleys with high organic soil content and excellent potential for maize and wet-land rice cultivation.

POPULATION DENSITIES

BASED ON 1970 CENSUS DATA.



AFTER PROF. SAINT-MOULIN,
"CARTE DE LA POPULATION", INSTITUT GEDGRAPHIQUE DU ZAIRE,
KINSHASA, 1974.

PART II. D. (cont'd)

4. DEMOGRAPHY(A) Census Data:

The project area in Kongolo Zone has a population density ranging from 3 to 49/km², while the Nyunzu density is 1 to 2/km². (See Population Densities Map.) Kongolo Zone east of the Lualaba River has a population of 86,000; the project area in North Lukuga (Nyunzu Zone north of the Lukuga River) has 18,300; and South Lukuga, 26,700; for a total project area population of 131,500 (excluding 23,100 in Kongolo town; 29,000 in western Kongolo Zone; and 6,700 in northern/eastern North Lukuga).

To develop data useful for agricultural development, the general census information should be supplemented with a sampling of farmers and farming units, using census categories relevant to local social organization and farm work patterns.

(B) Farm Population Distribution:

In South Lukuga the farm population lives mainly within 35 kms. of the railhead in Nyunzu town (efficiently served by the existing road network and the healthily competitive buying situation), with a more lightly populated southern area 60-90 kms. away. Throughout South Lukuga, farmers maintain their "official" residences on a main road, which they inhabit only from October to early April. During the maize cash-cropping activities, late April to September, farmers live in a "less permanent" residence to be near their forest farms. The location of these farm villages changes every 3+ years as farmers follow the receding forest. Pygmy workers live near their employers; Pygmy farmers tend to live in their own villages.

In Kongolo Zone, the most fertile and densely populated maize-producing areas begin only 35 kms. northeast and 40-50 kms. east of Kongolo town. Some major production areas lie 90-110 kms. from the railhead; increased agricultural production is currently heavily constrained by the poor condition of the otherwise excellent road network serving the numerous year-round villages, as well as by other high transport costs to buyers.

(C) Major Population Shifts

Two major kinds of population shifts are apparent in the project area. First, a slow, long-term in-migration to lightly

PART II. D. (cont'd)

populated Nyunzu Zone from Kongolo Zone dates from pre-Independence times: job-seeking and moving to live/farm with relatives were (and are) apparently the major motivations.

Second, large numbers of former North Lukuga residents have arrived in South Lukuga (the great majority have settled in Bayoro Groupement near Nyunzu town) in the last fifteen years. Some came because the commercial market for agricultural products has been severely limited since the 1961 destruction of the Kabeya-Mayi bridge. Others have come more recently as a result of social disturbance in northern North Lukuga in the late 1960's and early 1970's.

Nyunzu businessmen and farmers on both sides of the Lukuga River predict that a massive back-migration will occur after the Kabeya-Mayi bridge is finished in mid-1977. The forest for maize cash-cropping would be exhausted after two more years in South Lukuga, and the farmers are eager to return to their more fertile North Lukuga lands. Their relatives are ready to welcome them back with the economic prosperity that will accompany their return.

Although the details of this major population shift are difficult to predict, project activities have been designed to accommodate these changes, if necessary.

PART II. D. (cont'd)

5. CROPPING SYSTEMS

Cropping systems differ greatly throughout the project area, requiring a research/extension program sensitive to local variation and complexity. Nevertheless, in broad perspective the Kongolo Zone crop production systems can be clearly differentiated from the basic ones used throughout South Lukuga, with areas of North Lukuga as special transitional cases.

In densely-populated Kongolo Zone an intricate permanent road network, now in disrepair, attests to the pre-civil-war period of agricultural development with high crop production for regional and national export. Maize, rice, palm trees (along with the ever-present manioc, cotton and peanuts, as well as a host of other crops) are cultivated in integrated long-term systems of crop rotation, strip farming, and intercropping in two (some places three) different ecological zones.

Two crops of maize per year, or a maize/rice sequence, are planted in the forest and the river bottoms (with adjacent strips and intercrops of beans, new oil palms, bananas, papayas, vegetables, etc.). A maize crop may be planted in savannah land (near beans, peanuts, cotton, potatoes, and other vegetables, etc.). After three to five years of forest maize, four years of manioc, and some five years of fallowing, the land may be recleared and the oil-palm branches (guardians of soil moisture content) cut back, in readiness for another round of maize planting. In the savannah, maize often comes after cotton and can be followed by manioc or a peanuts/manioc sequence. Maize is a favored crop because it heavily predominates over manioc in the staple boiled-flour preparation called bukari in Kiswahili.

(A) South Lukuga, Nyunzu Zone:

By contrast, in South Lukuga, Nyunzu Zone, farmers annually plant one crop of maize in a generally drier forest land, mainly as a cash crop, because the local bukari is usually pure manioc flour, or, especially for recent migrants from North Lukuga, a predominant manioc/partial-maize mixture. (See map: "Maize/Manioc Consumption: Bukari", p.) Farmers often plant maize by itself in large fields, sometimes aided by a Pygmy labor force, following the receding clear forest of Shaba (i.e., not returning to fallow land for maize cultivation) and

PART II. D. (cont'd)

living near the maize area in farm villages six months per year.

Some food crops -- such as manioc, peanuts, potatoes, beans, and other vegetables -- are planted near the farm villages (more if the residents, in fact, stay year-round), but the cotton and the heaviest manioc, peanut, beans, etc., plantings are in the savannah lands near the permanent ("official") roadside villages. Rice is rarely cultivated, and oil palm trees are found largely in the villages themselves, though both crops do appear where former North Lukuga/Kongolo residents have settled.

Three examples of cropping systems in the project area are described below. This particular case material has been chosen to further specify some basic contrasts between cropping systems in Kongolo Zone, a transition area, and South Lukuga, Nyunzu Zone. It also illustrates the current know-how of farmers in the project area.

(1) Cropping System Kongolo Zone: Mbulula/Lunga/Kigumba/Nyanqa:

Lwamba Nongolola of Mbulula farms two hectares of maize with the help of his three wives (each of whom has one-half hectare for herself, for a 3 1/2 hectare maize total), as well as manioc, peanut, cotton, etc., fields and palm forests. They provide an example of the Kongolo cropping system in successful operation. They and other farmers near Mbulula, Lunga, Kigumba, and Nyanqa were interviewed to abstract a summary of the farm production systems in use there.

In the dry season (June and July) any new forest, river bottom, and savannah lands are cleared and/or fallow land (5-7+ years) is cleaned and the oil palms trimmed. The lands are burned in August to kill insects and as a second clearing/cleaning stage, leading to the final August removal of remaining obstacles such as partially-burned tree trunks. (The field preparation occurs throughout the project area, with local variations in the kind of land to be planted.)

(a) Forest and River Bottom Farms: Annual Cycle

<u>Crop</u>	<u>Plant</u>	<u>Weed</u>	<u>Harvest</u>
Maize I	Late Sept. after 3-4 good rains	Oct., Nov., Dec.	Jan. (or later)

PART II. D. (cont'd)

<u>Crop</u>	<u>Plant</u>	<u>Weed</u>	<u>Harvest</u>
Maize II	January	Feb., March	April (or later)
(Three crops of maize in a few river bottom locations)			
RICE	Dec.	Jan./Feb.	May/June
(Two crops of wetland rice in irrigated river bottom land at Sola.)			
Manioc	Sept.-Mar.	When weeds high	Year-round after 12-15 months; continues 3 years.
Peanuts	Sept.-Oct. and later	6" high	Jan., Feb. & later
Beans	Sept., Jan.	after 1 month	Nov., Mar.
Vegetables*	Sept.-May	various	Various, year-round; less July
Papayas	Sept., Jan.	With other crops	Oct.-July, after 2 years & continuing for several years
Bananas	Sept., Jan.	With other crops	After 12-18 months

*Vegetables can include: Greens (Lengalenga, Makoma, Sombe, Matembela), Sweet Potatoes, local Cucumbers, Hot Peppers, Okra, Tomatoes, Onions, and other foods of European provenance, such as Cabbage, Potatoes, Bell Peppers, etc. Four kinds of Beans are available, and two kinds of Peanuts. In addition to Papaya, Sweet Bananas, Plantains and Oil Palms, there are also Mangoes, Oranges, Lemons, Mandarin Oranges, and Pineapples. Millet is occasionally grown, now mostly for beer. Soybeans are grown at Sola.

After two to four big rains in September, the maize is planted, four or five seeds to a hole (either with random 1 meter stepping or closer together in rows). If the rains are late, the seeds may be planted in October, but a three-week delay after the heavy rains begin can significantly decrease yields, according to local experience, so the most successful farmers time their planting accordingly. Oil palms, bananas, and papayas, as well as other vegetables, are intercropped with maize in September/October or planted

PART II. D. (cont'd)

around field borders. Peanuts are planted in separate strips as are potatoes (and later, some of the rice).

The maize is weeded once or twice prior to December, when it is weeded a final time, especially if rice is then planted in with the corn. (January rice planting reduces yields: birds will eat the seeds in the 3-week dry season.) Rice is also planted separately, especially on wetter forest and river bottom lands.

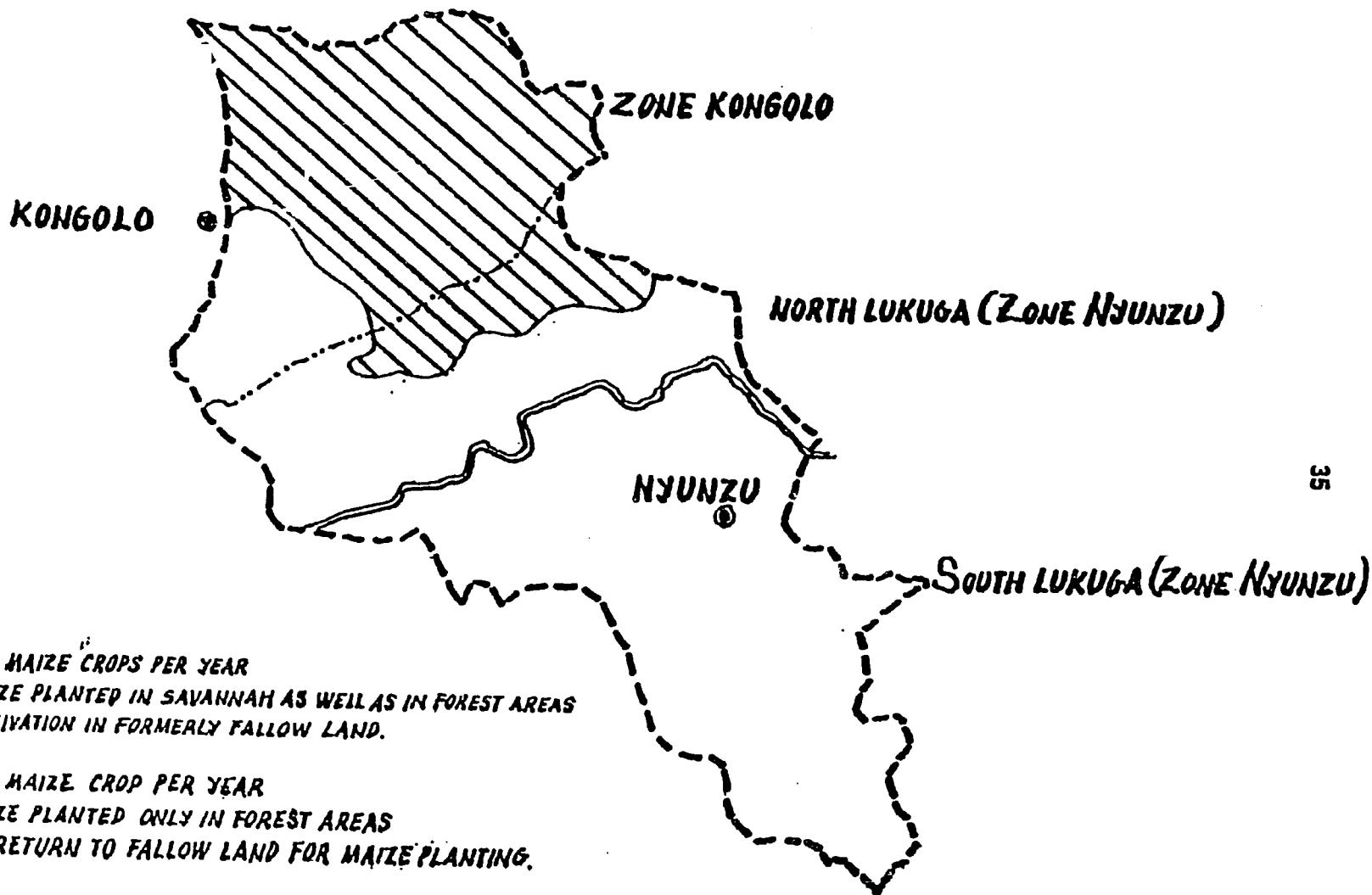
Maize is harvested and stored in closed field sheds or in village houses during January if a second maize crop is planted, or if rice has been intercropped; otherwise the maize may be left in the fields until February, March or even April, since buying has not started in recent years until May. Second crop maize can be harvested from April on, while rice (planted in December, weeded in January/February) is harvested in May/June. Peanuts planted in September/October (weeded at 6" height) will be harvested in January/February (perhaps later, if planted later). Bananas mature after one year to 18 months; papayas after two years (production continues for years); beans and big peanuts (njugumawe) after two months; citrus and mangoes after several years. Vegetable harvests vary such that there is a steady, balanced diet year-round, though there are fewer vegetables in the dry season. More fish, game, and palm oil are consumed.

Manioc cuttings may be planted any time from the September rains until March, intercropped with a final stand of maize, intercropped with peanuts or planted along with the usual papayas, bananas, vegetables, and the growing oil palms (cut back if large), etc. Manioc fields are weeded on no particular schedule: "when the weeds get high." Manioc harvesting starts one year after planting; plants are then productive for another three years, at which time the oil palms continue and the land goes fallow.

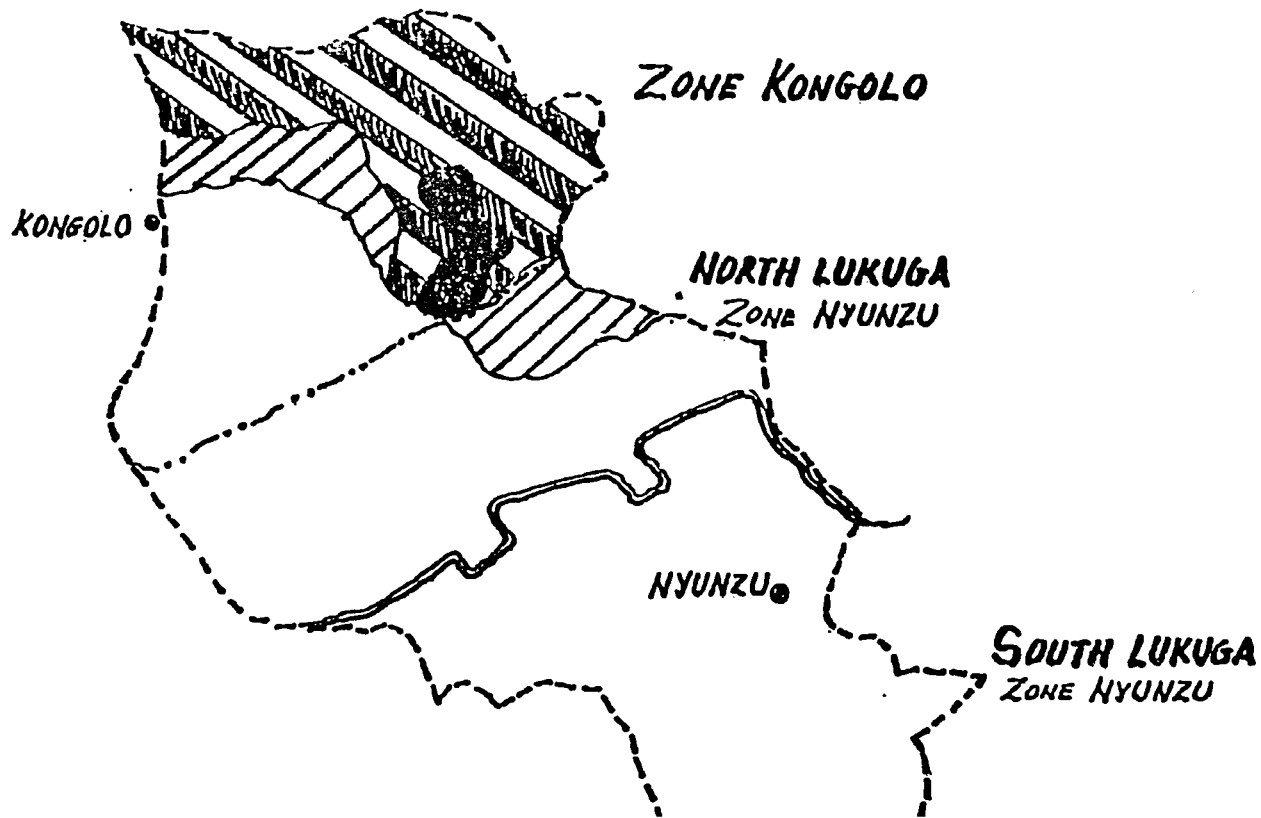
(b) Forest and River Bottom Farms: 12-14+ Year Cycle

<u>3-5 Years</u>	<u>4 Years</u>	<u>5+ Years</u>	<u>Recycle</u>
Maize I/Maize II or Maize I/Rice plus intercropping & strip farming beans, vegetables, papayas, bananas, etc. Oil Palms planted (year one)	Manioc and Oil Palms (some branch pruning to help manioc)	Fallow. Oil Palm forest; no weeding needed.	Clean land, prune palm branches, plant maize (thin out palm trees = palm wine) Oil palms continued.

MAIZE PRODUCTION SYSTEMS



PALM OIL PRODUCTION AREAS



- EXTREMELY HIGH
- ▨ HIGH
- ▩ MODERATE
- SOME PRODUCTION AT FRINGES OF "MODERATE" AREA AND IN SCATTERED AREAS IN NORTH LUKUGA AND IN SOUTH LUKUGA WEST OR NORTH OF NYUNZU TOWN. VIRTUALLY NONE ELSEWHERE, AWAY FROM VILLAGES.

PART II. D. (cont'd)

Oil palm fruits are harvested year-round (with dry season emphasis) except during the heavy rains from late November to early January. Planted along with other crops after a field is cleared, and weeded until the tree can itself shade out the weeds, a single tree starts producing around the fifth year (i.e. 3+ bunches of fruit annually) and will continue for decades. High oil palm density creates a wet forest environment, thus preserving moisture, retarding the leaching process, and aiding organic regeneration of the soils. Oil palms in the Kongolo area are considered a precious ancestral heritage. They are carefully planted, transplanted, nurtured, weeded, pruned, thinned (yielding palm wine) and tended with the support of complex social and legal formulations under patriline guidance. This complex procedure has at least a 300-year/10-12 generation time depth.

It appears to be no accident that the areas with a strong patrilineal organization match with those of palm oil production. (See Social/Cultural Context section below.) Volcanic soils may be another relevant factor. Oil palm husbandry and effective fallow land use appear to be mutually reinforcing. (See maps: "Palm Oil Production Areas;" "Local Social Organization;" "Maize Production Systems."

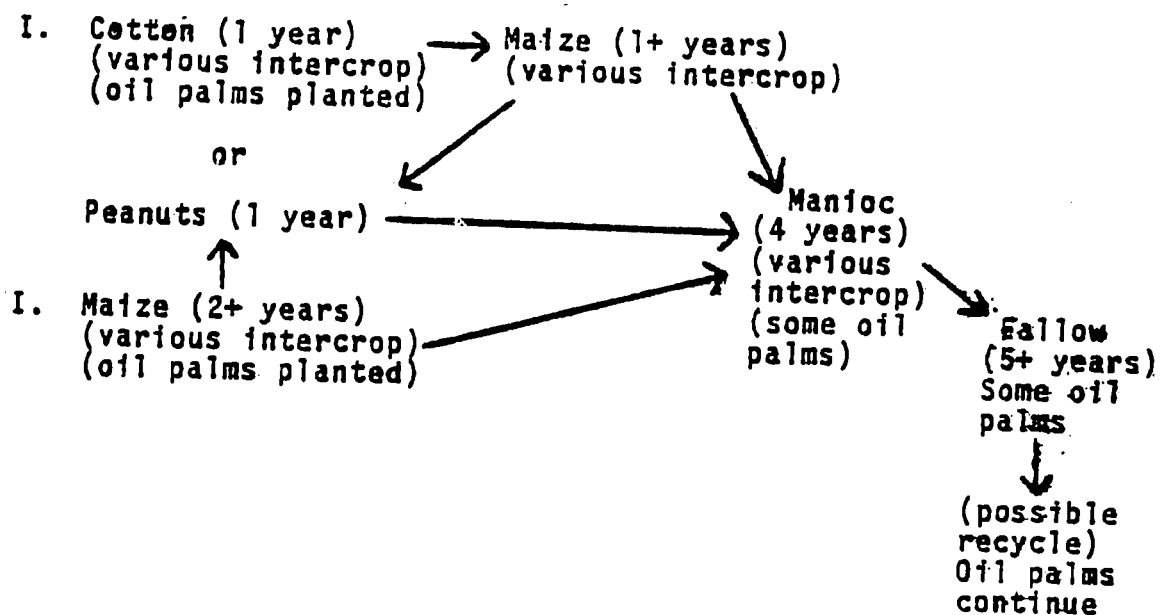
(c) Savannah Farms: Annual Cycle

<u>Crop</u>	<u>Plant</u>	<u>Weed</u>	<u>Harvest</u>
Cotton	January	Feb/Mar	June/July
Maize	Sept., Oct. after 3-4 rains	Oct., Nov., Dec.	Jan. or later
Peanuts	Oct./Nov. Jan./Feb.	after 1 month	Jan. - April
Manioc	Oct.-Mar.	When weeds high	After 12-15 mos continues for 3 years
Beans	Sept., Jan.	Oct., Feb.	Nov., March

Vegetables also intercropped; papayas, bananas and oil palms are fewer than in forest and river bottom lands. No rice. There is some second-crop savannah maize: planted in January, weeded in February, with April (or later) harvest.

PART II. D. (cont'd)

In the savannah, land may be cleared October-December for cotton planting in January (sometimes intercropped with beans, etc.), with the harvest starting in June. Maize is then planted the following September/October, followed by peanuts in January/February or the following October. Alternatively, peanuts or maize can be planted first after clearing a new field. Manioc can follow any of these crops (planted as an intercrop or in the following season), and remains for at least four years. Timing of the weeding and harvest parallels and follows the forest/river bottom annual cycle. Fewer papayas, bananas, and oil palms are intercropped in the savannah, but more beans and sweet potatoes.

(d) Savannah Farms: 11-12+ Year Cycle(2) Cropping System South Lukuga, Nyunzu Zone: Kihuya/Ngoy, Mubembe/Koyanza:

From April to October Kasongo Ngoy (who will for some purposes call himself a "Luba"), two wives and twenty Pygmy employees farm six hectares of maize in forest land and two hectares of peanuts and manioc near Mubembe, a large village on a good farm road 24 kms. northeast of Nyunzu. They also plant three hectares of peanuts and manioc, plus a quota of cotton in the savannah near their official residence in Kalundu, on the main Nyunzu - Kabeya-Mayi road (14 kms. from Mubembe), where the family lives from October to April each year.

PART II. D. (cont'd)

Seventy-five kms. south of Nyunzu town, Sangwa Majani and his two wives cash crop two hectares of maize in forest land, and peanuts, manioc and some cotton in the savannah near Tanzania Katoma, a small farm village on a newly-cut farm road. This is 3 kms. from their official residence in Kihua, on the Nyunzu-Manono road, where they cultivate more cotton, peanuts, manioc, and other food crops in savannah lands. The distance between the villages is short, so they travel back and forth a lot, but they basically follow the Nyunzu 6 months/6 months residential pattern.

(a) Farming Systems: South Lukuga, Nyunzu Zone
Farm-Related Residential Patterns

April-October Maize cash cropping; living at less permanent villages in the forest (return briefly in November to weed maize).

October-April Basic cotton, manioc, peanut farming, plus beans, bananas, papaya, vegetables, etc., in savannah near permanent roadside villages.

Note: Some farmers live unofficially at the less permanent villages year-round, maintaining a roadside house for statai requirements only (including cotton farming, taxes, census, etc.).

The less permanent villages are moved every 3+ years as the forest (for maize cash cropping) is depleted.

In Humba, on the Mokimbo-Ngoy road in southern South Lukuga, Nyanda Nkungwa is a Pygmy who works for wages on another man's farm. He also, with the help of his wife, cash crops 1/2 hectare of maize in forest land 3 kms. from their Pygmy/Luba twin villages, where the savannah land cotton, manioc, and peanut farms are located. Friends and relatives in the surrounding area either live in Pygmy/Luba villages, or by themselves in separate villages where Pygmies mainly cultivate their own farms, doing no (or only occasional) wage labor.

These South Lukuga farmers, and others in Mubembe, Kayanza, Kihuya, Humba, and Ngoy, provide an example of the basic farming systems used in this area.

PART II. D. (cont'd)

(b) South Lukuga: Kihuya/Ngoy - Mubembe/Kayanza
"Clear Forest of Shaba" Farms: Annual Cycle

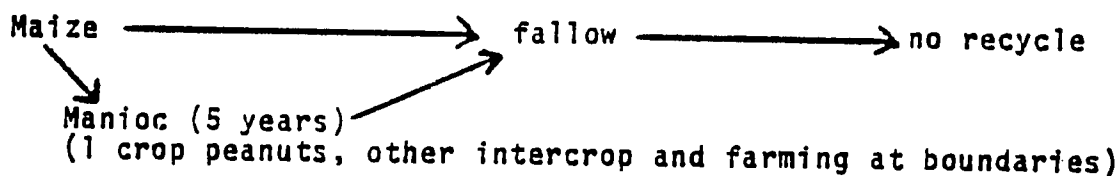
<u>CROP</u>	<u>PLANT</u>	<u>WEED</u>	<u>HARVEST</u>
Maize	Aug/Sept (before or after 1st rain)	Nov.	April
Peanuts	Sept	-	Nov., April
Manioc	Sept, Apr.	When weeds high	After 12-15 months, Nov, Apr-Sept for 4 years

Maize is planted in a field by itself; peanuts, manioc inter-cropped with beans, vegetables, etc. There is some river bottom farming: same cycle. Very little rice is grown though some is planted by recent immigrants near Nyunzu town.

Each year in April almost everyone moves to a less permanent village near the forest land farms, where they start to harvest the maize. Any peanut crop remaining in nearby savannah (or former forest) farms is also harvested, other food-providing farms tended, and sometimes manioc is planted. From May to July new forest land is cleared in preparation for late July/early August burning. Seeds are planted in holes marked off by random stepping (some farmers may broad-cast the seed) in late August/September prior to, or just following, the first rain. Following this, some manioc, peanuts, and other intercrops etc., are planted in nearby savannah lands or in former maize fields.

(c) South Lukuga: Kihuya/Ngoy - Mubembe/Kayanza
"Clear Forest of Shaba" Farms: 2-9 Year Cycle

(2 - 4 years)



PART II. D. (cont'd)

In South Lukuga storage sheds for maize are not always built, and those that are, do not have roofs. Also, the harvest drags on into August, when the remaining crop is often accidentally burned as bush fires and farm fires get out of control. Merchants estimate that 20% of the maize crop is lost through burning each year.

In the more remote areas (southern South Lukuga where buying is slow to start) considerable insect and rodent damage is found both in storage and in the fields. Wild pigs, monkeys and field rats also destroy maize, and elephants can ruin whole fields of maize or manioc. To protect against these animals, people plant everything but maize as close to the villages as possible.

(d) South Lukuga: Kihuya/Ngoy - Mubembe/Kayanza
Savannah Farms Near Permanent Villages: Annual
Cycle

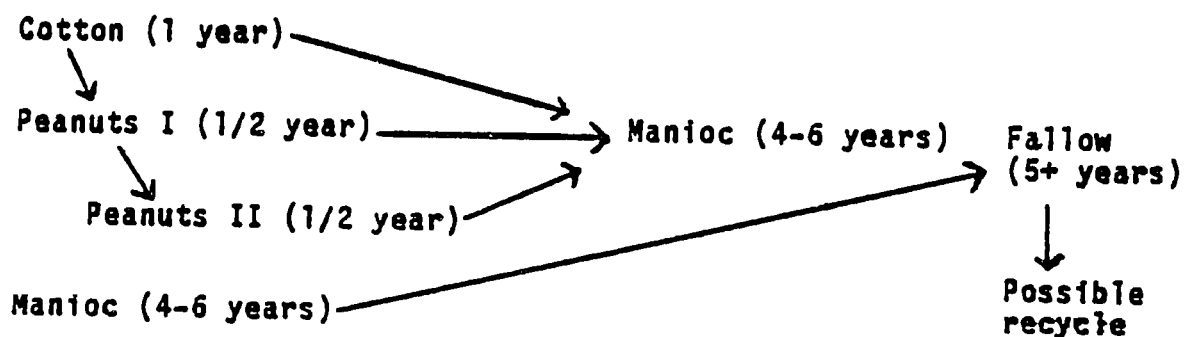
<u>CROP</u>	<u>PLANT</u>	<u>WEED</u>	<u>HARVEST</u>
Cotton	Jan/Feb	Feb.	May-August
Peanuts	Oct., Jan.	Nov., Feb.	Jan or Mar/Apr
Manioc	Oct/Nov-Mar	When weeds high	After 1 year, every month for 3-5 years
Beans	Jan-Mar.	After 1 month	March/April

Papayas, peanuts, beans, vegetables, sesame, etc., are intercropped, strip farmed, or planted at boundaries of manioc. There are very few oil palms except in villages or in fields of immigrants from oil palm areas (settled near Nyunzu town).

Pygmy farmers follow the same cycle.

Nearly everyone returns to their official villages on the main roads in October, at which time the major manioc, peanut and bean (and other crops) planting is done in savannah land. Maize is weeded in November at the forest farms, but otherwise the farmers stay in the roadside villages. There are some who live year-round at the unofficial villages, coming to the main road briefly at cotton planting time in January.

PART II. D. (cont'd)

(e) South Lukuga: Kihuya/Ngoy - Mubembe/Kayanza
Savannah Farms: 10 - 12 1/2 Year Cycle

Manioc cuttings are planted at the same time as the last previous crop. Beans, papayas, vegetables, sesame are intercropped, etc. Oil palms, if any, are usually planted apart, separate from other fields.

Weeding of all crops is kept to a minimum, not being a favored kind of work, either by independent farmers or by hired workers. Weeding difficulties are cited as a major reason for not planting savannah maize, which is viewed as twice as much work, while producing lower yields.

Not all Baluba farmers can afford Pygmy workers, nor are they available in sufficient numbers to work for everyone. Also, not all Baluba farmers have the ability to handle management tasks, and some do not want to have employees. Furthermore, many Pygmies now operate their own farms, having learned the South Lukuga farming systems on the job and deciding they prefer to farm for themselves.

(3) North Lukuga (northwest transition area) Cropping
System: Kahinda, Muquya III, Sulumbu

North of the Lukuga River within approximately 30 kms. of the Kabeya-Mayi crossing (and 15 kms. from the Lufzi/Genda crossing), the cropping systems closely resemble the South Lukuga systems, with minor exceptions, e.g., some rice is produced for export southward. Regardless of basic similarities, the difficult North Lukuga commercialization problems

PART II. D. (cont'd)

sharply distinguish the agricultural situation from that of South Lukuga. North Lukuga must be treated as a separate area for the purposes of agricultural development.

In northwest North Lukuga, an area of transition exists. As in South Lukuga, manioc is more important: it is harvested four years (or more) instead of three, and the manioc percentage in the bukari is still much higher than in most of Kongolo Zone. Also, maize is planted in September after the first good rain, as is sometimes done in South Lukuga, in contrast to the Kongolo practice of waiting for 3 or 4 heavy rains (late September/early October).

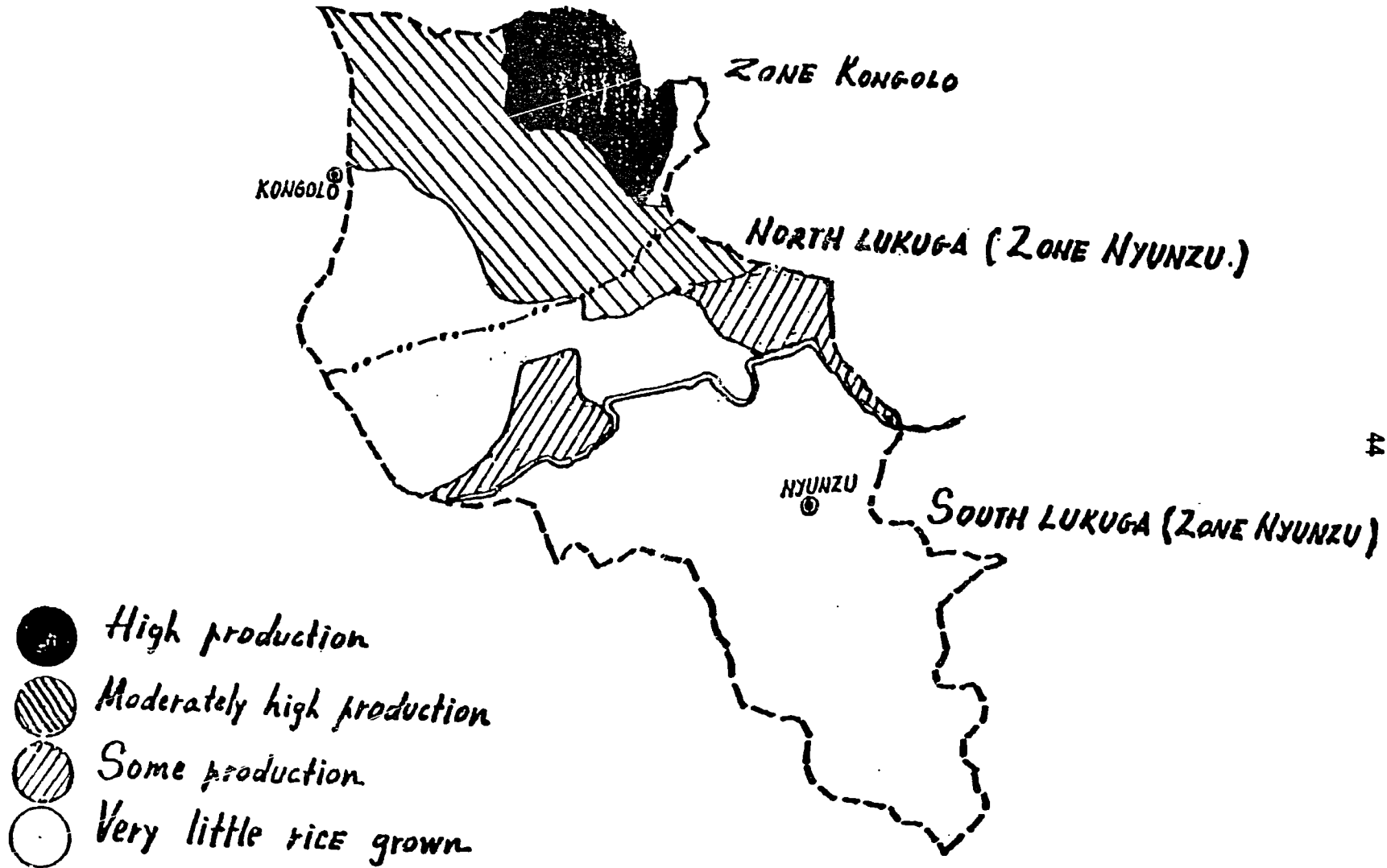
(a) North Lukuga (northwest transition area):
Kahinda, Muquya III, Sulumbu: Forest and
River Bottom Farms: Annual Cycle

<u>CROP</u>	<u>PLANT</u>	<u>WEED</u>	<u>HARVEST</u>
Maize I	Sept (after 1st rain)	October	January
Maize II	Jan/Feb	February	April
Rice	December	Feb/Mar	April/May
Peanuts	Sept/Oct+, or Jan	After 3 weeks	After 2 months
Manioc	Sept - Jan+	When weeds high	Year-round; after 12-15 months, continues for 4 years
Beans	Oct, Jan	Nov, Feb	Dec, March
Oil Palms	Sept/Oct	With other crops	Jan-Nov, after 5 years, and continuing for decades

Vegetables, papayas, etc., are intercropped, strip farmed, and planted at boundaries; bananas, especially, are used as boundary markers.

Note: The 12-14+ Year Cycle is the same as for Kongolo Zone.

RICE PRODUCTION AREAS



PART II. D. (cont'd)

However, there are very heavy influences from the farming systems of Kongolo Zone (excluding the southwest part of the Kongolo project area where farming systems are like those of South Lukuga). Two maize crops annually; savannah maize planted in fallow land; palm oil production; fallow land conservation; more maize in the daily diet; rice production/export, etc., all recall the basic Kongolo cropping system. Farmers in this area look toward Mbulula for agricultural models and as a site of farming system innovation. Still, the farming systems are not exactly the same, nor is the basic social organization for agricultural decision-making, nor the statal administrative interface, nor the total crop-buying situation. This transition area and most of North Lukuga must be dealt with differently than either Kongolo or South Lukuga.

(b) North Lukuga (northwest transition area):
Kahinda, Muquya III, Sulumbu: Savannah
Farms -- Annual Cycle

<u>CROP</u>	<u>PLANT</u>	<u>WEED</u>	<u>HARVEST</u>
Cotton	January	Feb/March	June/July
Maize	} On approximately the same schedule as Forest and River Bottom Farms; likewise for vegetables, papayas, bananas, etc.		
Peanuts			
Manioc			
Beans			

There is no rice. Oil palms grow well, but are not planted quite as much here because of fire danger in dry season. There is some second crop savannah maize -- planted in January, weeded in February, with April (or later) harvest.

Note: The 11-12+ Year Cycle is the same as for Kongolo Zone.

PART II. D. (cont'd)

6. INFRASTRUCTURE(A) Population Centers:

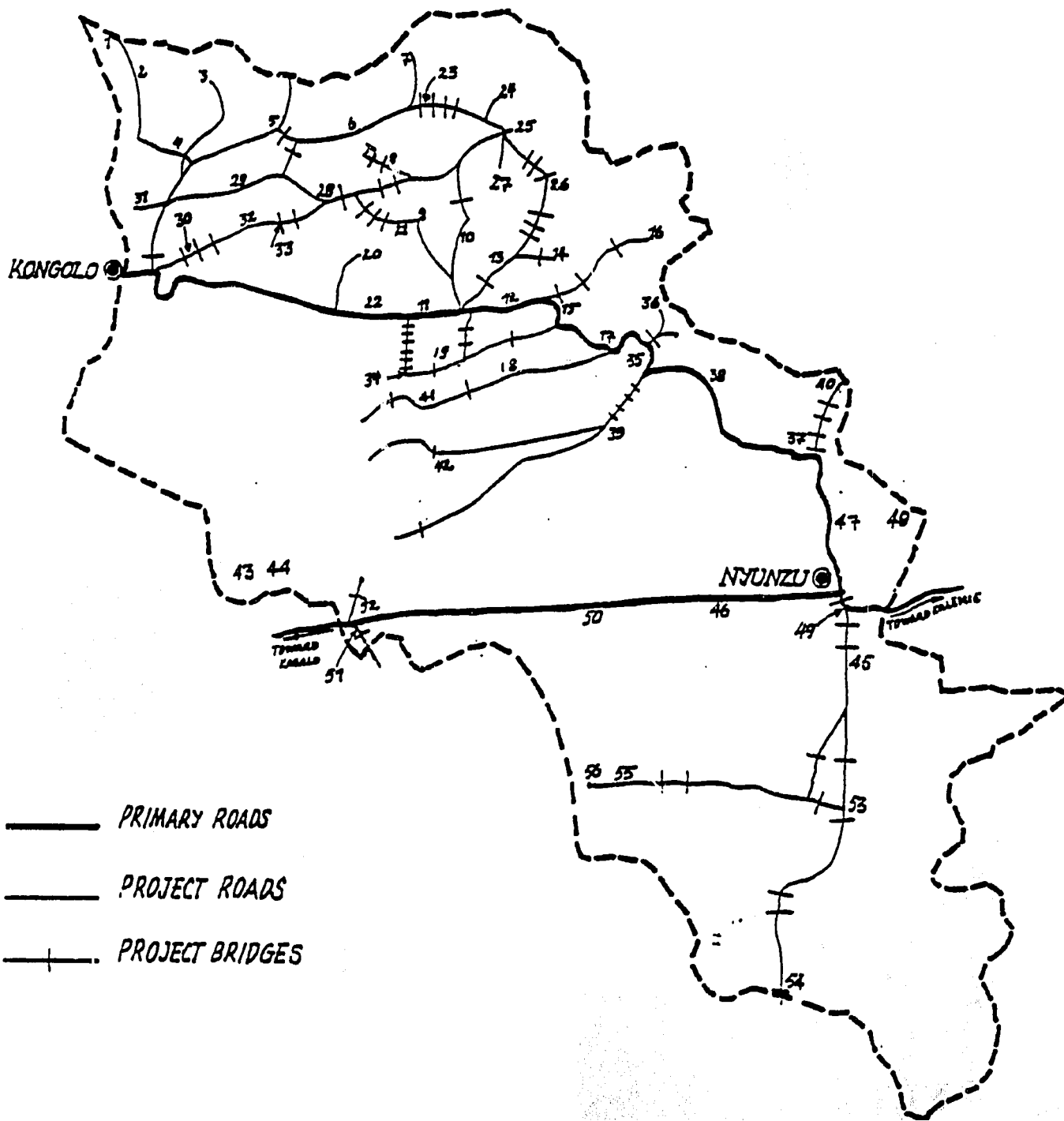
The town of Kongolo lies on the Lualaba River near impassable rapids at the foot of 500 kms. of navigable water. Until the early 1960's, the town was a bustling rail and river transport center, with an expatriate community of over 400 people. It was (and is) the site of the cotton company's (ONAFITER) regional headquarters. Just before Independence, it was slated to have become a District (Sub-Region) head. The hospital was scheduled for expansion which would have doubled its size. The brick colonial houses and substantial business and administrative buildings, though badly deteriorated, still attest that it was once a modern commercial and industrial center. Two 400 kw generators supplied power to the town and a water system exists. Both of these can be put back into operation with a minimum of expense. The river banks and railway station are now lined with the wreckage of a substantial fleet of river boats. The shops at the rail station have lines of dusty lathes, presses and other expensive equipment, and the yards still contain large amounts of steel. With restoration, the existing infrastructure of Kongolo can service project requirements.

During the colonial period, Nyunzu served more limited commercial and administrative roles, and as a consequence, does not have a well-developed infrastructure. The town does have the largest railcar capacity in the project area, allowing a substantial amount of maize to be exported. Also, there is a cotton gin complex with warehouses along a railroad spur. Housing is limited, though there is a functioning power plant, a hospital, and several stores.

Mbulula is located on the primary road between Kongolo and Nyunzu. It is a town of 2,600 people which serves as a strategic marketing and storage, administrative and communications center in the project area. During the colonial period, Mbulula was the location where Belgian and Zairois farmers exchanged the latest information about agricultural production techniques. Mbulula has a small number of stores, storage facilities, administrative buildings and colonial-period houses that need renovation. On the outskirts of the town there is a former Belgian farm that will serve as the project's Research and Training Center.

ROAD AND BRIDGE NETWORK

WITH FARMERS' CENTERS INDICATED



FARMERS' CENTER LIST FOR ROAD AND BRIDGE NETWORK MAP

- | | | |
|-------------------|----------------------|----------------------------|
| 1. KABALA | 27. SENGE | 53. MOKIMBO |
| 2. TIMPA | 28. KAHENGA | 54. MAKUMBO |
| 3. MUGIZHA | 29. SOGO | 55. NGOY-LUBA
(Pygmies) |
| 4. SOLA | 30. MWANAKASONGO | 56. NGOY |
| 5. KATEBA | 31. YAYI | |
| 6. NDUTU (MUGILA) | 32. KULULA | |
| 7. KILUZI | 33. NGULUBE | |
| 8. KILENGE | 34. KIBELE | |
| 9. KAYANZA | 35. KABANGO-NYAMA | |
| 10. KANGUNGA | 36. TAMBWE | |
| 11. KAYUNGU | 37. KABEYA-MAYI | |
| 12. NDUBI | 38. PENDE | |
| 13. KIBAMBI | 39. KITENGETENGE | |
| 14. KAHESHA | 40. KABEYA-MULUNGA | |
| 15. KABENGA-SAYI | 41. KAHINDA | |
| 16. MUTOMBO | 42. MBEYA | |
| 17. SONGA | 43. KANUNU (Pygmies) | |
| 18. MAHUNDU | 44. KANUNU | |
| 19. KIGUMBA | 45. MUHUYA | |
| 20. ILUNGA | 46. LUELA | |
| 21. KIYOMBO | 47. KALUNDU | |
| 22. MUGOMBA | 48. MUHEMPA | |
| 23. BUGANALWAMBA | 49. MUKENZA | |
| 24. BUGANAPIANA | 50. MULONGO | |
| 25. MAKUTANO | 51. KATANGA | |
| 26. BUGANAMWEHU | 52. MULEYA | |

PART II. D. (cont'd)

Important village centers in the project area include Sola (near Kongolo) where Catholic missionaries have an agricultural research, training and extension center. Also, in Kongolo Zone, Makutano and Nonge are major village market and communications centers. In Nyunzu Zone, Lengwe is a commercial center (with more than 5 merchants) and an important civilian/military headquarters. Another important center is Luizizi, which is a railroad stop with stores and bars.

(B) Rail System:

Although river transport was important in opening up this area and in its early development, today the main transportation link between Kongolo and Nyunzu and major urban centers is the railroad. Passenger trains, operating three or four times a week, provide access to Kalemie and Lubumbashi. Freight trains pass through Nyunzu and Kongolo even more frequently, allowing the shipment of maize and other produce to Lubumbashi. There are sufficient freight cars for current and increased production, especially with the "copper" cars returning from Tanzania. Railway loading/storage facilities are inadequate which causes shipping delays and results in grain spoilage late in the marketing season when the rains begin.

(C) Roads:

During the colonial period, the project area was a major agricultural exporter, and a substantial road system was developed, especially in the densely-populated eastern portion of Kongolo Zone, to evacuate produce, as well as to effectively administer the area. However, the utility of the road system is seriously reduced; many roads are almost impassable and several bridges have collapsed or are failing.

All roads in the project area can be categorized in one of four ways. First, there are the primary routes which connect Kongolo and Nyunzu, as well as the Kalemie - Nyunzu - Kabalo road. (See map: "Road and Bridge Network".) The Office des Routes has responsibility for rehabilitating the primary routes in the project area. The route from Kongolo to Mbulula and on to Kabeya-Mayi is almost impassable during the rainy season, especially the sections in low valleys and the steeper hills; the bridges along this route require only minor repair. South of the Lukuga River, the road is in much better shape except for several loose sandy areas which are difficult for small vehicles to traverse. The Office des Routes has begun rehabilitation operations on the primary roads and is scheduled to complete its initial grading operations in

PART II. D. (cont'd)

May 1977 when the Kabeya-Mayi bridge is completed. (See detailed project description which follows this section.)

Circulation patterns in the project area, and in the northern part of Tanganyika Sub-Region as a whole, have been significantly altered with the destruction of the Kabeya-Mayi bridge in 1961. The original bridge, completed in 1932, made truck transport possible from Kongolo through the project area to Nyunzu and beyond to Kalemie (ex-Albertville). Now trucks must make an exorbitantly long detour through Kabalo and western Kongolo Zone to go from Nyunzu to Kongolo and North Lukuga. However, Stevering et Fils, a German firm, is currently working on a new bridge that should be finished on schedule in May of 1977.

The secondary road system (with which the project is mainly concerned) was well developed in the heavily-populated Kongolo and North Lukuga areas during the colonial period. In these areas, people live in permanent villages the year-round (in contrast to South Lukuga, as noted in the "Cropping Systems" section, PART II. D. 5.), and the pre-Independence road system reaches most of these villages. These earth and laterite secondary roads have greatly deteriorated because of inadequate and ineffectual maintenance. Roads are eroded from improper drainage; surfaces are worn down with ruts and potholes, and in some areas rough basalt flows have been exposed. In South Lukuga, there are only a few main secondary roads because of the low population density. These roads are in relatively good shape (passable during the rainy season), though the bridges (timber) pose a problem, since many are weak and occasionally collapse.

The third type of road (farm area penetration roads) is predominant in South Lukuga. People live in their permanent villages from October through September, and in "satellite" villages near their fields from late April through September. Self-help roads are built by farmers to these villages; some roads have existed for many years, and new ones are cut each year as farmers follow the receding forest. These "farm area penetration" roads are only partially cleared, leaving stumps and rocks; these cause severe damage to vehicles during the early part of each marketing season until the grass is leveled, and these obstructions can be seen by drivers.

In Kongolo and North Lukuga (where the farmers live mainly in permanent villages), self-help roads ("farm roads") are constructed to their fields and to in-field grain weighing stations; these roads are also only partially cleared, causing some problems for merchants.

PART II. D. (cont'd)

In Kongolo, the zone administration has charged local Collectivite Sultani's with responsibility for some of the road work in their Collectivites. Road work is done by local inhabitants under military supervision (which is also true in northwest North Lukuga). Farmers complain that they are called for this labor during crucial stages in the agricultural cycle instead of in the dry season months (June and July), and that this is a serious interference to farming activities. ONAFITEX has shouldered much responsibility for temporary bridge restoration, which has seriously delayed their cotton-buying activities. This has further destroyed area roads, as the heavy cotton trucks must then travel during the height of the rainy season.

In both zones, farm area penetration roads and farm access roads are maintained by farmers on their own initiative. They have generally been able to do an adequate job to accommodate the buying-season truck traffic, except for bridge repair, and have no objections to continuing this work.

(D) Local Transport:

Personal mobility by motorized vehicle is quite limited in the project area. Trucks carrying about 60 passengers operate on the main road north from Kongolo to Kilubi (near Sola), and further to Kabambare in the province of Kivu about once per day. Similarly, though less regularly (or frequently), trucks transport people and goods for 34 kms. north of Nyunzu and to Kabeya-Mayi, a route that is expected to be extended to Mbulula and Kongolo when the bridge is completed in mid-1977; service from Nyunzu southward is even less frequent.

The best local public transportation in the project area is four small buses that operate from Kongolo to Makutano (via Mbulula) -- about 94 kms. traveling east from Kongolo. Their schedule corresponds to the days of arrival and departure of passenger trains at Kongolo. These buses also carry small amounts of freight.

Bicycles are used (primarily by men) for personal travel and the transport of produce. Even though most farmers cannot afford new bicycles (which cost about \$163), the old ones are kept operational by owners and specialists throughout the area.

In spite of the limited transport, there is high personal mobility within the project area for commercial, administrative and social purposes. Most people walk, sometimes traveling 15-60 kms. with headloads of produce for market.

PART II. D. (cont'd)

(E) Air Traffic:

There is a small airport (with radio system) at Kongolo which is served by Air Zaire on Friday (from Lubumbashi -- via Kongolo -- to Kalemie and Bukavu) with the reverse schedule on Saturdays (i.e. return flight to Lubumbashi). With rail connections, Air Zaire flights are frequently available to Bukavu and Kinshasa from Kindu, and to Lubumbashi from Kalemie. Small air fields (which are in good condition) are located in Kabeya-Mayi and Nyunzu.

(F) Telecommunications:

The main local radio system in the project area is that of the railroad (SNCZ) which is used extensively by government services. The Catholic mission radio network, with Kongolo, Sola, Mbulula, Makutano, and Nyunzu stations, and the Protestant network's Bigobo station, can be used on an emergency basis.

PART II. D. (cont'd)

7. COMMERCIAL ACTIVITY

Virtually all the marketed maize in the Kongolo project area is bought, transported in trucks, and stored by private merchants. Cotton is purchased/transported/stored only by ONAFITEX, the para-statal organization. Manioc, rice, peanuts, palm oil, bananas, and other crops make their way to the railheads via an intricate network of smaller merchants and the farmers themselves.

(A) Kongolo Zone:

In Kongolo Zone the maize market is dominated by two large buyers (with some ONACER intervention in 1975, not 1976), who purchase maize a reported average of 70 (maximum 130) km. from the Kongolo railhead, and who experience rapid truck depreciation and high operating expenses due to a deteriorated road system. Trucks are unable to reach a high rice and maize production area in the northeast for lack of adequate bridges. The situation is truly competitive in only a few high maize production areas (interestingly some of these are 110 km. from Kongolo); in most cases a near-monopoly is obtained. Overall, this leads to slow pick-up, slow pay, unfair weighing, and drivers requests for bribes. Four or five smaller buyers own trucks, but credit, spare parts, and gasoline problems have restrained their operations in 1976. There are a larger number of small merchants throughout the Zone who normally buy 10+ tons of maize annually, but non-availability of trucks for rent has stymied their efforts this year to ship to the railhead.

ONAFITEX devotes much time to fixing roads and bridges, organizing its own cotton-planting campaign, and distributing seeds, so its basic purpose of buying cotton is greatly slowed down each year, discouraging farmers and pushing them toward other cash crop alternatives.

Palm oil, rice, manioc, peanuts, and other agricultural products are transported via head load or bicycle by farmers or the numerous small merchants directly to Kongolo town or to centers such as Sola, Mbulula, Nonge, Makutano, Lengwe, etc., where some truck transport is available (though prices are currently prohibitive).

PART II. D. (cont'd)

Traveling salesmen on bicycles and many small stores sell clothes/cloth, salt, soap, medicines, household utensils, and other merchandise throughout the Kongolo area. Scheduled local markets, such as those commonly seen in West Africa, do not exist in the project area except in the railhead towns and the several smaller commercial centers.

(B) North Lukuga:

Maize buyers come last to North Lukuga (see map: "Maize Buying: Speed of Purchase"). In mid-August, two Nyunzu merchants each send one truck the 500 km. via Kabalo, etc., to carry North Lukuga maize to Kabeya-Mayi where it is ferried across in canoes to trucks waiting on the other side of the Lukuga River. Kongolo merchants only start to buy in North Lukuga late in the Kongolo season, with the exception of high production centers in the northwest transition area, where they competitively buy in May. Maize trucks do not visit some distant production areas; only the cotton buyers go there.

In fact, the cotton buying situation is relatively good for North Lukuga farmers. Kongolo-based (Lumanisha) ONAFITEX starts its buying season there, and cotton is picked up even in distant locations. Thus, cotton remains a favored cash-crop in North Lukuga.

For crops other than maize and cotton, the North Lukuga-Kongolo transition area sends produce to both Kongolo town and Nyunzu town, depending on the buying price, thus enjoying a healthily competitive environment for producer/buyer decision-making. North Lukuga villages just north of Luizi (on the road/railroad near the Nyunzu/Kabalo border) sell their rice, maize, manioc, peanuts, bananas, etc., to the sizeable Luizi-area population. North Lukuga villages within 30 km. of Kabeya-Mayi take their crops to Nyunzu town.

(C) South Lukuga:

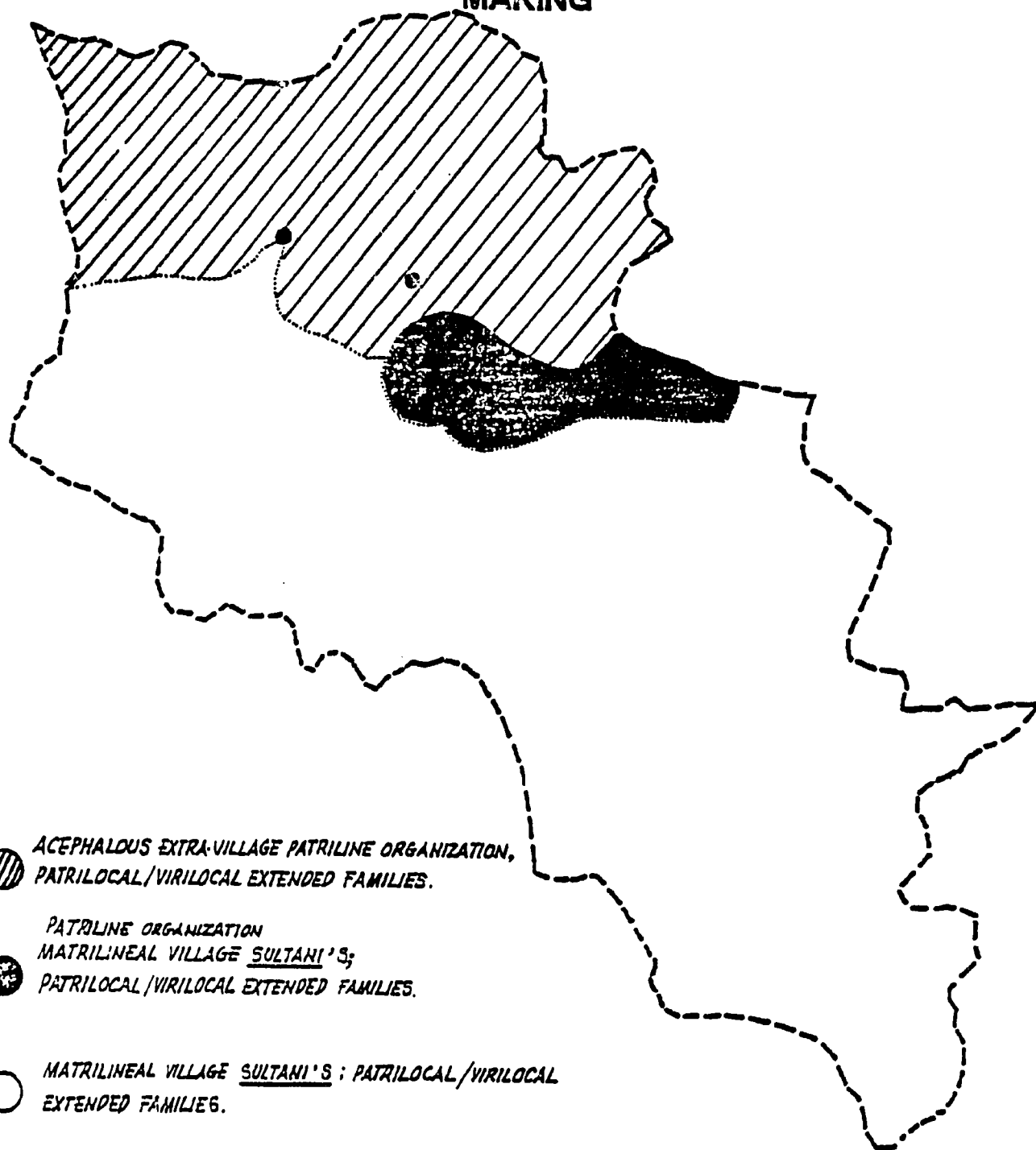
In the South Lukuga maize market, 15 buyers (four large ones), efficiently operating with 23 trucks on good roads within a basic 35-km. radius of the railhead at Nyunzu town,

PART II. D. (cont'd)

create a healthily-competitive buying situation. The cash crop is evacuated quickly, and there are few complaints of misweighing. Some weak bridges, comparatively long distances, and a smaller farming population slow down the buying activities in southern South Lukuga until the other areas are finished. (See map: "Maize Buying: Speed of Purchase").

With the exception of cotton buying by ONAFITEX, other crops are rarely transported by trucks (some Nyunzu merchants do buy peanuts in Manono and Kabalo Zones). Farmers transport manioc, peanuts, etc., on foot or by bicycle, using the same means to go to Nyunzu (or Luizi) stores; local shops or itinerant salesmen are rarely seen.

LOCAL SOCIAL ORGANIZATION FOR AGRICULTURAL DECISION- MAKING



PART II. D. (cont'd)

8. SOCIAL/CULTURAL CONTEXT

The project site spans, but does not exhaustively circumscribe, two culturally distinguishable areas, plus a transition zone in between, which differ in social organization related to agricultural decision-making. (See map: "Social Organization for Agricultural Decision-Making", p. 54)

In northeast Kongolo Zone (Collectivites Munono, Kuvu, Muhona, Yambula, Mambwe, and most of Nyembo), every bit of land is divided among autonomous patrilineal. At each level of organization, councils of elders and respected men, meet to discuss and decide broad issues of land usage, dry season plain-burning rights, palm tree exploitation, encroachment by unauthorized farmers, and other matters of agricultural import. The organization is basically acephalous -- one or more men may occupy positions of great respect, but they are leaders of equals rather than "chiefs".

Other councils -- formed in relation to matrilineal principles, semi-secret societies (which can unify when lineage allegiances divide), intertwining cognatic kinship networks, and, since fifty years ago, occupational categories such as school-teaching -- make important decisions on ethics, religion, inheritance, funeral disputes, marriage-related litigation, and a host of other issues but not those directly bearing on the land and agriculture. These latter groupings can indirectly and informally contribute to positive "spread effects" for agricultural information: people who learn something in a patrilineal context do not hesitate to pass the news on when they sit in other groups.

Below the level of village and extra-village patrilineal organization, patrilocal/patrilineal extended-family men's councils make general local land-use decisions, with each farming unit (husband/wives; wives with separate fields; widows; youths...) making most of the decisions concerning the land which it is farming.

In Nyunzu Zone and southern Kongolo Zone (Collectivite Baluba), issues of agriculture and land usage are the province of the local Sultani or chief, assisted by a group of hierarchically organized counselors. These sultanships follow a matrilineal succession principle (with the exception of two small groups with patrilineal succession in southern Kongolo).

Patrilocal residence is also most common; a man is thus called from his father's village to rule where his uncle (or

PART II. D. (cont'd)

older brother) had been Sultani previously. Thus, the village substructure is again based on patrilocal/virilocal extended families and their component farming units making lower-level local land-use and farming decisions, somewhat as is done in Kongolo Zone.

The difference rests at the supra-extended family and village level, where the Nyunzu ("Luba") system concentrates more power in one man assisted by a council of titled advisors, while the Kongolo ("Hemba") system relies on functionally acephalous men's councils for discussion, arbitration, and decision-making.

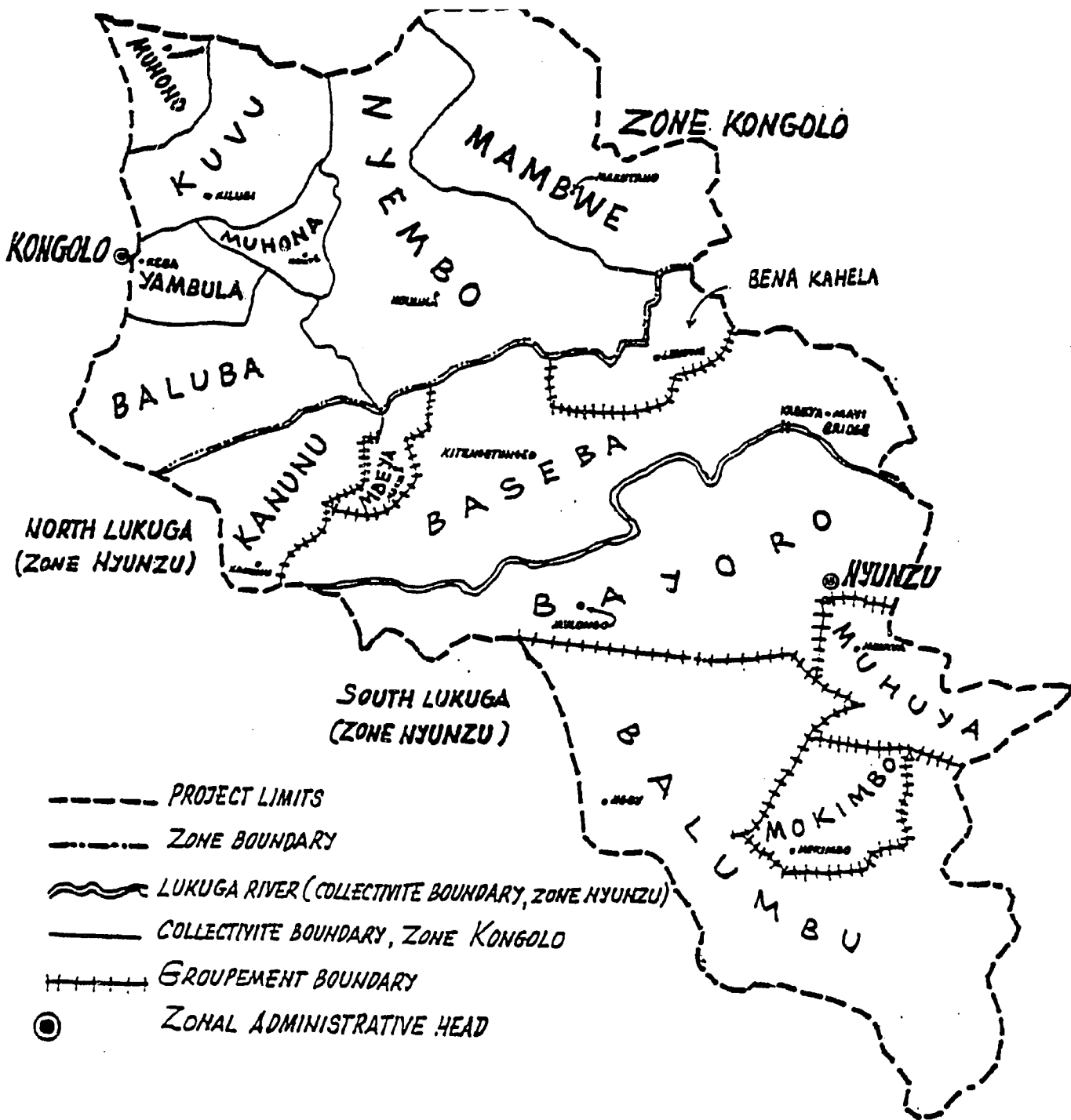
In a transition area (Bena Kahela and northwest Baseba groupements in Nyunzu; southern Nyembo Collectivite in Kongolo) village Sultani's are matrilineally chosen, but acephalous partilines are also quite strong. As might be expected, more palm tree and land-use litigation occurs here and the situation is more complex, though it is not incomprehensible.

Virilocality and patriline/matriline exogamy are found throughout the project area, so married women are not organized residentially by matriline or patriline. Neighbors and friends work and discuss together in cohesive women's groups. Respected women leaders (not necessarily related to male leaders) can be readily identified at the village level and below.

Since they come to live in a village other than where they grew up, women provide strong and important links among separate villages, patriline, and matriline, as well as across collectivite, zonal, and even regional boundaries. Women are thus a key factor in the diffusion and spread of agricultural knowledge throughout the project area and beyond.

However, in group meetings including both men and women, women are reluctant to speak. When women meet alone, they express themselves clearly on farming and marketing issues with which they are actively involved. Also, husband-wife agricultural knowledge transfer is not dependably high enough for an agricultural development project to be able to concentrate solely on the men. Overall, women farmers do 60-80% of the farm work; a successful research/extension effort will give special, direct attention to groups of women farmers.

ADMINISTRATION



PART II. D. (cont'd)

9. ADMINISTRATIVE/POLITICAL STRUCTURE

For over fifty years, a stataal administrative structure has been present in the project area. Today, in Shaba Region the national government is represented by a Commissaire de Region at Lubumbashi. The Commissaire de Sous-Region for Tanganyika Sub-Region is in Kalemie. Kongolo and Nyunzu each have a Commissaire de Zone. The Kongolo Zone Collectivite-level Sultani is directly responsible to the Commissaire de Zone. In each of the two Nyunzu Collectivites (North Lukuga, South Lukuga), the Groupement-level Sultani reports to a Chef de Secteur (Collectivite), who is directly responsible to the Commissaire de Zone. (See Administration Map, p. 57.)

There are Commissaires Assistants de Zone in charge of political, economic, and administrative affairs, but not one responsible for agriculture. The Department of Agriculture, via the Delegue General, Agronome de Region, and Agronome de Sous-Region currently maintains a hierarchy in each zone (Agronome de Zone, Agronomes de Rayon, Agronomes de Collectivite, and Moniteurs Agricols) which is widely criticized for its lack of supportive extension efforts and its concentration on cotton quotas, field measurements, taxing, fining, and other policing duties.

The most important aspect of the political/administrative system in the project area is the interface of the stataal structure with the local socio-political organization. The early Belgian administration sought local rulers to govern Chefferie and Secteur (both now Collectivite)-size populations, dividing the larger kingdoms (Lunda, etc.) into smaller pieces and appointing political heads in areas where none existed at the time.

So, in northeast Kongolo Zone one Sultani was chosen to help administer each historically, culturally, linguistically-affiliated area. In each case, these Sultani appointments involved the creation of a new position or greatly expanded an existing role vis-a-vis the local population and its strong, though acephalous, lineage structure.

Thus, where formerly a Sultani had been invested largely with communal defense responsibilities -- perhaps a response to early Luba-Buki invasions from the south, and certainly to late 19th century Arab incursions from the north -- suddenly he acquired a broad range of political, administrative, and judicial perquisites and functions. Alternatively, the head of one of perhaps three contending groups was given expanded territorial authority as well as increased power.

PART II. D. (cont'd)

In either case, one local group gained at the expense of several others -- a discordance which is not forgotten even today, particularly with the more complete integration of the Sultani into the statai political, administrative, and judicial hierarchies following Independence.

As another case in point, the newly emergent Pygmy farmers in the Nyunzu Zone who have their own village and supra-village Sultani structure indicated they would like to be considered on their own terms rather than to be seen as solely subordinate to the Sultani of the Groupement. At this time the Pygmy farmers appear to follow the Nyunzu matrilineal village Sultani structure, at least in overlay form.

When a matrilineal Sultani was elevated over a historically patrilineal political structure (Nyembo, Yambula, Muhona, Bena Kahela), further complexity was added to the political situation, then as now. When a matrilineal Sultani was chosen to rule (at the Groupement level in Nyunzu Zone) over a large number of village Sultani's who were also matrilineally legitimized, the fit was better, though the elevation and expansion of one man's power may still have been contested.

At the local level, in the Kongolo area the village or neighborhood Kapita is the administration's link into the patrilineal residential units, as are the President and Secretary for the national political party (MPR) at the village level. These officials have many duties but are not necessarily important in most agricultural decision-making. They may or may not be the most appropriate spokesmen on important agricultural subjects unrelated to required cotton farming. In Nyunzu, the matrilineal village Sultani apparently has both statai sanction and traditional authority in local agricultural and land-usage matters, though this should be carefully investigated in each case.

There are several key points to be underlined here. First, though some officials describe the Collectivite or Groupement-level Sultani as a "traditional" authority, the effective statai/local interface is below the Sultani level, not above it. Second, the patterned relationship between statai authorities and local inhabitants will vary considerably within the project area, requiring a careful, continuing sensitivity to the complexities and their real implications. Third, there are small natural farmers' groupings and recognized larger farming areas (smaller in size and population than a Collectivite/Groupement) which are the most appropriate

PART II. D. (cont'd)

existing organizational units for implementing equitable, decentralized, grass-roots agricultural development. (Within each village are a number of literate farmers who have had some formal education and who could perform certain necessary auxiliary services for participating farmers' groups.)

PART III.

PART III: DESCRIPTION OF THE PROJECT(A) Summary Description:(1) Project Goal:

The project goal, articulated to the design team by Government of Zaire officials at all levels, is to achieve self-sufficiency in maize production within the shortest possible time frame. However, in contrast to attitudes in the recent past, there now appears to be an awareness by national leaders at very high levels that the quick-fix mechanized approach does not represent a viable alternative for achieving this goal.

Thus, this project which focuses on increasing small-farmer production is viewed at very high levels with considerable interest. It involves an action-oriented experimental approach to achieving sustained agriculture production increases through a more collaborative approach with small farmers. Implicit in this approach is the recognition, often articulated by GOZ officials, that production increases cannot be achieved in the absence of adequate economic incentives for the small farmers. This position has been explicitly supported by recent decisions on the part of the government to increase the official minimum farm-gate prices on virtually all food crops. For example, the price of maize at the farm gate was increased by 200% over a 12-month period.

However, events during this period demonstrated beyond a doubt that while higher prices may be a necessary condition to achieving production increases, it is not a sufficient condition. This project has been developed on the hypothesis that sustained production increases can be most efficiently achieved through an integrated process designed to address major constraints.

(2) Project Purpose:

The purpose of this project is to identify an effective rural development process for improving small farmer production and income which is replicable in other parts of Zaire. The process by which this will be accomplished builds on the current practices of farmers, with innovations being introduced only after they have been tested and proven on farmers' own lands.

PART III. A. (cont'd)

The system to be developed under this project has six component parts.

- (a) A sub-system of research and extension operations directed toward the development and delivery of improved maize and other crop technologies. Combining research and extension in one sub-system will insure close communication between farmers, researchers, agricultural assistants, and trainers.
 - (b) A sub-system for encouraging the development of farmer groups/pre-cooperatives which will help insure that project benefits reach small farmers.
 - (c) A sub-system for the development and production of intermediate technology to alleviate peak labor constraints.
 - (d) A sub-system for developing and providing improved credit and marketing services to small farmers. The primary focus of this sub-system will be to facilitate the improvement of the private sector marketing activities in the project area by fostering competition.
 - (e) A sub-system for improving and expanding rural infrastructure in the project area. The primary focus of this sub-system will be road rehabilitation and maintenance.
 - (f) A sub-system for data collection and analysis for planning, monitoring and evaluating all project activities.
- (3) Project Strategy:

The basic strategy of this project will be to initiate and develop a process that enables small farmers to improve their production and incomes so that benefits become self-sustaining. The process will start with an understanding of the current practices of small farmers. New technologies (practices) that are acceptable to small farmers will be developed through research and experimentation in close collaboration with farmers. The most effective approach

PART III. A. (cont'd)

for transferring agricultural knowledge will be determined by experimenting with various extension approaches. The critical constraints to increased production will continue to be identified, and the project will devise methods to overcome them. Farmer groups/pre-cooperatives will be encouraged to help carry out basic services, easing the burden on GOZ agencies while making the service providers (farmer groups/pre-cooperatives) accountable to their clients-- the participating small farmers.

Such a process requires that the project design be flexible, allowing modifications to be made through a dialogue with small farmers. The implementation of the process requires a data-collection and analysis capability to plan, monitor and evaluate all project activities.

(4) Project Organization:

The organization chart presented in Figure below presents the relationship between the project and the GOZ/USG offices in Kinshasa, as well as the chain of command between the divisions responsible for the various sub-sections and the project management.

(a) Office of the Presidency:

Because the implementation of the project involves important inputs and support from several GOZ agencies outside the DOA (e.g. Office of Roads, Office of National Economy, Department of Finance, etc.), the Office of the Presidency has concurred in the establishment of a special relationship with the project.

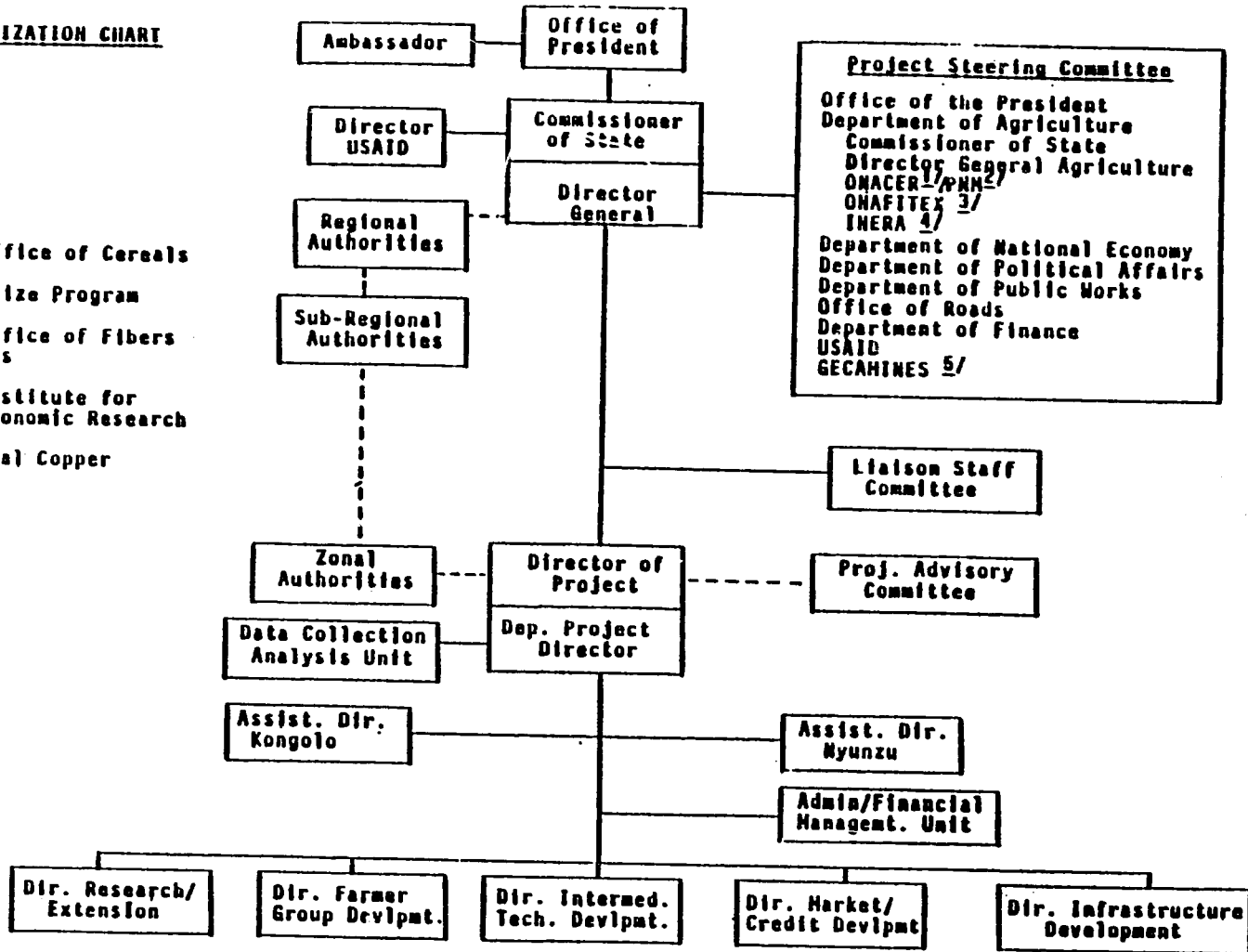
Under this relationship, the Office of the Presidency (through its Agricultural Advisor) will participate in meetings of the steering committee (see discussion below) and will be advised of any special circumstances arising under the project.

(b) Commissioner of State and the Director General of Agriculture:

Direct responsibility for project implementation at the national level will rest with the Department of Agriculture. The Commissioner of State for Agriculture will

PROJECT ORGANIZATION CHART

- 1/ National Office of Cereals
- 2/ National Maize Program
- 3/ National Office of Fibers and Textiles
- 4/ National Institute for Study & Agronomic Research
- 5/ International Copper Consortium



PART III. A. (cont'd)

be looked to for guidance on a continuing basis. The Director General will provide guidance at a technical and program level and insure coordination of GOZ support for the project at the national and regional levels.

(c) The Project Steering Committee:

The Project Steering Committee, chaired by the Commissioner of State for Agriculture or his designee will be the mechanism through which high-level policy and program guidance will be provided to the project management. It will meet biannually to review progress under the project. Membership would include the following GOZ offices:

- Office of the Presidency
- Department of Agriculture
Commissioner of State for Agriculture
Director General of Agriculture
ONACER (National Office of Cereals)/PNM
(National Maize Program)
ONAFITEX (National Office of Textile Fibers)
INERA (National Institute for Agricultural
Study and Research)
- Department of National Economy
- Department of Political Affairs
- Department of Public Works
Office of Roads
- Department of Finance
- USAID/Zaire
- GECAMINES (international copper consortium)

(d) Project Liaison Staff Committee:

A Project Liaison Staff Committee will also be established. This staff committee will be responsible for backstopping the project at the national level. It will include counterparts to the AID Project Manager from the following offices:

PART III. A. (cont'd)

- Department of Agriculture
- ONACER
- Office of Political Affairs
- Office of Roads
- Department of Finance

(e) The Project Director (stationed in Kongolo) will be responsible for all project activities; he will be assisted by a Deputy Project Director (also stationed in Kongolo), an expatriate agricultural economist with experience in the management of agricultural development programs. He will also have primary responsibility for the technical direction of the data-collection and analysis unit of the project.

(f) The Project Advisory Committee will consist of zonal-level administrative officials. It will help insure coordination of local government and project activities within the zones.

(g) Assistant Project Directors will be located in Kongolo and Nyunzu and will be responsible for daily administrative operations. They will work in close coordination with the expatriate administrative/financial manager.

(h) The Data Collection and Analysis Unit will be responsible for data collection and analysis for planning, monitoring, and evaluating all project activities. A Zairois experienced in data collection and analysis for agricultural development programs will head the unit. The DOA Bureau of Studies and Division Statistiques, as well as U.S.-based consultants will assist this unit.

(i) The Administration and Financial Management Unit will be headed by an expatriate. This unit will be responsible for administrative, financial and logistical operations of the project, as well as communications with Kinshasa.

(j) Divisions will be created with responsibility for each of the remaining five sub-systems:

- The initial Director for Research/Extension will be an expatriate agronomist with experience in extension

PART III. A. (cont'd)

training. Research and extension training will take place at the Mbulula Center, with the project staff being assisted by three PNM/CIMMYT research personnel. Further assistance will be provided by INERA researchers, as available, in the development of other crop technology and in soil analysis.

-- The Director of the Farmer Group Development Division will be assisted by an expatriate advisor who will be a rural development specialist with cooperative development experience. This division will be staffed by three Zairois with knowledge of the local social and production systems within the project area.

-- The Director for Intermediate Technology will be assisted by one or two Peace Corps Volunteers with backgrounds in blacksmith or machine shop work. Further assistance will be provided by the CEDECO Center in southern Zaire where intermediate technology is currently being produced.

-- The Director for Marketing/Supply will be assisted as required by short-term consultants and the USAID-sponsored marketing advisor to the Department of Agriculture.

-- The project and the Office of Roads will hold joint responsibility for infrastructure development. The Director for Infrastructure Development will be an expatriate with construction management experience. Other expatriate inputs into this unit will include a construction supervisor, a specialist in the construction of low-cost bridges, and an equipment maintenance specialist.

PART III. B. (cont'd)

1. A SUB-SYSTEM OF RESEARCH AND EXTENSION OPERATIONS DIRECTED TOWARDS THE DEVELOPMENT AND DELIVERY OF IMPROVED MAIZE AND OTHER CROP TECHNOLOGIES

(A) Conditions in the Project Area: Summary

As detailed in the description of the project area, farming takes place in four main ecological zones:

- (1) The wetter forest areas, primarily in Kongolo, where two maize crops per year are harvested, as well as palm oil, manioc, rice, cotton, peanuts, bananas, plantains, pineapple, papaya, mango, citrus, sugar cane, beans, okra, sweet potatoes, tomatoes, peppers, onions, other European vegetables, and greens.
- (2) The drier forest areas, mainly in Nyunzu and in the southwestern Kongolo project area, where maize, harvested once per year, is the major crop.
- (3) The savannah area, where essentially dry-land crops such as peanuts, manioc, cotton, and certain vegetables are grown (as well as some maize in the Kongolo Zone).
- (4) The low-land river valleys, in both Kongolo and Nyunzu, which have excellent potential for maize, rice and wet-land crop cultivation.

Within each type of farming area, the PP team's field investigation showed there are major variations in farmers' production systems these include differences in the method of land preparation, date of planting, planting techniques and sowing density, weeding and thinning crops, and harvesting and storage practices. Moreover, farmers (even within the same locality) use different systems of inter-cropping and crop rotation. Such variations result in a wide range of maize and other crop yields per hectare,

Technology for improved maize and other crop production has not been identified and tested in the project area, though some limited experimentation has been done by PNM and ONAFITEX. As a consequence, extension workers have to offer farmers. Their activities have been limited to policing functions, such as insuring that a certain amount of land is used for cotton production, keeping statistical information, and issuing planter's cards. There is need not only to develop

PART III. B. (cont'd)

technologies appropriate to local conditions but also to establish a new relationship between farmers and extension workers.

(B) Objectives of the Sub-System:

There are three main objectives for this sub-system:

- (1) Develop, test, and introduce maize and other crop technologies tailored to the farming systems in the various localities;
- (2) Recruit and train extension workers (DOA and para-professionals) to provide timely and appropriate technical advice as appropriate technologies are developed; and
- (3) Create a system that allows ongoing communication among extension workers and their trainers, the farmers of the project area, and researchers.

Combining research and extension operations under the same sub-system will help insure close communication and coordination. As improved practices are identified, they can be rapidly and easily introduced into the training (both basic and in-service) of extension workers. Moreover, the sub-system is designed so that farmers' experiences with these practices can be articulated to both researchers and extension workers so that modifications can be made, if necessary, to suit local conditions.

(C) Research and Experimentation(1) Establishment of a Research and Training Center at Mbulula:

The project will establish a research and training center at Mbulula. There are several reasons for the selection of this location. First, the Mbulula soils and other physical environmental conditions more accurately characterize the project area than do those of previously considered Kaseya site. Locating the center in Mbulula will allow the project to replicate the basic farming systems found in the forest, savannah and river valley ecological zones. Second, Mbulula has been traditionally a place to which farmers look for improved farming methods; during the Belgian colonial period,

PART III. B. (cont'd)

yearly demonstrations of crop production techniques were organized at Mbulula for expatriate and Zairian farmers coming from a wide area: Kibangula, Kasongo and Kasanga (Kivu); Kabalo, Nyunzu, etc. Many of the farmers indicated during the PP field investigation that they considered the techniques used by the Mbulula farmers to be a guide for their own. Thirdly, Mbulula is the site of the ONAFITEX cotton experimentation which can be coordinated with the center's activities. Finally, Mbulula is centrally located in the project area which will minimize travel in connection with project training.

The project will draw staffing for the research component of the center from several sources. PNM will provide three researchers (one of whom will be selected as the director of the center after two years). The initial director of the center will be an American agronomist with experience in extension training; his qualifications should include applied agricultural research experience with African farming systems in addition to Swahili language capabilities. Current ONAFITEX personnel at Mbulula will continue to conduct cotton research, and as experimentation begins with other crops, INERA researchers will be added to the staff as available.

The project will renovate three large buildings which belonged to a Belgian farmer -- the main building will be used as the headquarters for the center, and the other two as a warehouse and a multi-purpose building. In addition, the project will construct a classroom and housing for 40 trainees and their families; these will be constructed out of local materials by local labor. Housing in Mbulula will be provided (renovation of six existing houses) for the American technician and senior research staff.

(2) Research Approach:

The starting point for the project's research program will be an intensive, farm-level data collection and analysis effort designed to gain an understanding of farmer decision-making, behavior and constraints. The collection effort will focus on getting hard data on farming systems in use within the project area -- farm size and inventory, labor and cash inputs, current practices and their timing, yields and net income by crop. The purposes of this data collection and analysis effort are threefold:

PART III. B. (cont'd)

- (a) The information will allow the research and training center to replicate the basic farming systems; innovations will be tested within the context of these systems at the research farm;
- (b) The analysis of this data should allow some conclusions regarding which practices currently in use by the more productive farmers may be recommended to other farmers to help increase yields;
- (c) The data will provide a baseline which will be important in measuring the overall effects of project activities (see description of Sub-System for Data Collection and Analysis below).

To carry out this effort, the project's senior research staff will instruct the first group of 20 extension worker trainees (see below) on data collection techniques and supervise their field collection work. They will also discuss with, and consult, farmer leaders and the more productive farmers about the data collection effort. The intensive, farm-level research will begin with the mid-1977 farming season, and will take place in approximately 20 representative localities (about five farms per locality) throughout the project area. This type of data collection and analysis will continue during the life of the project. However, by the end of the second farming season, the project anticipates the identification of certain improved practices that can be recommended to farmers, drawing on local expertise. Among those practices suggested by the farmers during the PP team's research were the following:

- Date of Planting: by various geographic areas and by crop, there appear to be "ideal" planting times (e.g. before the first rain in southern Nyunzu for maize and after the third or fourth rain in northern Kongolo);
- Planting Techniques: sowing techniques and plant density;
- Weeding and Thinning Methods which are directly related to inter-cropping practices;
- Crop Rotation, including the cultivation of oil palms during the fallow period which provides a source of income, prevents weeds from overrunning fields, and helps retain soil moisture;

PART III. B. (cont'd)

- Time of Harvesting, where delays lead to significant losses due to insect, pest and bush fire damage;
- Method of Storing Maize to minimize spoilage and insect/rodent damage.

As documented in John Gerhart's The Diffusion of Hybrid Maize in Western Kenya (abridged by CIMMYT in 1975), improvements in husbandry practices such as those outlined above can result in significant yield increases at a minimum cost to the farmers. The following table from this study (pg. 6) illustrates this point:

Table 4: Effects of Husbandry and Input Use on Maize Yields

Factor	Treatment	Yields lbs/acre	Added Return Shillings/ <u>1/</u> acre	Added Cost Shillings/ <u>2/</u> Acre
Time of planting	Start of rains	5200	270	Very little
	4 weeks later	3040		
Plants per acre	16,000	4580	115	8
	8,000	3770		
Type of seed	Hybrid	4860	175	12
	Local	3380		
Amount of weeding	3x, early	4640	130	20
	1x, late	3600		
Phosphate per/acre	50 lbs.	4160	10	32
	None	4080		
Nitrogen per/acre	70 lbs.	4380	65	72
	None	3860		

1/ at 1966 price of 25/ per 200-lb bag. 2/ Based on costs of inputs required and estimated labor costs. Source: A.Y. Allan, "District Husbandry Trials in Western Kenya, 1966 and 1967." Quoted in M.N. Harrison, "Maize Improvement in East Africa" in C.L.A. Leakey, Crop Improvement in East Africa, 1970. p.45.

PART III. B. (cont'd)

Identifying, testing and introducing improved traditional practices tailored to local conditions will be the initial thrust of the research and extension operations. Concurrent to this effort, the project will begin basic agronomic research to develop a more advanced maize technology that may include:

- Replacing low-yielding local varieties with higher-yielding disease- and insect-resistant varieties;
- Introducing the use of chemical fertilizers and soil improvement and conservation methods;
- Introducing the use of seed treatments, fungicides, insecticides and herbicides;
- Modifying the rotation pattern to include leguminous crops which would be a source of supplementary nitrogen, reduce loss of plant nutrients by leaching, and provide additional protein for human consumption.

Priority in this research effort will be given to developing a savannah maize technology, because much of this land lies fallow, especially in Nyunzu. Also, during the colonial period, savannah maize cultivation accounted for a large portion of the crop shipped out to feed the urban population and for export; indeed, over 14,000 tons were shipped from eastern Kongolo Zone in 1958 when cotton and manioc were emphasized -- about seven times the total amount of maize from all of Kongolo Zone in 1975, when maize was a priority.

The development and testing of the advanced maize technology will be conducted by the PNM researchers on the project staff. Operating mainly in south Shaba savannah areas, PNM has released improved varieties and developed and tested cultural practices. Further, it has developed fertilizer recommendations that take account of such factors as economic feasibility, traditional practices, the limited supply of fertilizer and farmer reluctance to accept high levels of risk.

The project anticipates that the development of an advanced maize technology tailored to local farming systems will require four or five years. Further, the project will

PART III. B. (cont'd)

not attempt to introduce the advanced package to farmers until a reliable system of input supply is established -- a constraint that will not be overcome unless the macro-economic situation improves. The project will proceed to test this technology on the farmers' own lands when it is apparent that the GOZ can provide the support necessary for promoting this technology.

While the initial research effort will concentrate on finding ways to increase maize production within the context of current farming systems, the eventual aim of the project is to develop systems superior to those in use. This will require long-term experimentation with other crop technologies, various crop rotation, intercropping and multiple cropping systems. This experimentation will be carried out on the Research and Training Center's farm, with economic and technical assessments of the alternatives developed. The approach employed will be similar to that of the Farming Systems Division of the International Institute for Tropical Agriculture, where project research staff members will receive short-term training.

Over the long-run, as the project becomes involved in other crops, it is planned that INERA -- financed by another AID-sponsored project -- will play a major role in the research program. In the early stages of the project, special agronomic studies which can be carried out by either INERA or short-term consultants will be financed. A soils survey is needed immediately. Studies are also needed to determine changes in the physical properties of soils over time, such as the impact of fallowing on soil organic matter and nitrogen contents. Also, crop residue and liming studies will be required.

(D). Farmer Involvement in Research and Field Experimentation:

The project's research program will maximize farmer involvement. As mentioned above, the foundation for the program will come from the data collection effort which requires continued and detailed interaction and consultation with a representative sample of farmers. Also, the project plans to use farmer leaders in the project area as consultants to the Research and Training Center, especially in identifying improved traditional practices that can be quickly introduced to other farmers in the area.

PART III. B. (cont'd)

As improved practices are identified, they will be tested on experimental plots at field locations by the research/training staff in collaboration with farmer groups being formed. Finally, the improved practices will be tested on the farmers' own lands to determine their reactions and the constraints to adoption.

(E) Extension Operations:

One main objective of this sub-system is to develop an effective extension system that can be replicated in other parts of Zaire. Currently, the extension agents are seen by both farmers and merchants within the project area as a negative policing force working mostly with cotton, instead of as positive elements helping to bring about conditions favorable to greater production within the agricultural system. Farmers in many of the 100 villages visited by the PP team asserted that the agents do not know farming, local conditions, or even the location of farmers' fields; moreover, they contended that the forced cultivation of cotton, the lack of respect for farmers and their work, and the levying of fines and taxes by the agents were constraints to improved production within the area. In part, the viewpoint of these farmers can be substantiated, for over half of the extension workers in the project area have never received any technical agricultural training. Further, these extension workers have very limited training in extension and communications methods. These problems within the extension service are compounded by the lack of supervision, non-payment of salaries, and lack of opportunities for upward mobility.

The Department of Agriculture is fully aware of the shortcomings of its extension system and perceives this project as an experiment to develop a system that works. Accordingly, the Department is willing, through the project, to revamp its operations in this area. Several principles have been worked out with the DOA for restructuring and improving extension operations:

(1) Farmer involvement in decision-making (e.g., the development, testing and delivery of improved technology) and farmer resource commitments in support of project activities are critical to increasing agricultural production in the project area. Farmer involvement and resource commitments can be most readily achieved if: (a) there is effective two-way communication between extension workers and participating farmers; and (b) crop-specific and locality-appropriate extension advice is provided to small farmers. The above can

PART III. B. (cont'd)

be facilitated if extension workers assist groups of farmers. (This guideline is consistent with the findings of a recently published AID study on the necessary ingredients for successful small farmer development programs -- Strategies for Small Farmer Development: An Empirical Study of Rural Development Projects.)

(2) Extension operations will be effective only if a different relationship evolves between extension workers and farmers than the one that currently exists in the project area; this requires replacing the traditional police functions of the extension workers with communications and educational functions.

(3) Directly linking extension operations with the research effort will help insure that innovations (e.g. improved practices) found acceptable to farmers can be introduced into farmer and extension worker training programs. Further, such arrangements will facilitate feedback to the research staff of farmer experiences with, and comments on, the improved practices.

(4) Accountability of extension personnel to the local population being served by the project is an important variable affecting the success of the agricultural knowledge transfer/acquisition process. Assigning extensionists to local institutions improves extension service through accountability to the clients and can assist in making the benefits of the project self-sustaining if the local organizations assume the responsibility for paying the extensionists' salaries.

(5) Developing a system of para-professional "extension workers" will help the diffusion of improved practices while reducing the burden on the government to support extension operations. In the project area, there are farmers who are 40-50 years old, knowledgeable about farming, respected and articulate; these farmers appear to be the most influential change agents.

Implementing these guidelines requires a process through which the extension system is developed from the local level upward. The critical elements in this process are detailed below.

(F) Developing an Effective Extension System:

The first step in this phase of project development will be to select the local areas in which the project will operate. It is planned that the project will select approximately 75

PART III. B. (cont'd)

localities to which project activities will be extended over the six-year life of the project. These localities will be selected on the basis of the following criteria:

- Existing local socio-political groupings and their principles of organization;
- Current agricultural production;
- Potential agricultural production of the surrounding area;
- Farmer population density;
- Relationship to the central road network;
- Existing or past self-help efforts;
- Local reputation for leadership and innovation in agriculture;
- Lack of potentially-conflicting institutions (certain educational, commercial, religious or governmental activities);
- Geographic distribution; and
- Evidence of responsiveness to and readiness for the project.

Within each locality, one village will be selected as the location of a Farmer Center which will be used to support agricultural activities in the area. A fuller description of the Farmer Centers and their activities can be found in the description of the sub-system for encouraging farmer group/pre-cooperative development, and a map of possible Farmer Centers and the rationale used by the PP team for their selection is included as an Annex J. The Farmer Group Development Division of the project, in collaboration with the Planning and Evaluation Unit, will establish the procedure for making final determinations of their locations.

Each Farmer Center will be directed by a council of farmers which consists of farmer representatives from all major farming groups in the area (e.g. significant patriline, matriline, important extended families and respected local personalities, such as retired school teachers). One of the members of the Farmer Council will be chosen as President, most probably a 40- to 50-year-old influential farmer.

PART III. B. (cont'd)

Assisted by the Farmer Councils, the project will select individuals to be trained as agricultural assistants (extension workers). Initially, these individuals will be recruited from the Department of Agriculture, ONACER, ONAFITEX, local farm leaders, and other qualified applicants. As part of the selection process, potential recruits will be given a test on their knowledge of farming in the project area; also the project will conduct background checks to determine the ability of the candidates to interact effectively with local farmers. As Farmer Councils are formed and functioning, they will have a greater voice in selection.

The agricultural assistants will be trained at the Mbulula Research and Training Center in groups of 20-25. They will receive instruction in field data collection on farming systems, basic agronomic studies, accounting and management (in support of farmer group/pre-cooperative development), and basic extension and communication techniques. A major portion of their training will be on-the-job in the field. This will enable the project, in collaboration with the farmers, to evaluate their potential, screening out those who are not able to develop a close rapport with the farmers in their assigned area. The training program for the agricultural assistants will last about nine months, though the assistants will be brought back frequently for further training as improved practices are identified for recommendation to farmers.

After completing their training, the agricultural assistants will be assigned to a Farmer Center/Council to work under the supervision of its President. Initially, the project will pay these Agricultural Assistants, though experimentation will take place to determine ways for encouraging Farmer Councils to assume this responsibility. In case this arrangement does not prove feasible, projected costs for the project and the DOA include these salaries.

With close supervision and periodic training, the successful agricultural assistant will be able to synthesize and apply certain skills learned in formal schooling, work sensitively with local farmers, and use the insights of scientific agronomic research. With inputs from the Farmer Councils, the project will evaluate the performance of the agricultural assistants and the best ones will be promoted to the middle-level extension staff, perhaps supervising the work of agricultural assistants at three or four Centers; they will receive additional training to perform this role.

PART III. B. (cont'd)

The project will also provide training to the Presidents and other members of the Farmer Councils on a short-term basis, particularly as improved practices are identified for recommendation to farmers. In essence, these leaders can be considered para-professional extension workers; indeed, because of their position within the villages, they will probably be able to influence farmer decisions to a greater extent than the agricultural assistants. The Farmers' Council and agricultural assistants will organize experimental plots and training programs for farmers in the area served by the Farmers' Center.

In addition to the basic extension operations outlined above, the project will institute special programs to assist other groups within the project area. The first will be for women who perform all farming procedures from clearing forests to harvesting. Like men, women grow all crops. They have the primary responsibility for planting rice, peanuts and manioc, and they actively participate in growing corn and cotton. Women also carry out many other production tasks, such as palm oil processing, and involved in marketing. Field anthropological investigation shows that information of interest to the project is transferred only with difficulty from men to women; thus, women must be contacted directly.

The project will encourage women at each Farmer Center to form a subcommittee. Through this sub-council, women will be encouraged to experiment with improved techniques in their own fields. As particularly capable women are identified, they will receive para-professional training at Mbulula and in the field. As will be described below, the women's subcommittee and extension activities will also focus on the introduction of intermediate technology. To develop the women's extension operations, the project will provide female expatriate assistance, ideally as part of the project's professional staff.

Another opportunity within the project area is coordinating the project's activities with the agricultural programs of the primary and secondary schools. All students are required to learn and practice agricultural techniques two days per week. Through the Farmer Centers and at Mbulula, special training programs will be developed for school directors and teachers.

The third group which requires special consideration are the Pygmy farmers. The PP field investigation showed that there are localities within the project area where Pygmies have their own farms. Most of the Pygmy farmers previously worked as farm laborers; using the knowledge

PART III. B. (cont'd)

gained from this experience, they have established their own farming systems. The project will establish five Farmers' Centers in the areas with high Pygmy-farmer concentrations, as well as recruit and train five Pygmy agricultural assistants. This initiative is consistent with Zairian government policy.

The above approach to developing an effective extension system and programs is based upon current knowledge of the project area and what might be possible. It should be emphasized that this approach should be considered experimental, with modifications and new approaches being evolved as operational experience in the area is gained. This experimentation will be monitored and evaluated by the Planning and Evaluation Unit of the project.

(G) Project Support to Extension Operations:

The project will have direct control over all extension training and operations in the project area. As previously described, the training of agricultural assistants, Farmer Council presidents and members, and women para-professional extension workers will take place at the Mbulula Research and Training Center. Also, farmer training programs will be organized at the Farmer Centers. The project will provide two Zairois staff members who will be responsible for the training activities. Also, the American agronomist with extension experience and other research staff members will be directly involved in the design and implementation of training activities. Further, the project will provide funding for the costs of the trainees (long- and short-term) at Mbulula and for the training aids for Mbulula and the Farmer Centers. The Farmer Centers will initially consist of a meeting place constructed on a self-help basis out of local materials.

Supervision and management of extension operations will be the responsibility of the Assistant Director for each zone. Staff and logistical support will be provided to assist their work. The project will furnish bicycles for the Agricultural Assistants and the Presidents of the Farmer Councils, and motorcycles for the middle-level extension staff as it develops. It will also pay the salaries of the agricultural assistants unless Farmer Councils can

assume this cost. Salaries for senior and middle-level extension workers will be paid by the Department of Agriculture.

PART III. B. (cont'd)

Personnel for the senior-level extension training and operations positions will be recruited from existing DOA personnel and other qualified personnel in the project area. The project will have the right to hire those individuals which it deems to be qualified. Training for these senior-level positions will be mainly on-the-job and provided by the American technical assistance team; additional funds have been programmed for short study tours in Francophone countries where successful rural development programs are in operation.

(H) Possible Peace Corps Involvement:

The Peace Corps is anxious to cooperate with this project because of the opportunities for its volunteers to receive professional technical backstopping.

there are several possibilities for Peace Corps involvement. A tentative plan has been developed to be finalized with the Department of Agriculture. The Peace Corps could provide two-person teams which would be located in strategic localities. One team member would be an agriculturalist (either male or female) and the other a social scientist. The agriculturalists would function as agricultural assistants or middle-level supervisors until Zairois personnel are trained and working effectively. The social scientist would assist in the collection and analysis of data and would help encourage the development of farmer groups and self-help activities. The teams could also help introduce the intermediate technology (see below). A second possible input from the Peace Corps would be agronomists who could assist in the field research, especially in the forest and savannah areas. These inputs could help facilitate project implementation, while at the same time enhance the contributions of volunteers because of the project's technical support.

PART III. B. (cont'd)

2. A SUB-SYSTEM FOR ENCOURAGING THE DEVELOPMENT OF FARMER GROUP/PRE-COOPERATIVES

It is the policy of the GOZ to foster the development of farmer cooperatives throughout the country. In the project area, there are several functions that farmer groups can perform:

- Farmer groups can help identify and solve local problems by facilitating the dialogue between small farmers and the project staff, including the Mbulula Research and Training Center staff.
- Farmer groups can help encourage the adoption of recommended maize and other production practices; group training and interaction tend to reinforce the learning of new work patterns.
- Farmer groups can facilitate and perhaps assume responsibility for providing critical farmer services. For example, they can help overcome the major constraints to improved production identified by the farmers
 - marketing of maize and other crops, securing simple tools and equipment as well as agricultural supplies, and improving storage facilities.
- Farmer groups can promote primary agricultural processing by financing and using intermediate technology.
- Farmer groups can help plan, encourage and channel assistance to rural infrastructure development activities, in particular the preparation of farm roads tying into the central road system. (See discussion of the sub-system for rural infrastructure development.)

Farmer groups can also help insure that project benefits reach farmers with less-than-average-size holdings, helping to build the capabilities of natural groupings to work collectively. Thus, it may be possible for these farmers to improve their economic position.

(A) Strategy for Farmer Group Development:

The project will pursue a strategy for building farmer groups or pre-cooperatives which seeks to work with the non-centralized strengths of local socio-political groupings.

PART III. B. (cont'd)

Within the project area, there are significant differences among these groupings regarding decision-making on land use and agriculture. For example, as already noted in the project area description, an acephalous, patrilineal structure guides men's farming lives in much of eastern Kongo Zone. In most of Nyunzu Zone, male farmers look to a local Sultani (matrilineal succession) for higher-level farming decisions; patriline councils play an increased role near the Kongo/Nyunzu border. At this time, it appears that the Nyunzu Pygmy farmers follow the matrilineal Sultani structure at least in overlay form. Beneath these overarching structures, one finds patrilocal extended family groups (perhaps larger and stronger in Kongo Zone) that traditionally carry out cooperative production activities. Also, the field investigation revealed that in some villages, small groups of men (from different patrilines) cooperated on farming tasks. While married women are not organized residentially by either matriline or patriline, neighbors and friends work and discuss together in cohesive women's groups, where leaders can be easily identified.

The above only begins to outline the complexities of social organization within the project area. Indeed, within each locality, there are subtle differences in organization and decision-making, as well as not-so-subtle conflicts or competing interests among groups. The strategy for promoting the development of farmer groups has to take account of the strengths and weaknesses of the social systems found in different parts of the project area. In addition to encouraging farmer groups based on existing patterns of cooperation at the local level, there are certain other concepts incorporated into the project's strategy:

- (1) The development of farmer groups will be encouraged on the basis of popularly defined needs and opportunities. The PP team's meetings with groups of farmers throughout the project area revealed that the farmers have definite ideas of activities that could be carried out collectively with a minimum of outside support -- provision (sale) of low-cost processing equipment, the use of improved storage facilities, assistance in constructing farm access roads, identifying successful local farming practices, doing village and extended-family-level animation, etc.
- (2) At the outset, the farmer groups will be established to carry out one or two simple functions. As organi-

PART III. B. (cont'd)

zational and financial capabilities expand, the groups may choose to diversify their activities. This will avoid the common problem in many farmer organizational development efforts where activities are expanded more rapidly than the leadership and financial resources needed to support them.

- (3) A multi-tiered organizational structure will be developed for reasons of economy of scale and effective management. Also, this will facilitate the channeling of project resources and assistance to small natural groupings.

(B) Program for Farmer Group Development:

The project will establish a small division which will be responsible for encouraging the development of farmer groups; its work will be directly integrated into the planning and implementation of extension operations. This division will be manned by three Zairis recruited on the basis of their knowledge of local social and production systems, their demonstrated talent and willingness to live and work effectively in the field (at the farms, in the villages); and their ability to communicate with, and help organize farmers. The PP team found that there are such individuals in the project area. They who are highly respected by the local population and are interested in joining the project's staff. The project will also provide a Swahili-speaking, American rural development specialist with cooperative and marketing experience to assist this division.

As previously described under the Sub-System for Research and Extension Operations, the project will select about 75 localities in which the project's activities will be extended over its six-year life. One of the main criteria for the selection of these areas will be the existing socio-political groupings and their principles of organization. (See Annex J p. J-4 for provisional Farmers' Center list and selection criteria.) The Farmer Group Development Division will assist in the selection of the localities for initial project concentration and help identify the data requirements for determining the current patterns of decision-making, diffusion of new ideas, cooperation and help on farming activities. This information on local social systems will be collected as part of the project's overall data collection and analysis effort and will help guide the encouragement of farmer organizational development.

PART III. B. (cont'd)

Upon choosing certain localities for special initial concentration, the Farmer Group Division will accelerate the animation or communications process that was begun with the PP team's meetings with farmer groups. The purposes of this process include:

- Creation of a forum for area farmers to meet and discuss their concerns: in particular, the constraints to, and potential for, improved agricultural production.
- Encouraging the area farmers to form a Farmers' Council consisting of representative of major groupings such as patriline, landed matriline, villages, important extended families and other interested natural farmers' groupings.
- Encouraging the Farmers' Council to initiate an action program, such as the construction of a Farmers' Center to provide services to groups of farmers within the locality, and to begin actively identifying and contacting the numerous small farmers' groupings throughout the area which will be the building blocks of support and organization for any solidly based Farmers' Center.

Concurrently, it will be necessary for similar organizational steps to be taken with the women. Based on the results of meetings and discussions with village women's work groups throughout the area, they will be encouraged to form a Women's Sub-Council to be served by the Farmers' Center.

The process outlined above is compatible with existing local decision-making processes. As problems or possibilities arise, it is common for representatives of various groupings to meet and consider options. For example, much work has been done in the project area on constructing and improving farm access roads; the leaders of the villages or groups which will use these roads meet informally or formally to determine the division of labor. Another example is the Mbulula Farmers' Organization where a committee (similar to the proposed Farmers' Council) was formed with excellent representation from all major groups in that locality. In essence, the project will act as a catalyst for promoting such communication and cooperation at the outset.

PART III. B. (cont'd)

The Farmers' Council will be encouraged to construct a Farmers' Center which will probably consist of a traditional meeting place and perhaps a small office/warehouse combination, also made out of local materials on a self-help basis. The construction of the center will be somewhat symbolic, indicating responsiveness to project activities, and a willingness to work together. However, the Farmers' Centers will serve several important functions. Throughout its existence it will be a place for farmer discussions, providing constant feedback and advice on project activities. It will also be a forum where new farming techniques can be advanced, as well as a staging ground for continued identification of, communication with, and assistance to local farmer groupings. Further, it will serve as the headquarters for the agricultural assistant who will work under the supervision of the Farmers' Council. From the beginning, crop experimentation will take place -- first near the Center and later, as positive findings occur, in the farmers' own fields. Further, the Centers can hold intermediate technology demonstrations. be the local distribution point for this technology (as well as tools, insecticides and perhaps basic family necessities). In the future, the Farmers' Centers may also be able to provide storage, weighing, and marketing facilities and services, though at present there are no local means to transport large quantities of agricultural products to the Centers. Early in the project the Centers could facilitate the identification and development of improved on-farm, village, and weighing-station storage facilities.

Obviously, not all functions will be performed by each Farmers' Center. The activities and even the development of Centers will vary with local conditions and needs. From the PP team's field investigation, it appears that the full range of Farmers' Center activities is especially appropriate for most areas of Kongolo and the North Lukuga area of Nyunzu. In other areas (primarily South Lukuga), the implementation of such an approach may be impeded because of the shifts in farm village locations due to the rapid rate of forest depletion.

The map in this section shows 55 possible locations for Farmers' Centers, and Annex J presents the criteria for selection and a discussion of each possible location. In addition, the project will encourage the establishment of about 20 more Centers, mainly in Nyunzu, which is currently under-represented. The projected schedule for Center development is as follows: 10 by 10/77; 25 by 10/78; 40 by 10/79; 55 by 10/80; and 75 by 10/81. It is planned that at least three small farmer groups will be established in each locality served by a Farmer's Center.

PART III. B. (cont'd)

The formation of Farmers' Councils and the establishment of Farmers' Centers are only the first steps towards the development of viable farmer groups in the project area. Throughout the life of the project and beyond, resources and assistance will be channeled through Farmers' Centers to small natural residential groupings in the project area, such as cohesive villages, patrilineal farming groups, extended families, and groups of women who are neighbors and friends. For example, the Farmers' Center will be the sales point for the corn shellers, palm oil presses, peanut and rice decorticators, and hand mills. These will be sold to small groups that are willing to jointly finance and use a piece of equipment. Other opportunities exist for introducing technology appropriate for small groups, such as the construction of improved storage facilities or the initiation of soap making in women's groups. As improved maize production practices are developed and tested, the dissemination and discussion of these practices will be facilitated through small groups of farmers situated in the various parts of a Farmers' Center's area.

Over the long run small groups within each area served by a Farmers' Center will become the building blocks of an effective organizational/cooperative development effort. The Farmers' Council may evolve then into a primary society which serves several of these smaller groups or branches. There are many uncertainties on whether this process will work, but it appears to be a reasonable starting point for the project based on current knowledge of the local area -- in particular, how organizations are structured and how group action has occurred in the past.

(C) Project Support for Farmer Group Development:

As noted above, the Farmer Group Development Division will be staffed by three locally recruited Zairois and an American rural development specialist. Two Zairois will be stationed at Mbulula; the American and other Zairois will be stationed in Nyunzu. In addition to providing administrative and logistical support to this division, the project will provide short-term third country training for the three Zairois, as well as on-the-job supervision, constructive critique, and other training. One possible location for training in animation and communications techniques is the Centre d'Etudes Economiques et Sociales d'Afrique Occidentale (CESAO) in Upper Volta (which currently trains individuals from several

PART III. B. (cont'd)

Francophone countries). A possible place to meet the training in cooperative development and management, is the training institute in the Cameroons.

As financial transactions begin to take place (either at the Farmers' Center or at the local group level), simple accounting, management and record systems will have to be developed and introduced. The project will provide short-term technical assistance in village-level accounting and management systems. Training in these skills will be given at the Mbulula Research and Training Center to farmer leaders.

PART III. B. (cont'd)

3. A SUB-SYSTEM FOR THE DEVELOPMENT AND PRODUCTION OF INTERMEDIATE TECHNOLOGY

(A) Overview:

Farm-level acceptance of improved cultivation practices (e.g., field preparation, plant spacing, weed control) and experimentation with new crops and improved varieties will partially be a function of the supply of on-farm labor. Increased agricultural productivity is constrained by a seasonal shortage of labor, especially during field-clearing, planting, weeding, and harvest periods.

Farmers are familiar with improved tools (corn shellers, palm oil presses, peanut and rice decorticators, hand cultivators, and grain mills) and appear able and willing to purchase them. Hoes, axes, and weed cutters are fabricated throughout the project area. Machetes have been mainly imported from Tanzania and through Lubumbashi; new ones are expensive and in scarce supply.

Storage facilities for agricultural products are inadequate, although the concept of providing storage protection for maize is well established throughout the project area. Farmers report that insects, rodents, mildew, and fungi destroy large quantities of stored grain. Farmers are seeking better methods of constructing field and village storage facilities, particularly for maize. Problems related to maize storage include: timing of harvest, slow selling procedures, long distance from fields to villages or weighing stations, irregular buying by merchants, bulk and weight.

The project response to these needs is to provide, by grant assistance, selected intermediate technology in tools and storage to Farmers' Centers for sale to local farmer groups and individual farmers during the first three years of the project; and, concurrently, to establish a capability in the project area to fabricate, sell, maintain, and repair these tools and storage facilities, as well as to identify, through collaboration with farmers, other intermediate technology which will be designed and fabricated in the project area.

Some of the intermediate tools will provide more efficient procedures for tasks performed exclusively by women. Therefore, special attention is to be given in project implementa-

PART III. B. (cont'd)

tion to facilitating effective access by women to intermediate technology.

(B) Program Development:

Initial experimentation with various types of intermediate technology (e.g., corn shellers, peanut decorticators, hand mills) has been conducted in the project area by missionary groups, with a strong favorable response from farmers -- both male and female. Because of the high impact of introducing this technology, and potentially as of making farm implements readily available, the project will initially purchase equipment from local, third country and U.S. sources for sale to farmer groups and individual farmers. Project funds have been programmed for the purchase of 500 corn shellers, 500 hand mills, 200 each of peanut and rice decorticators, 100 palm oil presses and 10,000 agricultural implements (mainly machetes and scythes). As is described below, by the third year, the project will have developed a production capacity for this equipment in Kongolo.

Demonstrations and sale of the equipment and tools will take place at the Farmers' Centers, under the supervision of the President of each Farmers' Council with the help of the agricultural assistant. At first the Farmers' Centers sell items at cost, concentrating on passing them to small groups as efficiently and as equitably as possible. Later, as financial management skills are developed, some income could be generated from these sales to help make the Farmers' Centers financially viable. The proceeds from the sale of project-procured items will accrue to a special account which the project will use to help establish the Kongolo Intermediate Technology Center, provide working capital for its operation, and finance the training of village artisans.

The Kongolo Intermediate Technology Center will be established during the first two years of the project. It will be based on two area resources. Throughout the project area, there are village blacksmiths who construct and maintain hoes, knives, and axes and sharpen machetes. There is also a more limited number of men experienced in automotive and electrical repair, though their experience dates back to pre-Independence days. Both types of specialist can be trained in the design, construction and maintenance

PART III. B. (cont'd)

of equipment and tools by the Kongolo Center. The second area resource is the maintenance facility of the old Chemin de Fer des Grands Lacs railroad and river transportation company. Although the metal-working shop has not been used for several years, it is well-equipped with three forges, mechanical snear-presses, threaders, welding shop, anvils and a large assortment of hand tools and other machinery. There is also ample bar stock, sheetmetal, and salvageable iron and steel from abandoned barges and dry dock facilities. The SNCZ has said informally that it will consider granting the use of these resources and facilities to the project. (Funds have been programmed for establishing the Center in case this option does not work out.)

The first step in developing the Center will be to rehabilitate the workshop; this will require six months' time of an American technician and a six-man local unit. During the period of rehabilitation one or two Peace Corps volunteers with backgrounds in blacksmith or machine shop work will arrive to begin designing and fabricating appropriate equipment for sale to the farmers. Backstopping for the volunteers will be available from the machinist provided under the project's rural infrastructure sub-system.

The project will recruit a Zairois who will direct the Center which will be the locus for all activities being carried out under this sub-system. His staff will be built up gradually as the Center's activities are developed. Initially, there will need to be a unit to handle production and training. Ten to fifteen Zairois with blacksmith/mechanical skills will be locally recruited by the project and trained by the Peace Corps volunteers. Five will be trained for production activities, and the other five to ten will be trained to teach village blacksmiths how to repair the equipment being imported (and eventually produced locally) by the project.

For the design and production of equipment, the Center will draw on the experience of the CEDECO Center in southern Zaire, where corn shellers and peanut decorticators are currently produced. Designs for other hand-powered equipment have been developed and are being produced in Ghana, Senegal and Upper Volta. The project will finance study tours to these countries to tap the expertise that

PART III. B. (cont'd)

has been developed, both in terms of equipment developed and in terms of the structuring of production and training operations. With this background, the Center will design, field-test and begin production of the equipment with initial priority being placed on supplying corn shellers. Two years after the project commences, the Kongolo Center will be producing equipment and tools. Further, through discussions with farmer groups, other types of intermediate technology will be identified, designed and tested.

Like the imported equipment, the Center will sell its products through the Farmers' Centers. One aim will be to make the Kongolo Intermediate Technology Center financially self-sustaining. At the end of four years, the profitability of the Center will be assessed and a procedure worked out to determine its future ownership (if it proves to be successful). There are several options which could be explored:

- Turn the Center into a cooperative;
- Sell it to a local businessman or group of businessmen, with the workers receiving equity; or
- Transfer the Center to a government agency.

The Kongolo Center will also perform a training function for village blacksmiths. The immediate need will be to train blacksmiths to repair the equipment imported by the project. This will be done by the five to ten blacksmith-trainers at strategically located Farmers' Centers. Blacksmiths from nearby villages will be trained as a group, probably from two-four weeks, and the trainers will then follow up with individual instruction. Over the long run the Center will launch a program to train village blacksmiths to produce various implements such as machetes and simple equipment.

The details will be worked out as the project learns more about the capabilities and interests of village blacksmiths.

(C) Women and Intermediate Technology:

The intermediate technology being introduced by the project is particularly appropriate for women, for it is

PART III. B. (cont'd)

they who are primarily involved in shelling the corn and peanuts, grinding of maize, and making the palm oil. Especially significant for women will be the introduction of the hand grain mills. They will greatly reduce the time required in the household to produce corn flour for domestic consumption and will provide additional income as women sell corn flour in the larger villages and towns. Another possible income-generating activity for women would be the introduction of soap making. Soap, as the PP team found in its village meetings, is in great demand and is very expensive. Missionaries in the area have developed procedures for making soap using palm oil and a minimum of external materials; the Sisters could help with the training effort.

The Kongolo Intermediate Technology Center will be responsible for identifying and developing the technologies and training programs for women in collaboration with the female extension expert (discussed in the Extension/Research Sub-System, Section 1 above). As noted in the social analysis of this PP, the project will have to exercise caution in introducing technology to women to avoid disrupting social interaction and work patterns, to not create long user lines at machine sites (thereby wasting more work days than are saved), and to insure that the women receive the benefits of this technology.

(D) Development of Improved Storage Facilities:

Another area of initial concentration for the Kongolo Center will be the development of improved storage facilities -- an area in which farmers expressed considerable interest. To handle this aspect of the program, one ONACER technician will be part of the Kongolo Center staff and located in Mbulula to facilitate his field work. The project will provide him with short-term technical assistance, as well as third country training in such locations as Nigeria and Ghana, where low-cost storage facilities have been developed. Also, the Peace Corps in Zaire has been developing designs for improved storage facilities using local materials. They can be tested in the project area.

The first task of the ONACER technician and a short-term specialist with experience in low-cost storage facilities will be to examine the variations in local

PART III. B. (cont'd)

storage facility design to determine which are the most efficacious; when and where needed, improved techniques could then be introduced into the program of the Mbulula Research and Training Center. Based on the field investigations and other research, the ONACER technician and short-term specialist will design prototype models in cooperation with farmer leaders for testing by local farmers. The research, design and experimentation with storage facilities will be coordinated closely with both the Sub-Systems on Research/Extension Operations and on Marketing. (see Sections 1 and 4, respectively).

PART III. B. (cont'd)

4. SUB-SYSTEM FOR MARKETING AND CREDIT(A) Overview

There is considerable contrast in maize marketing situations in Kongolo and Nyunzu, but both zones face severe limitations to increased commercialization. Nyunzu Zone has been marked by heavy competition (four to five large traders) within a 60 kilometer radius of the railhead at Nyunzu town.

This is because a considerable quantity of maize (10,000 + tons) is produced close to the railhead and the quality of the road network in the area is adequate to permit reasonably efficient collection of the maize by truck.

Marketing in Kongolo, on the other hand, is dominated by two or three traders. Other limiting factors include the greater distance between maize-producing centers and the railroad and the relatively worse condition of the road network. Both factors result in a relatively higher transport cost (and thus reduced margins).

Notwithstanding these differences, the marketing systems of both zones face similar short- and medium-term constraints which, if not addressed, will likely result in reduced levels of commercialization.

The GOZ Department of Agriculture reports that 24,716 MT of corn were harvested in Kongolo and Nyunzu in 1974. Corn shipments to MINOKA were: 18,519 MT in 1974; 13,785 MT in 1975 and an estimated 16,000 MT in 1976. Local consumption of corn and shipments to Kalemie and Kabalo probably account for at least 6,000 MT's. per year. It is anticipated that corn production will increase from a 1977 level of about 22,000 MT to about 42,000 MT in 1982.

The corn marketing system in the project zones is not capable of moving this additional grain to markets. In 1974, 28 of 38 licensed merchants actually delivered corn to MINOKA mills; by 1976 only 12 licensed merchants were delivering corn to MINOKA. A few of the larger merchants indicated

they may not return next season. (Throughout these years, 7-8 merchants bought 90 percent of all marketed corn.) The decrease in numbers of active corn merchants is caused by low margins of profit for all merchants due to increasing costs of petroleum products, spare parts, trucks and corn sacks; inability of local banks to provide short-term credit for corn purchases; high transactions

PART III. B. (cont'd)

costs, in terms of money and time, required to do corn marketing between the project area and Lubumbashi markets; and the deteriorating condition of rural roads in North Shaba.

During the last half of CY 1975 the minimum price to be paid corn producers in North Shaba was Z40/MT, whereas the price being paid for corn delivered to MINOKA mills was Z63/MT. Corn was marketed in North Shaba during this period, as larger merchants were able to write-off losses, or due to their monopolistic position, able to apply a small degree of differential pricing at the farm level. The latter latitude was narrow, given a lower than normal harvest in the project area, due to drought conditions. Small merchants went out of business or suffered substantial losses. The ONACER, in its second year of activities, was required by law to pay the minimum producer price and to buy in remote areas not usually served by private merchants. ONACER's accounting losses were substantial in 1975.

During the first six months of 1976 a price policy was followed whereby the corn (grain) merchants' margin was restored, but the milling margin became negative: a wholesale flour price of Z90/MT versus Z 105/MT price paid to merchants by the mill. In July, 1976, Shaba Regional authorities and MINOKA management established a revised corn pricing structure of Z75/MT for producers, Z115/MT for corn merchants, and an average mill selling price for flour of Z139/MT. This restores margins for all three parties in the corn economy, but it is too early to know with certainty whether incentives to produce, market, and process corn will be sufficient to capitalize this project.

The average cost for corn merchants in the Nyunzu area is estimated as follows:

<u>Costs</u>	<u>Z/MT</u>
Purchase 1,000 kg. Maize	75.00
Truck Depreciation, Maintenance, Fuel	8.50
Truck Labor	.50
Payment to Village Leader	1.00
R.R. Loading Labor	.20
Sacks and String (including lost sacks)	8.00
Losses in Transit	5.00
Rail Transport (Nyunzu-Likasi)	9.92
Cost/MT delivered to MINOKA	108.12
Mill Buying Price	115.00
Less Merchant's Costs	108.12
Profit Per Ton	\$ 6.88

PART III. B. (cont'd)

Profits under the current Shaba price policy may be adequate for the 7-8 large merchants in the project area who market 900-4,000 tons each per year. Operational feasibility for ONACER and smaller merchants is less a question of pricing policy than one of access to economies of scale, such as credit, reduced transactions costs, market and production information, and improved management. This is a particular problem in Kongolo, where operational costs for merchants are higher than in Nyunzu, due to the disrepair of the road system and the greater distance between the maize source and the railhead. The inability of ONACER to obtain short-term credit for the Kongolo buying season this year has led to a significant reduction in the quantity of maize being marketed in Kongolo.

Overall GOZ grain pricing policy will be addressed in on-going research programs and in the Grain Marketing Project. North Shaba PP discussions have called pricing disparities to the attention of influential GOZ decisionmakers.

B. Objectives of the Sub-System

The basic objective of the credit and marketing sub-system is to promote a strong competitive market system over the next five to ten years. The number of merchants buying 1,000 tons or more of corn per year will be expanded from the current 7-8 to 20-25. While the improvements in the road infrastructure to be carried out under this project will play a major role in this regard, it is necessary to address other constraints as well. Local facilities in the project area for banking services and for truck sales and service essential to all merchants will be established and capitalized to relax the constraints faced by small-medium merchants in credit, cartage, communications and management. At the same time, a program for rationalizing the operations of ONACER will be carried out to enhance their capability to play a positive role in facilitating competition in corn marketing in the project area.

C. Program for Credit and Market Development

The marketing and credit program contains the following components:

- Bank credit to small grain merchants and cooperatives for trucks and spare parts;
- Bank credit to small grain merchants and cooperatives for grain purchases;

PART III. B. (cont'd)

- Small farmer production credit;
- Improved and expanded railhead facilities;
- Assistance to grain commercants in business training and market communications; and
- Assistance to ONACER (grain purchase credit and equipment; agent training; project supervision).

The Marketing and Credit Division of the project will be headed by two ONACER Directors of Marketing located in Kongolo and Nyunzu and the U.S. Rural Development Specialist at Nyunzu who will have a strong marketing and credit background or training. The Division will be charged with sole project area responsibility for licensing corn and rice merchants; with increasing the quantity and quality of private grain traders in the project area; and with marketing a maximum of 25 percent of corn production exportable from the project area in order to maintain a competitive market and to evacuate marketable corn. ONACER and all of its personnel will become part of the project staff. With the above guidelines, the project management unit will find ways to develop a healthy, competitive market as well as to help ONACER improve the efficacy of its own marketing operations.

Licensing

A prospective grain merchant in Zaire must presently obtain an authorization to market from ONACER. ONACER certifies that the merchant has sacks, storage facilities, access to a vehicle and scales, and that he will pay producers the 7.5/kg. In addition, ONACER surveys farmers and other businessmen to formulate profiles of corn merchants' reputations and credibility in the community. ONACER then grants an authorization to the merchant, who takes it to the Agronome of Zone, who issues a grain marketing license for Z2. The data collection and analysis is quite subjective. The project will develop a detailed questionnaire for use in the authorization and licensing process. The questionnaire will seek specific information on prior marketing experience; debt history; cash balances; access to credit; and access to cartage, sacks, storage facilities, and scales. The project will analyze this data (to be obtained prior to April 15, 1977) and establish priorities for assistance to merchants and ONACER for the current marketing

PART III. B. (cont'd)

campaign. Based on the Marketing and Credit Division's favorable review of this data, a marketing license will be issued by the project.

Credit Program for Trucks

Commercants in the project area have about 30 trucks with which they will market approximately 16,000 tons of maize in 1976. Many of these trucks are in poor condition and are often under repair. Poor road conditions limit the tonnage the trucks can carry. A truck in Kongolo may transport only 500 to 600 tons this marketing campaign due to poor roads and the long distances traveled to reach the production areas. In Nyunzu, a truck may transport 1,800 tons because most production areas are within 60 km.

During the course of the project, the condition of the roads will be improved, but production areas in Nyunzu are expected to move farther from the town. If we estimate a minimum of 1,000 tons/truck/year, we will need approximately 40 trucks in the project area by the end of the project to transport the increased quantity of maize produced for sale by year six of the project (a minimum of 36 tons is targeted for 1982).

In the early years of the project the average life of a truck, based on interviews with merchants and ONACER technicians, is expected to be about three years. This should be increased to five years at the end of the project due to improved roads. To assure these trucks are available in the project area, and that merchants have the means to purchase them, the project will loan counterpart funds to a banking institution for relending to grain merchants for the purchase of trucks. To minimize foreign exchange losses for the GOZ and to maximize parts and service availability, the Bedford diesel truck manufactured by GM/Zaire and sold and serviced by ACA (which has branches in Kalemie, Bukavu and Lubumbashi), is recommended. The PP team has verified with GM and ACA that ten trucks per year can be purchased for the project area with counterpart funds. The delivered price is estimated to be approximately Z16,000 in year 1 and, following current price trends would be about Z23,000 by year 5.

PART III. B. (cont'd)

NUMBER OF TRUCKS IN PROJECT AREA

	<u>Year</u>	<u>Current</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
Existing Project (Includes ONACER loans, rentals)		15*	10	5	-	-	-	-
	1		10	8	6	3	-	-
	2			10	8	6	4	2
	3				10	9	8	6
	4					8	7	6
	5						4	4
Private Sector	1		3	2	1	-	-	-
	2			3	2	1	-	-
	3				5	4	3	1
	4					5	4	3
	5						8	7
	6	—	—	—	—	—	—	<u>10</u>
Total		15	23	28	32	36	38	39

* The 30 trucks now operating are not new and are often out of service for repairs so that at any one time only about one-half of the trucks are in service.

The price of new trucks is expected to increase over the course of the project. The cost per year is as follows:

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>
Price	216,000	17,000	19,000	21,000	23,500	26,000
No. of Trucks	0	10	10	10	8	4
Total	170,000	170,000 (\$197,674)	190,000 (\$220,930)	210,000 (\$244,186)	188,000 (\$218,605)	104,000 (\$120,930)

PART III. B (cont'd)

The total cost through 1981 will be Z862,000 which is equal to \$1,002,326. However, the principal on the loans will be repaid one-third per year for three years. This will put money back into the loan fund each year for new loans, reducing the total needed in the loan fund to Z393,333 (\$457,364). To this is added Z75,000 (\$87,209) for a spare parts fund. The total for both funds is Z468,333 (\$544,573). With a buffer of Z31,667 (\$36,822) for contingencies the total would be Z500,000 (\$581,395).

Loan terms for merchants would be three years at an interest rate of approximately 12.5 percent. Given an adequate price structure for maize marketing (see micro-economic analysis) that allows for reasonable profit margins for merchants, and the lower than average purchase price for trucks (due to project economy of scale), the interest rate would not need to be low to accommodate the merchants, but rather high enough for the loan institute to meet costs. The exact interest rate would be decided by the loan facility with the assistance and concurrence of the Marketing and Credit Consultant.

In addition, six-month loans will be provided at approximately 12.5 percent for spare parts (stocked by the project) for maintenance of project supplied vehicles. Based on the number of trucks operating each year, it is estimated that Z75,000 will be required for this fund.

The total amount of the loan fund, Z500,000 will be loaned at a concessional rate from counterpart funds to a banking institution which would open a facility in the project area. Based on data generated in the licensing process and on interviews, the Credit and Marketing Division will make recommendations to the financial institution. All other factors equal, loan preference will be given to merchants and cooperatives marketing less than 1,000 MT/year. Criteria for selecting small merchants and cooperatives as loan recipients will be (1) debt history, (2) marketing experience, (3) education and skill level, (4) intentions for marketing corn, (5) reputation in local community.

Truck Rentals

A truck rental program provides an additional means of making trucks available to small merchants. The trucks would be rented on a weekly or monthly basis, with the project supplying the driver and providing for maintenance.

PART III. B. (cont'd)

The program will be run on a trial basis during the first year of the project using two of the trucks from the loan fund purchase (the project would use the loan fund money, with the rental fee going back into the loan fund). If the rental program proves to be viable for the project to run and a valuable service to the small merchants (greater benefit than the sale of trucks through the loan fund) the project will expand the rental program at the expense of the loan program.

In-House Project Marketing

To obtain the Marketing and Credit Division's in-house capacity to market 25 percent of project corn production, four to six centers will be designated throughout the project area. Project weighers on bicycle will precede the farm pickup by seven to ten days. A small truck will operate out of each center to pick up grain from nearby farmers. Every week or two, a large project truck will take a full load from the center to the railhead. Sites for these centers will be selected by project management, and will correlate to degree of competition, amount of corn produced in the area, and formation of farmer groups. Special emphasis will be paid to Kongolo Zone.

In addition to corn marketing, the Marketing and Credit Division will verify in the field that other buyers are paying official producer prices, that farmers are being paid, and that sacks of various marketers are being correctly used.

To carry out this program the Marketing and Credit Division needs four large trucks in Kongolo and four in Nyunzu; four all-wheel drive pickups in Kongolo and two in Nyunzu for grain collection centers, and ten bicycles for weighers in Kongolo and Nyunzu. ONACER now has five large trucks in good mechanical condition, which will become part of the Marketing and Credit Division fleet. Counterpart funds will be used to purchase the additional three Bedford diesel trucks locally in 1977. The all-wheel drive pick-up will be dollar-funded in 1977. Replacement requirements will be met through investment loans by the GOZ or local banks.

PART III. B. (cont'd)

Credit for Corn Purchases

Small corn merchants informed the PP design team of a serious shortage of front-end credit for purchase of sacks and of corn from farmers. Under the current system, after the merchant has bought this corn and loaded it onto railcars, he goes to a bank in Kalemie and gets a 65 percent advance on the value of the corn he reports has been loaded. The balance is paid after weighing at MINOKA mills, with deduction for rail transport costs. The 65 percent will give the merchant a quick return to purchase more corn. The problem for many small merchants is not having the cash to begin purchasing.

The PP team was told that there have been few loans made in the last two years. The team verified this in conversations at the sub-region's two banks in Kalemie. Bankers cite two problems: (1) the drying up of loanable funds in the past year; (2) the difficulty in administering small (220-40,000) loans in North Shaba. The project addresses these problems by establishing a short-term credit revolving fund to be administered by a private bank in the project area. The availability of banking services in the project area also would enable all merchants, regardless of size, to redeem their letters of transport without undue transaction costs and delays.

A merchant who has a truck available for full-time use (e.g., a truck provided through the project credit or rental programs) should be expected to market about 1,000 tons per maize marketing season. Using the MINOKA-GECAMINES system for payment (65 percent advance on "letter of transport" and 35 percent following delivery at the mill), a buying fund for a maximum of 200 tons per merchant would suffice for the season. At current prices that would be Z15,000. However, the price paid to the producer is likely to be raised to the current national level of Z120/MT, bringing the total for 200 tons to Z24,000 (@ Z1 per sack) should also be tentatively planned. That would make a total annual loan of Z36,000 per merchant. Loans would be provided to a total of ten merchants per year with allocation to be made by the financial institution with full recommendation by the project Marketing and Credit Division. ONACER

PART III. B. (cont'd)

officials estimate that a short-term crop-buying credit of Z150,000 would be sufficient to meet the Marketing and Credit Division's marketing objectives.

The Marketing and Credit Division will have access to that amount of credit from counterpart funds. Criteria for selecting small merchants and cooperatives as loan recipients for grain purchases would be similar to the criteria used for the truck loan fund.

The project would loan Z550,000 at concessional terms in counterpart funds to a selected bank which would open a branch in the project area. The bank would administer the loan program. Present bank terms in Shaba for this type of loan are 6-9 months at 6-7 percent, but funds are not available. The precise terms will be developed by the project and the banking institution. The loans will be made at a commercially viable interest level well above 6-7 percent (possibly 12-18 percent). All loans will be repaid at the end of the marketing season. Following the initial year of operations, information and data gained from experience may warrant an expansion of this fund for corn marketing, or, indeed, for crops other than corn or equipment not eligible for financing under the truck credit program.

D. Small Farmer Credit

Agricultural activity in Kongolo and Nyunzu is labor intensive. During the PP design team's field visits to over 100 farmers, the only capital equipment encountered was machetes, hoes, and mortars and pestles. Wage labor was reported to be used in three operations in Nyunzu and one in Kongolo, which used seasonal labor for corn harvesting and, to a lesser extent, for field clearing. Wage rates were 50-75 makuta (US 43¢ to 65¢) for working from 6AM to 12-1PM. The first three years of the project will develop improved crop cultivation schemes based on local practices and will introduce intermediate technology. Combined, they will relax the seasonal labor constraint so that practices of side-dressing of fertilizer, weeding and thinning fields and experimentation with new corn varieties may be assumed by farmers. By the end of the third year of the project the project's information system will indicate whether cred:

PART III. B (cont'd)

is a constraint to increased production and will identify the nature of the constraint. The logical organizational focus will be the Farmers' Groups. These Groups will be large enough that collective collateral for individual farmer's loans will be feasible. At this time, the PP team believes that if, and only if, fertilizer is available in commercial channels in Kongolo and Nyunzu, will small farmer production credit be necessary in the life of the project.

A systematic assessment of the small farmers' cash flow will be included in the projects information and data system. This ongoing process will assess changes in the project area with respect to the need for credit, the purposes of credit, and the most efficacious means of extending credit.

E. Improved and Expanded Railhead Facilities

Expansion of railyard facilities will be needed at Nyunzu. Each rail car carries 30-35 tons of corn. The existing siding is long enough for 13 rail cars, enough to meet current marketing needs. The rail sidings will require lengthening to allow for approximately 26 cars (910 MT capacity) and necessary platforms will have to be constructed. The SNCZ director for the region that includes the project area told the Design Team that SNCZ would put in the rail sidings at their own cost and requested that the project provide only services of a bulldozer to level the land for these sidings. Formal arrangements with SNCZ and OR will be made after the project agreement.

SNCZ has also informally agreed to provide motorized vehicles to jockey the railcars on and off the sidings at both Nyunzu and Kongolo. This arrangement will also be formalized. To ensure that this important improvement occurs before the next buying season, a contingency fund of 25,000 in counterpart funds and 210,000 in counterpart funds is established for materials and labor, respectively, for this activity.

PART III. B (cont'd)

F. Assistance to Grain Merchants in Management and Communications

Large-scale grain buyers have developed a comprehensive information system to keep them well informed on maize production, available bags, spare parts and fuel availability, price changes, etc. Small buyers do not possess the scale that grants access to such information. Through its information system, the project will provide information to small merchants regarding production patterns and other local environmental matters. The project will also aid the small merchants in their communications needs with organizations outside the project area.

This assistance will not be withheld from the large merchants but it will be directed mainly to the small merchants, where the need is greater.

Most of the small merchants have had little or no experience in operating small businesses. Until 1974, the private commercial sector in Zaire was dominated by Europeans. Then in 1974 under Zairianization, most Europeans left and businesses were taken over by people who, in most cases, did not have the necessary experience to run a successful business operation. The more successful market operations in Nyunzu and Kongolo are run by Arabs and Greeks. Training for small Zairian merchants will be an important component of the marketing and credit sub-system.

The Marketing and Credit Specialist will be responsible for assessing the training needs of the local small merchants and then setting up the training program to provide seminars and on-the-job training as required. A Zairian trainee will be assigned to assist the U.S. Rural Development Specialist and the two Zairian Directors of Marketing to implement this training component. Project facilities at Nyunzu, Mbulula, and Kongolo will be utilized for this activity. \$2,000 for materials and teaching aids is programmed for FY 1978 and \$2,000 per year for local training costs.

PART III. B. (cont'd)

- Agricultural credit services:
 - A 2400,000 revolving fund for six-month loans to grain merchants in the project area;
 - A 2150,000 revolving fund for ONACER grain purchases;
 - A 2500,000 3-6 year loan program to enable merchants to buy or rent trucks and to purchase spare parts; and
 - Project management assistance in evaluating credit needs of small farmers, channeled through the farmers' groups established by the project and to implement a credit program when and where needed.

The alternatives for fulfilling these functions are the Banque Commerciale Zairoise (BCZ), SOFIDE, and the Bank of Kinshasa.

The BCZ is a Belgian-financed bank, with a branch in Kalemie. SOFIDE loans funds for large industrial and agri-business schemes, and is taking a growing interest in agricultural development; it is capitalized by the GOZ, Zairian banks, IDA, and European/American/Japanese bank loans. The Bank of Kinshasa is a wholly Zairian-held bank, and operates a branch bank at Kalemie.

The BCZ is willing to serve the project through its Kalemie branch, and sees no interest in the project other than relending project loan funds.

SOFIDE has not yet begun small-scale rural credit operations, and is concentrating on agri-business. Their terms are 3-15 years and 10.5 percent to 12.5 percent interest rate. They could administer the credit program for grain trucks, but would not establish an office at Kalemie or in the project area. They plan to open an office at Lubumbashi in 1977.

PART III. B. (cont'd)

G. Organization and Staff

The Delegee-General of ONACER regards the marketing aspect of the project as a prototype for testing and evolving national policy in cereal marketing, including an effective role for the agency vis-a-vis the private sector. This represents a unique opportunity for collaboration and experimentation. To facilitate this process, a special working liaison will be formalized at the Kinshasa level between the Delegee-General of ONACER and USAID project manager to plan the experimentation to that will take place in the project area. This experimentation will be monitored and evaluated by the ONACER field representatives in cooperation with the Project Data Collection and Analysis Unit. Based on these reports, the Delegee-General and USAID project manager will formulate necessary revisions in the implementation of project marketing activities as well as identify alternative approaches to be tested.

To insure effective coordination during the first phase of experimentation, ONACER personnel will operate under the supervision of the project, with direct reporting responsibilities to the Delegee-General; the project will provide the ONACER agents with formal training in marketing. The Marketing and Credit Division will be headed by an American rural development specialist with experience in marketing and credit operations. Two ONACER field agents will be assigned to the project area, with responsibility for overseeing the experimentation in Kongolo and Nyunzu Zones as well as directing ONACER's buying operations.

H. Assessment of Financial Institutions

The project has two categories of demands of financial institutions:

- Banking services for the disbursement of project funds for the salaries, operating expenses, and materials (estimated to range from 50,000 to 200,000 zaires per month);

PART III. B. (cont'd)

The Bank of Kinshasa is willing to provide banking services and credit programs in the project area. It would begin by having a Kalemie office make weekly trips to Kongolo and Nyunzu, and would open a branch in the project area as soon as needed. Their current agriculture investment terms are six percent for short-term (six months) agricultural credit and seven percent for three-year agricultural credit. These may change upward to ensure supply of loanable funds at the end of the project. The Bank of Kinshasa is willing to negotiate and sign an implementation agreement covering these services at the same time the Project Agreement is signed. USAID/Kinshasa is continuing discussions with this bank, as the most likely financial institution for the project activities. A stronger assessment of the Bank of Kinshasa's past experience with agricultural credit program is required as well as a full examination of appropriate rate and term structures for agricultural credit in the project area. The USAID Mission will request TDY assistance in this question.

PART III. B. (cont'd)

5. A SUB-SYSTEM FOR INFRASTRUCTURE DEVELOPMENT(A) Overview:

The infrastructure improvement program is included as a sub-system under the project to help insure that the strategies for implementing this program will be compatible with overall project objectives. For example, roads that form an interconnecting network which facilitates truck circulation through areas of present and potential high maize production will be rehabilitated. Also, throughout the project area, the road leading to each Farmers' Center will be repaired; these centers are located in the high maize production areas. The project will be responsible for all road rehabilitation except the primary routes, which will be maintained by the Office des Routes (OR).

Including all rehabilitation/construction (project facilities, roads, bridges, etc.) and maintenance (facilities, roads, equipment, etc.) under a single sub-system ensures that infrastructure development efforts will be carried out in a more coordinated, efficient, and less-costly fashion.

(B) Current Condition of Roads:

An extensive road system exists in the area, but the condition of roads and bridges has deteriorated seriously due to lack of adequate and effective road repair and maintenance. OR cannot mobilize the human and financial resources to do more than the primary routes.

In the northern part of the project area (Kongolo Zone and some of North Lukuga), earth and laterite roads are eroded, have poor drainage, and surfaces have deteriorated leaving ruts, pot holes, and basalt flows of solid jagged rock. Local inhabitants, under military supervision, have ditched roads, and in one area cleared all trees along the road for the sun to evaporate mud holes; but these efforts have been of limited benefit. Further, since this road work interrupts farming activities, it is detrimental to agricultural production. ONAFITEX has shouldered the primary responsibility for temporary bridge construction, which has seriously delayed their cotton-buying activities. Farmers maintain farm access roads effectively for seasonal buying activities (except necessary bridge repair).

PART III. B. (cont'd)

In the southern part of the project area, main roads have a loose sandy surface which has permitted more adequate maintenance by local inhabitants. Farm access roads in this area lead to temporary villages, moved as frequently as every three years. These roads are obstructed with stumps and rocks which could be removed by local people with appropriate hand tools. The serious constraint to truck circulation in South Lukuga is not the condition of roads but the condition of the bridges. Bridges are weak, and it is always questionable whether they will hold the next truck.

The current deteriorated condition of the area's existing infrastructure is a major constraint to marketing. Some effects of the poor road system on marketing in the project area can be enumerated as follows:

- (1) Because of the excessive truck transit time on rough roads, extensive delays occur in purchase and pickup of corn from farmers. The extension of the buying season seriously increases corn deterioration.
- (2) Difficulty in reaching farm areas served by roads without adequate bridges results in reduced amounts of corn reaching the market, actual loss of part of the harvest, and farmer discouragement from further expansion of farms. In some areas farmers have actually reduced production because of lack of marketing opportunities.
- (3) High vehicle operating costs significantly increase the cost of bringing corn to the rail head. In 1975, three months' rent for a 7-ton truck to pick up corn in the Nyunzu area was \$4,400.
- (4) Excessive wear from rough roads causes rapid deterioration of the few remaining serviceable trucks. Import restrictions due to the critical shortage of foreign exchange and subsequent high cost or non-availability of spare parts and replacement trucks results in a serious shortage of trucks for transport of corn.

At the present time there is a need for a well-organized reconstruction effort, utilizing both mechanized units and hand labor, focusing both on bridges and roads in the north, and primarily on bridges in the south.

PART III. B. (cont'd)

(C) Overall Road Program:

The main objective of the roads component of the infrastructure development program is to facilitate farmer access to improved agricultural inputs and services, as well as to marketing channels. The continuing deterioration of the transportation system is preventing large portions of the project's population from reaching the market place. The proposed road program will reopen these areas, helping to provide a profit margin sufficient to stimulate private sector activity.

(1) Proposed Program:

The major elements of the proposed road program for the project area can be defined as follows:

- (a) Primary Systems: Luizi-Nyunzu: 65 kms., and Nyunzu-Kongolo: 175 kms. Total: 240 kms.
- (b) Secondary System in Kongolo and Nyunzu Zones: 724 kms.
- (c) Farm Penetration Road System: 100 kms.
- (d) Farm Roads: up to 500 kms.

(2) Resource Commitments:

The resources for carrying out this program include not only the project funds required for the roads listed above in categories (b), (c), and (d), but also those resources which will be committed by the GOZ through OR to finance the primary system noted in (a) above. The distribution is as follows:

(a) OR Costs:

Estimated Office des Routes (OR) costs for construction of the primary routes is \$1,440,000. (This does not include equipment, depreciation, or bridge construction.)

(b) Project Costs:

Cost of the secondary road system fully funded under the project is \$4,190,000 (not including expatriate costs, the cost of repair facilities, or housing, which are shown below).

PART III. B. (cont'd.)

- (c) Hand Maintenance Years 5 & 6: \$18,000
 - (d) Farm Area Penetration Roads: \$5,000.
 - (e) Farm Roads: \$26,000.
 - (f) Expatriate costs to provide management expertise for the roads and all other project construction: \$1,416,000.
 - (g) Cost of providing housing, maintenance centers, power plants, etc., is \$657,000.
- Total Project Cost: \$6,312,000

These costs are considered the minimum required to provide a road system for adequate access within the project area.

(3) Primary System Construction:

The primary roads within the project area are part of a larger primary system administered by the OR through its Brigade 19 headquarters in Kalemie. The overall primary network in North Shaba for which this brigade is held accountable totals 1,255 kms. This is part of a nation-wide OR plan for continuing maintenance of "agricultural routes".

As stated above, 240 kms. of this 1,255 kms. lie within the project area. Rehabilitation of these 240 kms. is critically important in meeting project area needs. All of the proposed secondary routes feed into this primary system, which carries the major traffic load throughout the Kongolo-Nyunzu area. The following map shows the system of primary and secondary roads proposed for reconstruction throughout the entire project area.

(a) Proposed System of Constructing the Primary Road Network:

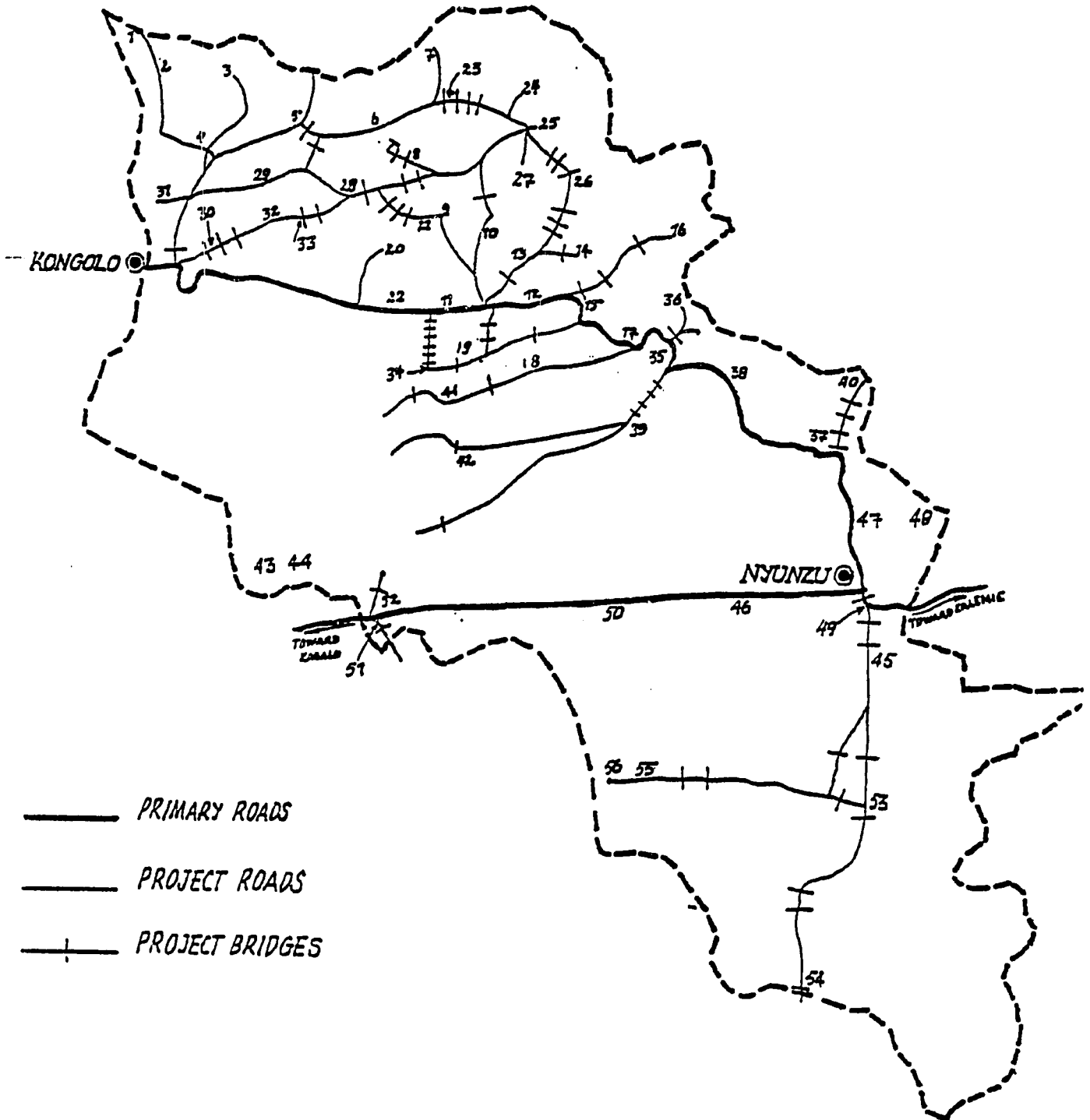
In order to systematically maintain the agricultural roads under their jurisdiction (primary network), Brigade 19 has split their rehabilitation effort into two phases. These include:

(i) Phase I:

This phase of the construction in the North Shaba area is designed to achieve maximum impact in a short time frame by restoring these routes to an economically viable standard. In the first phase effort, sub-units of the brigade are being mobilized to open the primary system from Kalemie -

ROAD AND BRIDGE NETWORK

WITH FARMERS' CENTERS INDICATED



FARMERS' CENTER LIST FOR ROAD AND BRIDGE NETWORK MAP

- | | | |
|-------------------|----------------------|----------------------------|
| 1. KABALA | 27. SENGE | 53. MOKIMBO |
| 2. TIMPA | 28. KAHENGA | 54. MAKUMBO |
| 3. MUGIZHA | 29. SOGO | 55. NGOY-LUBA
(Pygmies) |
| 4. SOLA | 30. MWANAKASONGO | 56. NGOY |
| 5. KATEBA | 31. YAYI | |
| 6. NDUTU (MUGILA) | 32. KULULA | |
| 7. KILUZI | 33. NGULUBE | |
| 8. KILENGE | 34. KIBELE | |
| 9. KAYANZA | 35. KABANGO-NYAMA | |
| 10. KANGUNGA | 36. TAMBWE | |
| 11. KAYUNGU | 37. KABEYA-MAYI | |
| 12. NDUBI | 38. PENDE | |
| 13. KIBAMBI | 39. KITENGETENGE | |
| 14. KAHESHA | 40. KABEYA-MULUNGA | |
| 15. KABENGA-SAYI | 41. KAHINDA | |
| 16. MUTOMBO | 42. MBEYA | |
| 17. SONGA | 43. KANUNU (Pygmies) | |
| 18. MAHUNDU | 44. KANUNU | |
| 19. KIGUMBA | 45. MUHUYA | |
| 20. ILUNGA | 46. LUELA | |
| 21. KIYOMBO | 47. KALUNDU | |
| 22. MUGOMBA | 48. MUHEMPA | |
| 23. BUGANALWAMBA | 49. MUKENZA | |
| 24. BUGANAPIANA | 50. MULONGO | |
| 25. MAKUTANO | 51. KATANGA | |
| 26. BUGANAMWEHU | 52. MULEYA | |

PART III. B. (cont'd)

Nyunzu - Kongolo - Kabalo and back to Nyunzu. One unit is now in place at Kongolo and is working toward the new river crossing at Kabeyi-Mayi. This bridge was destroyed during the 1960's, severing the route between Nyunzu and Kongolo, and causing a migration of local farmers to areas where agricultural products could be marketed. Reopening the route through Kabeya-Mayi is expected to result in substantial return migration to the area just north of this river crossing. The bridge, which is being constructed with donor financing by the German government, is expected to be completed in May of 1977.

The two units of the Kalemie brigade are working toward the Kabeya-Mayi bridge crossing and expect to complete their Phase I rehabilitation to coincide with the completion of the bridge in May of 1977. By that time, the road will be completely regraded and the traveled way reshaped. The drainage system along the route will be rehabilitated to minimize water erosion. Selected sections now in critical condition will be rehabilitated through a heavy maintenance effort. If completed on schedule, the road will serve the needs of the project by facilitating the reopening of the Kongolo-Nyunzu route.

(ii) Phase II Construction:

Phase II of the OR road rehabilitation program is necessary in order to put the road back in a condition that can be maintained economically. Even though the Phase I construction provides the necessary service ability for project activities, it does not provide a system of least-cost maintainability. The Phase II operations are basically to surface the road with select side-borrow materials. This will further reduce road-user cost and complete the primary system rehabilitation. These roads can then be kept in a serviceable condition with normal maintenance operation. The second phase targets have not yet been established by the Kalemie brigade. Their first priority, given a full operational budget, would probably fall in areas closer to the major population center of Kalemie. However, since the Ministry of Agriculture priorities are to immediately improve production in the Kongolo-Nyunzu Zones, and also since three of Brigade 19's constraints are being addressed through the project (see the following section), it is expected that OR will concentrate their efforts on Phase II construction within the project area. This would result in completion of project area Phase II operations by not later than May 1980.

PART III. B. (cont'd)

(iii) Maintenance:

The ongoing maintenance of the primary routes will be provided by the Kalemie brigade sub-unit at Kongolo until a special brigade (formed and equipped by the project) is transferred to the OR. At that time, the special brigade will be responsible for all maintenance within the Kongolo-Nyunzu Zones (both primary and secondary routes in that area).

(b) Standards: Primary Road Construction:

The primary road network is to be constructed to a two-lane all-weather standard with permanent steel and concrete bridges. Surfacing under Phase II will provide for assured year-round access. This standard is considered appropriate for the existing and anticipated traffic demands on these routes. The short-term projections are that average daily traffic will not exceed 50 vehicles per day. Much of this traffic will be heavy-haul and bus types. The OR standards meet the requirements of administrative and private sector needs within the area and are considered fully appropriate.

(c) Resource Commitment by OR:

In response to the need to rehabilitate primary roads in the North Shaba area, the OR mobilized the Kalemie brigade. The brigade was provided with the following 32 major pieces of equipment (additional smaller units bring the total of brigade equipment to 60 pieces):

-- Major Pieces of Equipment:

- 3 Bulldozers
- 5 Graders
- 3 Rollers (Compactors)
- 2 End Loaders
- 10 Dump Trucks
- 4 Pickups
- 1 6000-liter Water Truck
- 1 6000-liter Fuel Truck

- 1 Generator
- 1 15-Ton Low-Bed Trailer
- 1 Mobile Workshop

Most of this equipment is new, and it is all in excellent condition. Also, OR is still marshaling equipment and expects to add 20 dump trucks to the Brigade 19 fleet. The staff assigned to Brigade 19 to perform the rehabilitation comprises:

- General Management: 2 positions;
- Administrative Staff: 7 positions;
- Technical Staff (including sub-unit chiefs, mechanics, equipment operators): 26 positions;
- Sub-technical staff (carpenters, masons, etc.): 16 positions;
- Other general category positions above common laborer: 48 positions.
- Seasonal labor to support the mechanized equipment operation paid for on a day-labor basis: as needed.

(d) Progress to Date:

Remarkable progress has been realized by OR in mobilizing the Kalemie brigade which required shipping all project equipment from Matadi to Kalemie and Kongolo. Once the most critical units (graders) arrived at these locations, the brigades immediately began rehabilitating the roads leading from Kalemie toward Nyunzu and leading from Kongolo toward Nyunzu. Some interference from zone administrators diverted equipment for work on roads which the administrators considered of higher priority than the assigned primary routes.

In spite of this initial interference, the sub-units are now both working on Phase I of the primary rehabilitation, and making remarkably good progress in spite of constraints such as lack of sufficient fuel to support full production.

PART III. B. (cont'd)

Liaison between Brigade 19 and the special brigade to be mobilized by the project for secondary road construction will be in terms of technical assistance. Resources will not be transferred between the two brigades except on a cost-reimbursable basis. The support now requested for Brigade 19 from the project is as follows:

(i) The brigades are constrained by the lack of GOZ foreign exchange. This especially affects provision of spare parts for the brigade equipment. USAID/Zaire has agreed to include the provision of parts for Brigade 19 under their Commodity Import Program. The OR is now preparing an item-by-item list of these needed parts, and this one-time purchase is expected to be implemented as soon as the list is available.

(ii) There are no equipment maintenance facilities in the project area which permit heavy maintenance of construction equipment. Such facilities will be constructed by the project and made available to both OR and the special brigade funded under the project. Capital costs will be completely covered through project funding. Services through these facilities will be provided to OR on an operational cost-reimbursable basis. Also, special training will be provided to the OR mechanical staff by the equipment maintenance expatriate funded under the project.

(iii) The OR is experiencing difficulties in providing fuel to Brigade 19. It is proposed that OR meet its deficit fuel needs by drawing fuel through the project fuel supply center, which will have fuel available. Though it is expected that project fuel will have to be funded with foreign exchange, OR will be permitted to pay for fuel in local currency.

(D) Determination:

The PP team is reasonably assured that OR, through Brigade 19, is capable of rehabilitating and maintaining the primary road system within the project area. This assessment is based on the evaluation of the Office des Routes (Annex B-4), information received from numerous discussions with OR/Kinshasa management personnel, and the performance of OR's Service de Gestion du Matériel des Travaux Publics (SGMTP) and Brigade 19 in marshaling equipment in the Kalemie/Kongolo area and commencing road restoration in both areas in a surprisingly short time

PART III. B. (cont'd)

frame. To carry out its responsibilities OR must have a sufficient operating budget, fuels, and spare parts. As noted below under issues, GOZ guarantees of such support should become a condition to disbursement.

E. Secondary System Rehabilitation and Maintenance**(a) Summary**

Due to a lack of effective maintenance over the past 15 years, the secondary road system has gradually deteriorated to a point where commercial and administrative access to portions of the project area is severely limited. The project will create a Special Brigade to rehabilitate and maintain these roads. Over a 2-1/2 year period the brigade will rehabilitate a total of 724 km: 428 in Kongolo Zone, 132 km north of the Lukuga River, and 164 km south of the river in Nyunzu Zone. On completion of the rehabilitation work, the brigade will remain in the area as a part

PART III. B. (Cont'd)

of the Office des Routes and will have responsibility for maintaining the primary and secondary systems in Kongolo and Nyunzu Zones.

The map in the previous section (p.) outlines the secondary roads proposed for rehabilitation. Annexes B-1, B-2, B-3 and B-4 present a description of road standards, the specific roads to be rehabilitated in the project area, and the list of bridges to be constructed.

(b) Present Condition of the Secondary System:

The entire secondary system within the project area is in extremely poor condition. Where it is still possible to force vehicle access, the surface condition of the road links is rapidly deteriorating. Other secondary road links have been abandoned because of the difficulty and expense of replacing of failed bridge structures. In these cases road surfaces are, relatively speaking, in much better condition.

Fortunately, the rather gentle terrain which the secondary roads traverse does not generate highly-erosive run-off water velocities, even though annual rainfall in the project area is in the neighborhood of 1200 to 1400 centimeters. Further, the grades on the existing roads are such that the routes can be maintained without gravel surfacing. Consequently, in spite of the long period of non-maintenance, the secondary roads can still be put into serviceable condition at a relatively low cost per km.

Most of the marketing in the project area, except for cotton, is done during the dry season. ONAFITEX uses the road system during the rainy season, which results in some annual damage. As was mentioned previously, early (dry season) buying by ONAFITEX can be facilitated if it is relieved of its extensive bridge reparation work each year. The project will assume this responsibility.

It should be noted that certain segments of the secondary system can be quickly put back into serviceable use. For example, the main loop road which leads from Kateba to Makutano and down to Mbulula can be surface-graded as soon as the project's equipment arrives at site; only minor bridge repairs are required. The same situation pertains to the roads leading north from Keba to the Luika

PART III. B. (Cont'd)

River and from Sola northward. Opening these routes will result in an immediate increase in the amount of maize exported from Kongolo Zone. Other road links have been closed due to a lack of permanent bridges (such as the routes south and northeast of Mbulula). Constructing the bridges to open these roads will require a longer period of time, though the impact on production should be significant because they are located in fertile areas.

Overall, the roads proposed for rehabilitation were selected on the basis of several criteria: actual or potential agricultural production; population densities and migration patterns; current and projected commercialization of the area; and critical links for carrying out project activities, as well as for completing the total network. These criteria also suggest the major considerations for determining which roads within the network should be constructed first.

(c) Proposed Program:Construction: (1) Analysis of Options for Accomplishing-- Use of Local Contractors:

The first option considered was to contract with local contractors for construction and rehabilitation of roadwork and/or bridges. Unfortunately, there is no local expertise which could be mobilized to undertake a program of major bridge or road rehabilitation. To establish such an organization would also require large capital outlays for equipment and plant which is beyond the financial capabilities of local firms. Finally, the private sector has had difficulty obtaining fuels to support their marketing operations; it is highly improbable that they would even attempt to procure the fuel and material needs of a large construction effort.

-- OR Construction of Secondary Systems:

OR has just commenced brigade mobilization throughout Zaire. This is straining their capabilities, especially at the management levels. Also, OR access to foreign exchange is limited, and it is doubtful that they would agree to allocate the foreign exchange required to rehabilitate the secondary system in one area when so much has to be done nationwide to rehabilitate the primary arteries. Even if these foreign exchange resources

PART III. B. (Cont'd)

were provided through the project, it would be politically difficult for OR to undertake an entire system within the project zone.

-- Creation of a Special Brigade:

It was therefore decided, with the full support of the OR/Kinshasa staff, that the project should undertake the construction by establishing an autonomous special brigade, funded and directed by the project. Establishing a special brigade facilitates the implementation of OR's long term-plan of having a road brigade based in Kongolo. At the end of project this brigade would have responsibility for maintaining all zonal roads, relieving Brigade 19 of that responsibility and allowing it to concentrate its work in a smaller area.

(ii) Secondary System Program:

-- Organization:

The project will form and equip a Special Brigade which will be headquartered in Kongolo. The Special Brigade will be equipped and staffed to support one surfacing unit, two grading units, and six bridge construction crews. The project will also construct two equipment maintenance centers (located in Kongolo and Nyunzu) to service both OR and Special Brigade equipment. Annexes B-5A and B-7 describe the equipment to be procured and the staffing for the brigade. As shown by the chart below, the equipment for the brigade will be similar to that of Brigade 19.

Comparison of Brigade 19 and Special Brigade Equipment

<u>ITEM</u>	<u>BRIGADE 19</u>	<u>SPECIAL BRIGADE</u>
Bulldozers	3	2
Graders	5	3
Loaders	2	1
Backhoe Endloaders	1	1
Fuel Trucks, 2,000 Gal	1	2
Water " " "	1	1
Flat Bed Trucks		2
Dump Trucks	10 (+20)*	9
Rollers	3	2
Pickup Trucks	4	14
Grease Units		1
Mobile Workshops	1	
15 Ton Trailers	1	2
Compressors	1	1

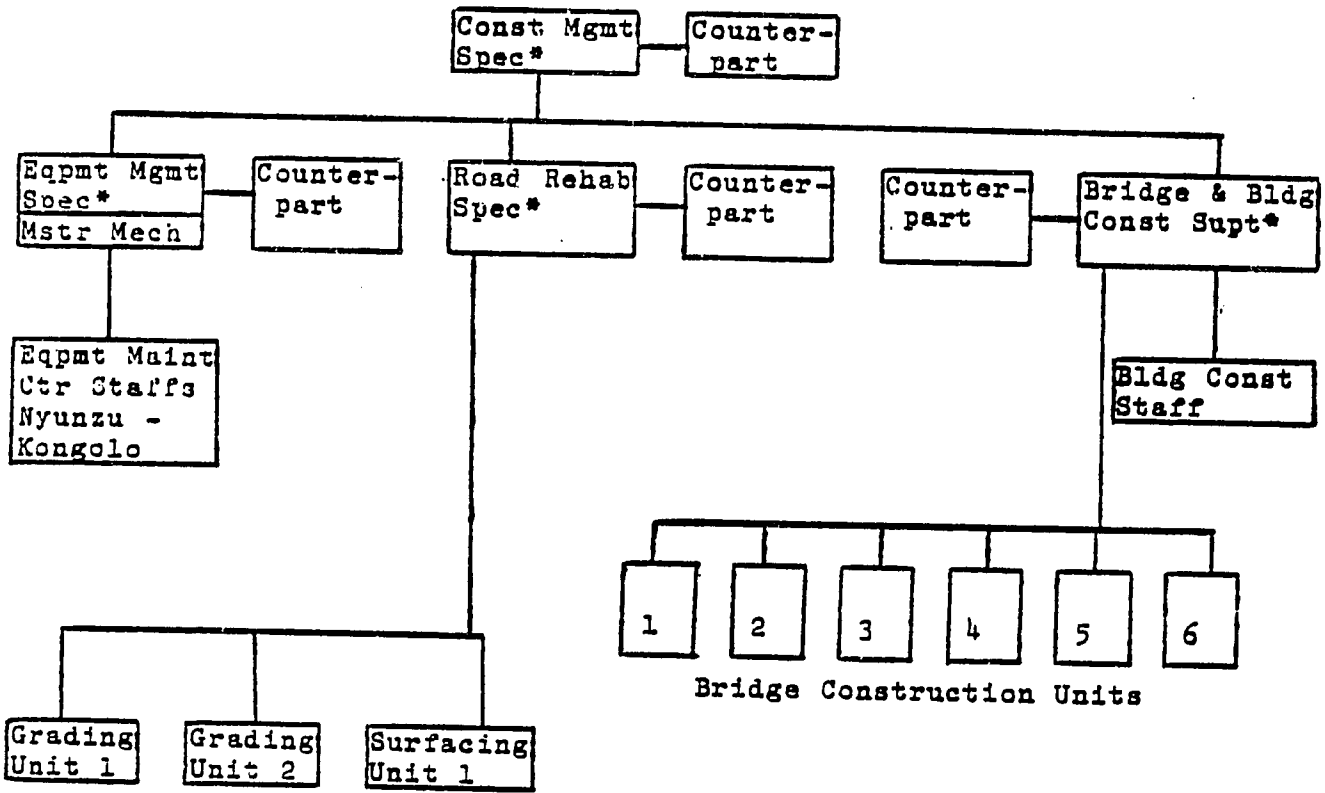
*To be supplied as available by OR.

PART III. B. (Cont'd)

The differences were dictated by the need for a substantial bridge construction program in the project area and by the relatively light need for surfacing routes in the secondary system.

The following chart shows the organization of the Infrastructure Development Unit which will manage the operations of the Special Brigade.

Infrastructure Management Staff



*Expatriates

PART III. B. (Cont'd)

(5) Staffing and Training:

The senior level management positions will initially be filled by expatriates, either American or TCN with French language capabilities. These positions include: the Construction Management Specialist, the Road Rehabilitation Specialist, the Bridge and Building Construction Superintendent, and the Master Mechanic. OR will second Zairois counterparts to the project for these technical specialists. The Zairois counterparts will have received the SGMTP management-level training, though they will still need intensive on-the-job training. This will be provided by the four expatriates. Training of the supervisors of the various units will also take place on-the-job, particularly through the day-to-day interaction between the senior managers and the construction units.

Heavy equipment operators and mechanics will also be trained by OR SGMTP and seconded to the project. Their skills will be upgraded through training and close supervision by the expatriate specialists. The PP team's field investigation determined that many of the other skills required by the Special Brigade may be found in the project area -- light mechanics, machinists, masons and carpenters. If there are additional requirements for semi-skilled or skilled workers, the project may request OR SGMTP to recruit and train additional craftsmen. While the primary output of this component of the project will be the rehabilitation of the secondary roads, the training that takes place will provide the skills required to organize each unit into an effective construction crew from the salaried-laborer level through the unit-supervisor level.

Unskilled laborers are available in the project area, and the project will tap this resource in two ways. First, a small group of unemployed or underemployed laborers will be recruited to work with each unit on a year-round basis (though paid on a day-laborer basis). There are young men in the project area who would welcome this sort of work and can be spared from family farming operations. Moreover, having these regularly-paid crews will eliminate the need for mobilizing farmers during the agricultural season for road work, thereby overcoming a major constraint to increased production as perceived by the farmers (see Part IV. C., Social Analysis).

Second, the project will contract with farmer groups to provide the hand labor necessary for rehabilitating the secondary roads. The contracts will be for specific

PART III. B. (Cont'd)

tasks, the results of which can be easily measured; the project will pay a lump sum for the work when it is completed. It will be important to schedule this contract work so that it does not coincide with the peak farm work periods. For example, in the case of bridges, there will be a need to stockpile sand and gravel for the masonry work on bridge sub-structures. The contracts for this work will be made well in advance of the need for these materials so that farming operations are not disrupted.

(6) Timetable for Construction Start-up:

Recruitment of the first two expatriates, the Construction Management Specialist and the Bridge/Buildings Superintendent, will commence during the first month of the project; it is expected that these individuals can be quickly identified and be in Zaire by the end of the fourth month of the project. They will immediately prepare the equipment IFBs and procure off-shore building materials through GSA; the lead time before the equipment will arrive is estimated at about two years.

At the present time, the optimum choice for equipment shipments appears to be via the Port of Matadi -- rail to Kinshasa -- barge to Kindu -- rail to Kongolo. OR SGMTP has successfully transported equipment using this route. Recent shipment times from port to project area have varied from a minimum of 27 days to a maximum of 71 days. The various options for equipment shipment are examined in Annex B-6.

The project will purchase fuels from Petro-Zaire, the parastatal responsible for importing and distributing all fuels for Zaire. Fuels for the project area are imported through Kalemie by Petro-Zaire. Due to a critical shortage of foreign exchange, fuels are in short supply throughout most of the country. The project has budgeted foreign exchange for fuel purchases to overcome this constraint. Also, the project will have storage facilities for up to five weeks of fuel in case there are delays in shipments.

Once the orders for the equipment and fuels have been placed, the two expatriates will take up residence at Kongolo and start restoration work on project buildings using locally-recruited staff. An early priority will be restoring the saw mill at the Kongolo shipyards which will facilitate the manufacture of the sawn timber needs for both building and future bridge construction.

PART III. B. (Cont'd)

In addition to renovating and constructing the Mbulula Research and Extension Center and staff housing, the project will construct one equipment maintenance center at Kongolo to service the equipment of OR and the Special Brigade. This center will provide eight bays for equipment repair, a tire shop, welding shop, machine shop, tool room and warehouse. The center's compound will be fenced and include a major fuel dump and electrical generation capacity. A second center will be built at Nyunzu to service the fleets of OR and project equipment in that area; it will be a facility similar to, though smaller than, that provided at Kongolo.

The second two expatriates, the Roads Rehabilitation Specialist and Master Mechanic, will arrive the 14th month of the project. They will assist in the completion of the building program, and start the recruitment and selection of individuals with the skills required to staff the road and bridge construction crews. By the 22nd month of the project, the OR will have completed the training necessary to provide the skilled manpower for the permanent road and bridge crews.

By the end of the second year, the equipment and staff necessary to begin road rehabilitation operations will be in place.

(7) Road Rehabilitation Process:

Road rehabilitation will be accomplished through a combination of mechanized equipment and hand labor. Before the arrival of the grading unit, local farmer groups will be contracted to do any clearing necessary; for most of the secondary roads, this requirement will be extremely limited. The grading of the roads will then be done by the grading unit which will be equipped with a bulldozer and grader combination. The grader will first construct the side ditches and then shape the road surface, skipping areas where rocks or heavy side grading is required. The bulldozer will follow up this operation, doing the heavier rehabilitation work on those areas missed by the grader. Unskilled laborers (paid) will work with the grading unit to remove rocks, tree limbs, and other objects from the road surface. As the bulldozer operation is completed, the grader will make a final pass to fine-grade the road surface. Following this operation, the mechanized portion of the unit will move to another road section. At the same

PART III. B. (Cont'd)

time, local labor will be contracted to do the necessary hand ditching to carry water from the side ditches into natural water courses. This will complete the roadwork on a given section except for placing culverts where the side ditches must be drained across the roadway. Building these culverts will be carried out by supervised hand labor; when these are completed, the remainder of the grading unit will move on to the next section. Using this process, a grading unit should be able to rehabilitate from 2.5 km to 4 km a day, depending on the terrain.

(8) Road Maintenance:

After the roads have been rehabilitated, a follow-up hand labor effort will be needed twice a year. Farmer or village groups will be contracted to do the necessary work, such as cleaning culverts, opening any plugged side drainage ditches, and filling in any potholes. A light machine grading will be required on approximately half of the secondary system once per year. The other half of the system, which will have lighter traffic, will require surface grading only every other year. The machine grading operations (this can be accomplished with one grader) can cover about 14 km per day.

(9) Road surfacing:

The road surfacing unit will work entirely separate from the grading units. This unit will surface sections of the secondary road system which can't be otherwise maintained through the light maintenance effort proposed under (8) above. These sections are scattered throughout the system. The surfacing unit consists of two rollers, one grader, one endloader, and six dump trucks. As roads are completed by the grading units, the road surfacing unit will move along the routes and place materials from select "borrow" sources (i.e., available along route). Where these sources require a bulldozer to loosen the materials, the sources will be pre-ripped by the grading unit dozer during the grading operation. The surfacing unit can complete their operation in 2-1/2 years (by year 4-1/2 of the project).

(10) Construction of Bridges:

One of the major efforts in road rehabilitation will be the construction of 72 bridges. This will be done

PART III. B. (Cont'd)

by the six bridge construction crews, using local timber and masonry materials. Contracts will be made with farmer and village groups to provide the stone and sand for the masonry abutments; this work can be done well in advance throughout the whole system so that the materials will be available when the bridge crew arrives on site. The sawn timber will be fabricated at a central saw mill located at Kongolo. The materials needed for each bridge can then be packaged and delivered to the individual sites on low-bed trailers provided as part of the project equipment. These trailers will be hauled to each bridge site by a dump truck, which will also be utilized in the bridge construction.

Once the materials arrive, part of the bridge crew will immediately begin to excavate and construct the foundations for the masonry abutments. The rest of the crew will move the superstructure materials into place so that as the abutments are completed, the superstructure can be quickly set in place. This basic construction scheme is relatively simple, and the technology is understood not only in the project area, but also throughout Zaire.

The bridge crews and the road units can work to some extent independently of each other. For example, the grading units can grade secondary roads where the bridge construction requirements don't exist or are limited. However, much of their work will be coordinated, i.e., the grading units will grade secondary routes (where needed) to the major bridge sites to permit access by the bridge crews. In short, all of the units can proceed expeditiously and at the same time be supportive of other unit activities.

(11) Costs:

(a) Since the major output of the roads component will be the rehabilitation of the 724 km of secondary system roads, the cost per kilometer has been calculated on basis of this figure. The projected expenditures and calculations of cost per kilometer are shown below:

PART III. B. (Cont'd)

(b) Distributed Costs:

	<u>Bridges</u>	<u>Roads</u>	<u>End of Proj Residual Eqpmt Value</u>	<u>Total</u>
Equipment	\$ 300,000	\$ 902,000	\$ 358,000	\$1,560,000
Salaries	405,000	416,800		821,800
Materials	263,000	325,800		588,800
Fuels	275,000	504,760		779,760
20% b.c.d. Contingency	<u>188,500</u>	<u>249,500</u>		<u>438,000</u>
Totals	\$1,431,500	\$2,398,860	\$ 358,000	\$4,188,360

(c) Costs per Kilometer:

-- Cost of Road Restoration (\$2,398,86/724 km)	\$3,313/km
-- Cost of Bridge Construction	\$1,977/km
-- Total Cost Roads/Bridges	\$5,290/km

As examined in the Technical Analysis, the PP team has concluded that the cost per kilometer is sufficient to meet project objectives.

(12) Outputs and End-of-Project Actions:

As already noted, the full road rehabilitation operations will begin at the end of the second year. After six months (30th month of the project), 15 bridges and 150 kilometers of roads will be completed; by the end of two years (fourth year of project), the 724 km of roads will be completed in addition to 65 bridges. Six months later the bridge work will be completed. It is now planned that the bridge crews will be terminated at the end of the construction phase. If desired by OR, however, these crews could be absorbed and funded through the OR budget. With a line management of trained OR counterparts, the expatriate staff remaining at that time will observe the Brigade's continuing effectiveness and train as necessary to insure a fully operational Zairois brigade. This brigade will be staffed and equipped to handle the maintenance of all primary and secondary roads within the project zone.

PART III. B. (Cont'd)

(13) Construction of Farm Area Penetration Roads:

The roads included in this category lead from the primary and secondary routes to satellite villages which are inhabited only during the farming season. These sodded roads are used only for marketing grain. Rocks and stumps on these roads are often obscured by high grass; when the loaded grain trucks strike these objects, the truck sustains substantial damage. Removal of such objects is the only improvement required.

About 100 km of this type of road will be improved by contracting with village or other local groups to remove the stumps and rocks. Tools will be loaned to these groups who will be responsible for clearing a specific area within an agreed-upon time period. The work can then be accomplished at the local farmers' convenience, but prior to marketing time. A representative of the project will inspect the work, collect the tools, and pay the group for its work. Since most of these roads are located in Nyunzu, Pygmies will perform much of this work.

(14) Farm Road Construction:

The farm road system connects the farmers' fields with their villages (permanent or temporary). There is a strong tradition of self-help work on these roads, primarily to open them to grain trucks. If and when local groups wish to improve these roads through their own efforts, the project will make tools available to them through the 75 Farmers' Centers. Each center will be allocated enough tools to supply a 12-man crew.

PART III. B. (cont'd)

(F) Buildings and Facilities:

Kongolo was a main center for the colonial operations in northwest Shaba. Its location on the banks of the Lualaba River, at a point where the river again became navigable, made it the transportation system's transfer point from rail to river. It was also the center of a productive farming area which produced maize, cotton, and other agricultural products for export. The facilities constructed at Kongolo included a major machine and carpentry shop installation equipped with expensive machining equipment which served the railroad maintenance and ship-building yards, as well as the community of Kongolo. Offices, stores, and housing were well-constructed brick buildings. The modern section of the city had piped-in water treated by a sophisticated water treatment plant. Power was generated by two 400-kw generators and distributed to the developed section of the city. Workers' quarters (100-150 separate residence buildings) were constructed of brick. These are small buildings, but quite adequate when compared with most indigenous housing.

These facilities still exist in varying states of disrepair. The entire infrastructure within the city is in need of some upgrading, but the water system, power plant, and some of the larger housing are still in comparatively good condition.

At Mbulula there are some facilities which can, with rehabilitation, serve the extension station. The station will, in the main, however, need to be built from the ground up.

At Nyunzu, the modern housing infrastructure which now exists is completely utilized. Therefore, all buildings needed in the Nyunzu area will have to be constructed, with the possible exception of one house which may be available for rental.

(1) Strategy:

The first priority of the infrastructure development staff will be to assemble the necessary management to recruit and direct a large construction crew to build the facilities required at the Kongolo base center, Mbulula, and Nyunzu center. The total building needs are:

- House restoration: 5 houses
- House construction: 33 houses

PART III. B. (cont'd)

- Indigenous Student Housing Construction: 40 units
- Classroom Building, Indigenous type: 1 building
- Office Building (for Nyunzu): 1 building
- Office Restoration Kongolo: 1 building
- Warehouse Restoration Kongolo: 1 building
- Shop Building Restoration Kongolo (intermediate tech): 1 building
- Maintenance Centers:
 - (1) Construction at Kongolo: 1 center
 - (2) Construction at Nyunzu: 1 center
- Office Restoration Mbulula: 1 building
- Warehouse & Small Shop at Mbulula: 1 (joint) building

(2) Staffing:

In the Kongolo area, skilled craftsmen are still available. They were trained by the Belgian administrators prior to Independence. Building materials which cannot be obtained or fabricated on site will have to be shipped from outside Kongolo. Items such as wiring, plumbing supplies, hotwater tanks, etc., are not currently available in the country.

It will be important to identify and recruit the construction management and bridge/building specialists early in the project life. They can order a large supply of imported items through the G.S.A., and the bridge/building specialist would then proceed to Kongolo. He would hire local skilled craftsmen to form two construction units, and then commence restoration of the first two buildings. As these crews become functional, additional building unit starts will be made.

As the most critical units of the Kongolo construction near completion, one of the two expatriates (by then at Kongolo) will be moved to Mbulula to organize crews and start construction of the Research and Extension Center.

PART III. B. (cont'd)

When both Kongolo and Mbulula work crews are proceeding effectively, trained crews will be moved to Nyunzu to start the construction there. (See the activity network chart, Annex E, for the construction target dates.)

This construction work will be done force-account, rather than by formal contract. Much of the work at Kongolo is the restoration of existing buildings. To fully define and provide specifications and drawings for that construction would be far too time-consuming at the front end of the project. Unless the facilities are started immediately, other project activities and staff will be delayed in commencing their operations.

One TCN now working in Zaire has been identified who might be recruited to head the building construction operation. Where such expertise is available in country with French-speaking capabilities, their local recruitment would greatly facilitate the project construction.

(3) Continuing Maintenance of Buildings:

Buildings and facilities constructed under this project will be maintained by a small group of skilled technicians who will be selected from among the most qualified individuals used on the building construction crews. They will work under the direction of the project construction manager. This crew will be stationed at Kongolo, and will be assigned to maintain the facilities at Kongolo, Nyunzu and Mbulula.

PART III. B. (cont'd)

6. A SUB-SYSTEM FOR PROJECT MONITORING AND EVALUATION(A) Need and Purpose

The project is designed to develop a process for improving small farmer production and incomes which builds on the strengths of local social and farming systems. While the various sub-systems of this project have been developed on the basis of the best available knowledge, there still remain several unanswered questions and, therefore, uncertainties in project design. There is uncertainty about which improved practices will result in increased maize yields and should be recommended to farmers, about the most effective ways of helping farmer groups build their technical, organizational and information assessment capabilities, and about the most efficacious methods for promoting a strong, private competitive commercial system in the project area. Modifications in the project design will be necessary as knowledge about the area expands and as the local people and project initiate and carry out the different activities.

The uncertainties in the project design, combined with the need to test a considerable number of assumptions and relationships upon which the project success depends, justify the time and expense of creating strong data collection and analysis capabilities at the extended-family, village, project and national levels. Of critical importance will be the ability of all concerned to diagnose problems as they arise and together formulate solutions.

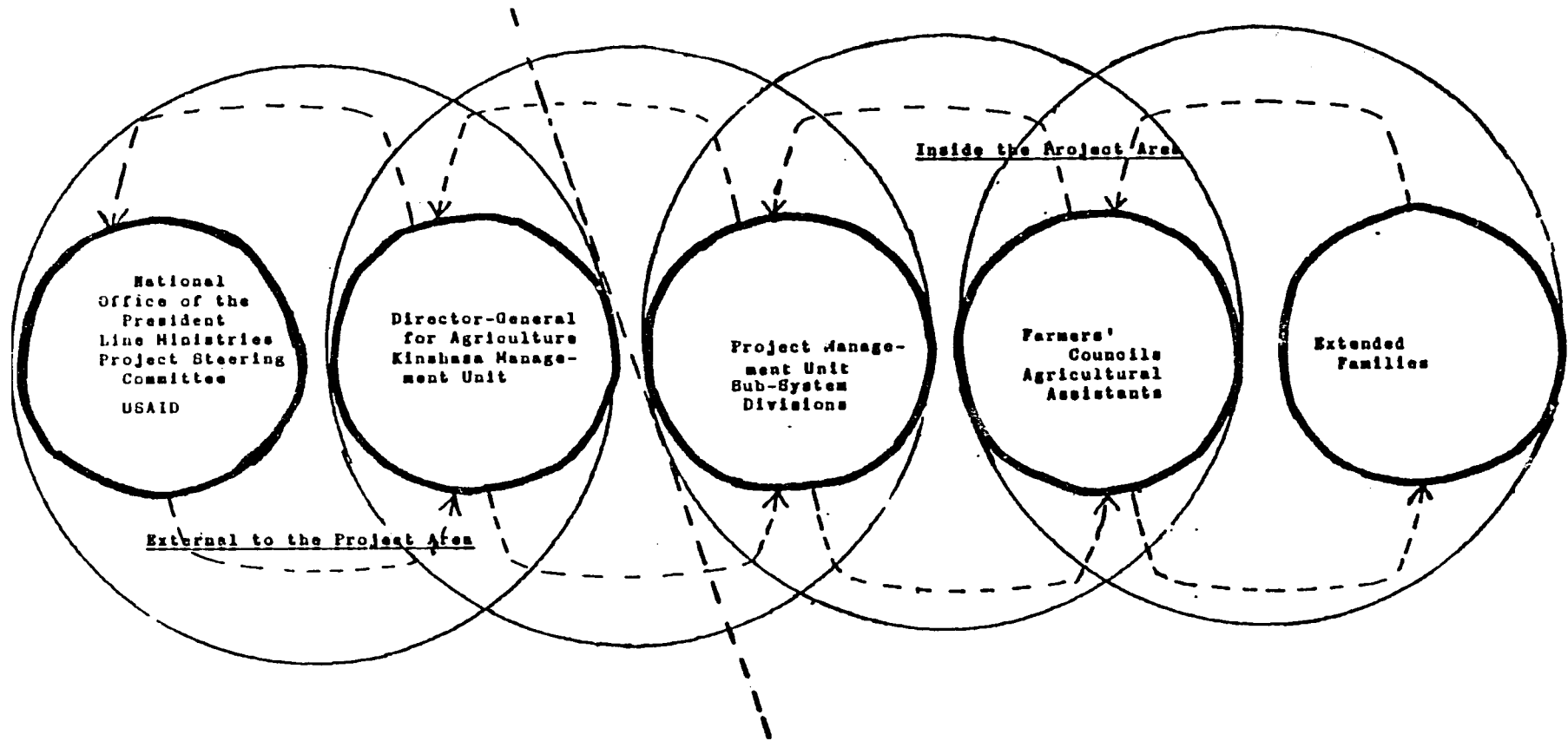
More specifically, the objectives of this sub-system are:

- (1) To monitor project implementation and the achievement of project objectives in terms of:
 - (a) The key assumptions or other possible condition changes or data revisions which may imply dangers to successful project implementation (including attainment of farmers' articulated goals) and thus the need for changes in implementation strategy;

PART III. B. (cont'd)

- (b) The financial, equipment, commodity, training, and technical assistance inputs and allocations to the various project sub-systems and to the localities within the project area;
 - (c) The direct action results or outputs such as bridges constructed, roads rehabilitated, Farmers' Councils and Farmers Centers established, farmer groups participating, results of agronomic tests, etc., that are necessary for the achievement of project objectives. Included also will be the initial effects of the interrelationships developed between the local population and project personnel and activities, with special concentration on their implications for the area's agricultural development;
 - (d) The achievement of key objectives in terms of benefits and costs on society in general, the target population, and the actual project participants;
- (2) To analyze the monitored data with respect to the implied causal relationships determining the extent to which specific factors detract from or contribute to successful project implementation and achievement of project objectives.
- (3) To evaluate project performance and the project implementation experience, with particular attention to the process of involvement, assumption of responsibility, and capability of sustaining the development effort of the local farm population, and to develop recommendations for design and implementation that may be implied for other rural development projects, as well as the present project.

Model of the Flow of Information for Project Decisionmaking



←----->
Flow of Information

PART III. B. (cont'd)

(B) Strategy for Developing an Effective Monitoring/
Evaluation System

An effective monitoring/evaluation system builds upon the information requirements of decision-makers (i.e., extended families, farmer groups, merchants, project staff, government officials and foreign donor personnel) and the necessary flow of information among these decision-makers. The model which provides the basis for the design of the project's information system follows:

The information requirements of these groups of decision-makers will vary a great deal, with those inside the project area needing the greatest detail. The extended families must have a basis for deciding whether to accept the recommended changes in their farming systems -- a decision which entails risk-taking for them. They will want to compare their yields with those of other farmers, taking account of such factors as differences in the quality of land, access to water, availability of labor, the timing of tasks in relation to the agricultural cycle, the level of cash inputs, and the tradeoffs between improved maize production and perhaps the reductions or increases in the production of other traditional crops. Moreover, they will be concerned whether technical assistance, agricultural supplies and equipment, and marketing outlets will be available on a correct and timely basis. Members of the Farmers Councils and the Agricultural Assistants will also need to have this information as well as summarized comparative information from a wider area, so that they can recommend with reasonable certainty improved practices to local/village groups.

The project management and staffs of the various subsystem divisions will need to engage in an ongoing dialogue with the extended families, farmer groups, Farmers' Councils and Agricultural Assistants to determine what is working, or is not working, and the reasons why or why not. Moreover, the project management will need to track the flow of resources into the project area as well as the initial inputs. Further, the project will need to provide the information necessary to insure that appropriate policies and operational support are forthcoming from the Department of Agriculture and other government agencies.

PART III. B. (cont'd)

The Director General for Agriculture and the members of the Kinshasa Management Unit will wish to monitor the general development of the project, to be informed of problems as they arise, and to have information necessary to respond to project area needs more effectively. In addition, those agencies that are participating directly will have specific requirements. The Department of Agriculture will be concerned about whether the process being developed has resulted in improved production and whether it can be replicated to other zones. The Office des Routes will not only wish to know the progress being made in the construction of bridges and the rehabilitation of roads, but also the efficacy of the labor-intensive approach to accomplishing these tasks. The Bank of Kinshasa will be particularly concerned with the agricultural/commercial credit being provided by the project; more specifically, bank officials will wish to follow closely repayment rates of small merchants on the truck and grain purchase loans. Finally, ONACER will need data on the experimentation in the marketing component to help formulate its future national program.

The Office of the President, the government ministries, the Project Steering Committee, and USAID all will be concerned about what combination of development resources and approaches are necessary to bring about the desired increases in agricultural production. In addition, the national agencies and USAID will have agency-specific information requirements such as need of the Office of National Economy to understand the effects of its pricing policies.

To develop an effective monitoring/evaluation system, the information requirements of each group of decision-makers will have to be identified and the appropriate methodologies designed so that they can be met on a timely basis. Also, as described above and displayed in the model, there will be a need for a constant flow of information among these groups; in particular, there will be a need for a strong two-way communication between groups with close linkages (e.g., the Farmers' Councils/Agricultural Assistants and extended families) though the flows of appropriate information between more distinct linkages should not be de-emphasized. For example, the extended families will need to know about changes in farmgate pricing policies while the Office of National Economy will need to know farming groups articulated viewpoints on, and adaptive responses to, any shifts in pricing.

PART III. B. (cont'd)

The model suggests another important element in the development of the project's monitoring and evaluation system -- there is a need not only for each group to receive information, but also to have the ability to understand the implications of this information for decision-making. For example, information pertinent to extended-family decisions should be presented in straightforward ways with adequate backgrounding so that family leaders can determine which courses of action to take. Developing decision-making skills, especially those of the Farmers' Councils, Agricultural Assistants, and members or leaders of extended families, will be an important step towards developing an effective monitoring/evaluation system.

The form and timing of information reporting is critical to its usefulness. Unanalyzed data or information on events long past will have little value for current decision-making. For some decisions, local tabulation of collected data with rapid reporting will be most effective; for others, periodic (monthly, quarterly, annual) or episodic reporting according to pre-determined need is what is required. Occasionally, in response to particular problem situations, priority reporting of special analytical results will be called for.

A properly detailed delineation of the decision-making space and its information requirements at various decision points is, therefore, required. One of the initial tasks for project implementation will be the conceptual and empirical specification of this structure. This task will require the project to engage technical assistance from outside consultants at an early stage.

A Cautionary Note: The Need to Respect Human Rights. The model could be interpreted to imply that all information should flow among decision-making groups; this is not only unnecessary, but could also lead to serious abuses of human rights. Inside the project area, hard data will be needed on the size of extended family holdings, yields, and net income. Moreover, there will be a need for some qualitative data on farmer attitudes, personal and social relationships in each locality, local socio-political groupings and their principles of organization, and socio-political intricacies in various localities. If collected and computerized without screening (so that it is possible to identify the cooperating families and villages), there is a danger that irresponsible elements will use this information to penalize those cooperating or to take advantage of this knowledge for personal enrichment.

PART III. B. (cont'd)

The reality of this danger is evident in the current activities of the agronomes in the project area; many use data they collect as a basis for fining or extracting gifts from farmers; other local and higher authorities have been known to follow similar practices. The implications of the potential abuses through the use of locally-generated data are twofold:

First, farmers will be reluctant to cooperate unless they are involved in decisions related to the initiation and design of local-level (or farm-level) data collection efforts. Involving the local population in this process has been done successfully in Nigeria, Lesotho, Ghana, and Kenya. The result has been full cooperation because from the outset, the farmers understand the interest of the effort, especially the ways in which it will help them.

Secondly, there will be a need to screen the data that is to be computerized or even stored manually at the project headquarters so that identities of particular individuals, extended family groups, and in some cases, villages, are appropriately masked. Responsible and ethically sound procedures for structuring the screening must be worked out with the assistance of a qualified specialist before any data are collected.

PART III. B. (cont'd)

(C) Approach to Developing an Effective Monitoring/
Evaluation System

Implementing the strategy described above requires the project to establish a Data Collection and Analysis Unit. This unit (with professional guidance) will be responsible for determining, in direct collaboration with the different groups of decision-makers, the critical information requirements of each group, as well as designing the methodologies for collecting and analyzing this information. Further, the Unit will be responsible for insuring that the appropriate safeguards are built into the system so there is no possibility of infringements on human rights. The Data Collection and Analysis Unit will be directly responsible to the Deputy Project Director in Kongolo.

To illustrate the approach to the development of the project's monitoring/evaluation system, the main objectives of the system are discussed below with an indication of the methodologies and approaches that will be employed by the Data Collection and Analysis Unit.

- (1) To monitor project implementation in terms of:
- (a) The key assumptions or other possible condition changes or data revisions which may imply dangers to successful project implementation including attainment of farmers' articulated goals and thus a need for changes in implementation strategy.

There are a myriad of assumptions that are basic to the successful implementation of the project. A combination of qualitative and quantitative data may be necessary to assess the implications if these assumptions prove to be incorrect. For example, a basic assumption is that the price structure for maize will be maintained at a level that allows maize to remain competitive with other crops; and that allows an adequate profit margin for grain merchants and millers. The data requirements for monitoring this assumption are complex. First, there is a need to have hard data on yields and net income by crop within various farming systems. Such data can only be collected on a continuing basis (in contrast to a point-in-time survey), for to calculate the profitability of maize and other crops requires regular (once or twice a week) recording of data about farmer cash and labor inputs. One mechanism for collecting this type of data is the "farm journal" where

PART III. B. (cont'd)

the farmer, perhaps with the help of the Agricultural Assistant, collects his data on his farming. Such a mechanism can only be effective if the farmer understands the approach and is willing to cooperate. It will allow the farmer to see the results over time and to know his yields and profit compare with that of other (not necessarily named) farmers and encourage him to consider various alternatives. Further, the regular interaction between the farmer and Agricultural Assistant should facilitate the flow of information. This very personal information is the kind to which access must be limited and for which masking procedures must be developed.

A similar type of approach will be required with the merchants to determine the effects of mill prices on profitability of their operations. The merchants will probably be even less willing to cooperate than the farmers because of their appreciation of how information can be used against them, particularly fears of being "taxed". The merchants, like the farmers, will have to understand fully the benefits of cooperating. They must be given adequate safeguards on access to and use of this data.

Other assumptions can be more easily monitored. For example, the fuel for the project (purchased with foreign exchange) needs to be delivered to the project. Projections of fuel availability will indicate whether there is a need for investigation and action by the project, the Kinshasa Management Unit, or Petro-Zaire. Other assumptions may require special studies by either the project or local academics; under this category may be assumptions related to farmer willingness to participate in farmer groups/Farmers' Councils. These special studies may consist of sequential discussions with farmers and farmer groups to find out their reactions, considered opinions, and suggestions.

- (b) The financial, equipment, commodity, training and technical assistance inputs and allocations to the various project sub-systems and to the localities within the project area;
- (c) The direct action results or outputs such as bridges constructed, roads rehabilitated, Farmers' Councils and Farmers' Centers established, farmer groups participating, results of agronomic tests, etc., that are necessary

PART III. B. (cont'd)

for the achievement of project objectives. Included also will be the initial effects of the interrelationships developed between the local population and project personnel and activities, with special concentration on their implications for the area's agricultural development.

Project inputs and resource utilization will be monitored and analyzed with standard accounting and management information system methods. Systematic project records will serve as a primary source of data. The approach and instruments will be established with the Project Administrative/Financial Unit, as well as with the divisions responsible for operating the other sub-systems: research/extension, farmer group development, intermediate technology, marketing and infrastructure development.

The monitoring system should be able to indicate whether resources are arriving as planned. If there are delays in the arrival of petrol, the system must provide a warning signal so that corrective action can be taken.

In addition to monitoring the specific inputs provided by the project, the system should also take account of the resource commitments of other governments agencies and those of the local population. There will be private and public inputs into the project area (other than those of the project) which will either help or impede agricultural development in the area. Those that are relevant to project success need to be monitored.

Beyond the recordkeeping of the project, there is a need for a cross-check to make sure that resources and services are being channeled into the appropriate localities. Here is one role for the records of the Farmers' Councils/Centers. The project will encourage the Farmers' Councils to keep track of the resources that enter their areas from either the project or another source. In addition, it will be important for the Farmers' Councils to keep a record of the Agricultural Assistant's activities so the Council can make an assessment of his value in the local area. (This will enable the Farmers' Council to assist the initial project evaluations of Agricultural Assistants as well as to decide whether the Farmers' Council should develop a capacity to pay his salary because of the value of his services).

PART III. B. (cont'd)

It is possible to monitor project activity results (outputs) long before it is feasible to conduct a major evaluation. In addition to the more typically considered results (e.g., persons trained, bridges built, etc.), the project needs to monitor the less tangible effects of the local population and project activity interrelationships. Some of this information can be derived from data provided by the management information systems developed for the respective sub-projects. In addition, a most effective operational mechanism will be the regular meetings between farmers and senior project staff members. Such meetings allow farmers to voice their views; the candidness with which both groups express themselves is one indicator of the effectiveness of this approach.

Further, if the Farmers' Councils and Agricultural Assistants recommend certain improved production practices, acceptance of these practices will be easily observable. While the evaluation process will be concerned with the differences in yields and net incomes as a result of the innovations, discussions with those who adopt or partially adopt and those who do not will indicate the strengths and weaknesses of the innovations long before the first crop cycle is completed.

- (d) The achievement of key objectives in terms of benefits and costs on society in general, the target population, and the actual project participants.

It will be possible to identify quantitative indicators (e.g., MT of maize exported at the Kongolo and Nyunzu railheads) that will allow those concerned to follow the progress that is being made by the farmers and the project. In addition to maize, production of manioc, peanuts, rice, and palm oil can be monitored drawing on data from individual farmers as well as from merchants. Net income objectives can be monitored from data provided by the farmers by means of farm journals as well as by means of special and baseline/follow-up surveys. Project records and survey data will also indicate the extent of achievement in developing maize and other crop technologies suitable to the project area, in extending these technologies to the area farm population, in developing viable Farmers' Councils, in developing intermediate technology production and maintenance capacity, in rehabilitating roads and bridges, and in expanding project area marketing capacity.

PART III. B. (cont'd)

(2) To analyze the monitored data with respect to the implied causal relationships in terms of relative complementary or competitive significance for successful project implementation and achievement of project objectives.

The context of any project consists of a system of social, economic and technological resources, linkages and products. This system defines and determines the quantity and distribution of goods and services produced, the access to and use of available resources, the distribution and other characteristics of the decision-making functions, and the technology utilized for production. It is this system which project interventions attempt to modify. It is not enough to know simply whether the project has succeeded or failed in achieving its objectives. More important are the causes of the successes and failures, and the probable causes of potential successes and failures.

Analysis of these relationships will provide the basic structural link between the information needs of the decision-makers and the data-collection and measurement activities. Qualitative and quantitative analysis will delineate the current and potential significance of cause-and-effect linkages. Associative cross-tabulations and statistical analyses will play a major role in providing useful information. To some extent descriptive analysis will suffice for meeting information needs. Analysis will also be required to determine the validity and reliability of collected data.

A tentative set of models of cause-and-effect relationships based on design team conceptual and empirical efforts is implied in the project design. A more detailed conceptual analysis is called for to be conducted in conjunction with the further delineation of information requirements and the specification of data collection instruments. The Unit will draw on outside technical assistance for this task.

The Unit will recognize the complementarity of purpose in developing and using the analytical and decision-making capability of the local population. A variety of communication strategies can be used here: the meetings between farmer groups and senior project officials; the daily interaction of the leaders and members of the Farmers' Councils/ Agricultural Assistants with the farmers in the vicinity; the special survey teams sent out by the project to investigate specific problems. Staff members from each sub-system

PART III. B. (cont'd)

will be expected to enter into a dialogue with farmers and farmer groups exploring how farmer and project resources can be most effectively combined to improve production.

The ability among the farmers and farmer groups to identify, analyze, and solve local problems should become increasingly effective over time. The training at the Mbulula Research and Training Center for members of Farmers' Councils as well as Agricultural Assistants will facilitate the development of this ability. The process of development can only become self-sustaining when farmers have improved their ability to formulate their own solutions to development problems.

(3) To evaluate project performance and the project implementation experience, with particular attention to the process of involvement, assumption of responsibility, and capability of sustaining the development effort of the local farm population, and to develop recommendations for design and implementation that may be implied for other rural development projects, as well as the present project.

Evaluating the impact of the project and its components on the agricultural development of the project area is a complex task. Required data include indicators of the area's development which can be categorized as follows:

- Economic Indicators: Amount of maize exported; amounts of other crops exported, relative prices by crop; input availability and sales; transportation availability and costs; etc.
- Non-Income Indicators: Increase in collective efforts in economic undertakings, improvements in health and nutrition; increase in agricultural development-oriented problem-solving capabilities; increase in functional literacy, etc.

The Data Collection and Analysis Unit, with the assistance of experts and under supervision of the Deputy Project Director, will define these indicators and collect the initial data, periodically updating these data as required.

PART III. B. (cont'd)

The information on the area's agricultural development is only one element in attempting to understand the overall success of the project. It will also be necessary to collect hard data on the changes in yields, net income, as well as the percentages of production consumed, retained and sold. This hard data needs to be collected regularly over time to get an accurate picture of the costs and benefits from the various farming systems in the area; such information can be gathered for selected farmers using methods such as the Farm Journal. Further, to compare the characteristics of the participating farmers with whom intensive data collection has taken place and a representative sample of farmers in the project area, it will be necessary to conduct a survey of farmers during the baseline study. However, in this initial survey, only data which is easily observable or recallable on farm families and their farming systems should be sought. Illustrative data that can be collected in a baseline survey are as follows:

- Data on Farm Families: Number of family members, sex, age, education, literacy, occupation, and domicile. (The PP team's field investigation indicates that the primary focus of this collection should be on the extended family which is the basic economic decision-making unit in the project area).

- Data on Farming Systems: Location and size of fields, soil characteristics, water availability, and other environmental conditions; a farm inventory which includes equipment, livestock, and other fixed production resources; crops and crop production practices such as crop rotation, intercropping, planting, weeding, thinning, storage and harvest techniques; farmer perceptions of constraints on production and reactions to technological innovations.

PART III. B. (cont'd)

In both the intensive data collection (e.g., Farm Journals) and the farmer component of the baseline study, it will be important to follow the procedures referred to above which will mask and restrict access to data in order to safeguard the rights of the cooperating farmers, extended families and villages.

The intensive data collection will continue throughout the life of the project. A follow-up survey compatible with the baseline survey should be conducted toward the end of the project period. Characteristics of the representative sample of farmers can be compared with those with whom the "hard data" is being developed to project the level and spread of benefits throughout the project area. Further analysis of the data collected by the project will yield insights regarding the reasons for success.

PART III. B. (cont'd)

(D) Organization and Technical Support

The Data Collection and Analysis (DCA) Center will be located at Kongolo to facilitate interactions with project management. The Center will be responsible for overall coordination of data collection and analysis activities and for conducting such activities which the various sub-project operations have in common. It will also provide the operational support for implementing the special ad hoc data collection and analysis and general data collection activities, as well as the formal and informal evaluation activities of the project. The Center will work with the DCA Chiefs at Mbulula, Kongolo, and Nyunzu in training Agricultural Assistants and others in data collection and analysis techniques, in involving farmers in the data collection and analysis effort, and in developing proper safeguards to ensure data and information privacy. In these functions the Center will work closely with the Deputy Project Director who will be an American with a strong background in rural development and in information systems for monitoring and evaluating agricultural development efforts.

The Center Chief will be a Zairois who is experienced in data collection and analysis methods and operations, as well as in social science research. In addition to the Chief, the Center staff will consist of two research assistants (high school graduates), three statistical clerks, three enumerators, and one secretary. Maximum use will be made of Agricultural Assistants and farmer leaders to carry out the necessary work in the project area. A data-processing expeditor administratively linked to the Center will be located in Lubumbashi.

The DCA Chief at the Mbulula Research and Training Center will be responsible for training the Agricultural Assistants and farmer leaders in data collection techniques such as the keeping of Farm Journals, field measurements, yield estimations, and interview methods, as well as in simple aggregations and analyses that can be performed in the field. Similar training, especially in farm record-keeping and basic analysis, will be provided the leaders and members of the Farmers' Councils who come to Mbulula for training and discussions. The DCA Chief in Mbulula will also be a Zairois fluent in Swahili with agronomic training, demonstrated ability to live and work in the village-level rural milieu, and training and experience in field data collection and analysis methods and operations. He will work closely with the American agronomist/extensionist and woman extension expert assigned to the Mbulula Center.

PART III. B. (cont'd)

There will also be DCA Chiefs in Kongolo and Nyunzu with responsibility for field operations in their respective zones -- data collection backstopping and supervision, and intermediate-level data review, tabulation, aggregation and analysis -- as well as for monitoring sub-system activities within their Zones. These individuals will be expected to travel extensively, live in the villages and work together with farmer groups to analyze information about their farming systems. These individuals will be Zairois fluent in Swahili with agronomic training, demonstrated ability to work in the village-level rural milieu, and training and experience in field data collection and analysis methods and operations.

The staff of the DCA Unit will be supported as required with technical assistance provided by the DOA Bureau d'Etudes and Division Statistiques, by short-term consultants, and other resources technically qualified in data collection and analysis and in monitoring and evaluation activities.

The Bureau d'Etudes will provide resources qualified in project monitoring and evaluation, as well as in statistical methods relevant to the economic analysis of agricultural development processes. In addition, the Bureau d'Etudes will play an active role in the Kinshasa Project Support Unit.

A TA/AG-BuGen PASA will work with the Bureau d'Etudes staff in the development and field testing of a basic data processing and analytical methodology that can be utilized by the project staff in meeting information needs. This methodology will be designed to facilitate on-site ad hoc assessment and evaluation of the actual and potential benefits and costs of alternative approaches and actions relevant to the project.

The Division Statistiques will provide data collection resources particularly with respect to the general coverage baseline and follow-up surveys.

The short-term consultants, either local hire or U.S. based, will design, test, and implement various components of the data-collection and analysis system, in collaboration with the DCA Unit. They will also participate in the regularly-scheduled project evaluations. These short-term

PART III. B. (cont'd)

consultants will be Ph.D. or equivalent information systems specialists experienced in the design and implementation of monitoring and evaluation activities for rural development projects.

In addition, the project will have a Research Fund that may be drawn upon as required to provide Zairois expertise for study of a wide range of phenomena bearing on project approach and implementation.

PART III. B. (cont'd)

(E) Implementation Plan

The DCA Unit needs to be structured in an integrated relationship with the respective operating sub-project units. The development and implementation of the Unit, therefore, depends upon the sequence of implementation of the respective sub-project units.

The initial information need of the project is systematized and analyzed baseline data particularly for decision-making concerning the research and the farmer group development sub-systems. In addition to socio-economic and cultural characteristics, there is need for data describing the farming systems presently in use. It is imperative that this initial data collection activity be properly phased into the cropping cycle in the project area. Double-cropping practices in Kongolo include maize planting/harvesting in October/January and January-February/May-September. Single cropping practices in southern Kongolo and Nyunzu include maize planting in January-February and harvesting in May-September. The optimum time for measuring field sizes is 2-4 weeks after planting; while preliminary production estimates are possible early in the season, more accurate data can be obtained only at the end of the harvesting period. Training of extension agents in data collection techniques should be started 6-8 weeks prior to the actual operation -- i.e., in January for a March survey or in August for an October survey. Given the staffing and preparation lead times, the baseline survey should be scheduled for October 1977.

The preparation sequence for the baseline survey begins with recruiting the DCA Chiefs. In addition to recruiting the remaining DCA personnel, a first task will be to develop a detailed structure of the project information needs and reporting, based on the respective decision points to the extent that they can be ascertained. Outside technical consultation on this as well as subsequent tasks will be required through the actual taking of the survey.

Working from the information reporting needs, the project DCA staff will be able to structure the analytical requirements (in terms of methodology and resources), as well as the data collection needed. The data-collection instruments should then be selected, the specific data elements or proxies should be determined, and the data sources

PART III. B. (cont'd)

identified. Such data elements as quantities marketed, prices paid and received, economic and social effects of various actions by government or non-government organizations, etc., might be obtained from such data sources as local leaders of farmer and non-farmer groups, missionaries, merchants, as well as railroad and government officials and records. One particularly useful source for such data as crop and settlement patterns may be satellite imagery from U.S.-based sources as well as ERTS/Zaire. Because of the lead times that may be involved, the availability and usefulness of specific satellite imagery materials should be investigated at an early stage in the development of the DCA program. It may be possible to obtain useful imagery data on a periodic basis.

For the farm-level aspects of the baseline survey, a selection must be made of the sample size, of the type of sample and stratification, and the number of observations in each strata. Based on variability data provided by design team field work, a preliminary estimate of the required sample size is 2000-3000 observations. Problems in obtaining access to the various strata will need to be addressed and resolved. Resources of the DOA Division Statistiques should be drawn upon at this stage as well as through to completion of the actual survey.

With knowledge of what is to be measured, the DCA staff and consultants can develop and pre-test the questionnaire. The pre-test should be addressed at the expected farmer respondent. Pre-test also with farmer and community leaders will provide useful insights which might otherwise be overlooked.

During execution of the actual survey, it may be useful to operate the enumerators in control-group relationships to test for potential interview biases. For example, Division Statistiques enumerators might be structured for comparison with extension agent enumerators. Capacity to carry out field tabulations and analysis should also be tested by checking agent performance in the field against that of the DCA Center staff.

The DCA Center staff should be able to tabulate and run some analyses (e.g., cross-tabulations and other associative techniques) using hand calculators without difficulty. Preliminary results of the baseline survey should be available by December 1977.

PART III. B. (cont'd)

The DCA Center staff should take appropriate measures to ensure proper data storage is available at this stage, both physically and using computer tapes. In conjunction with the latter, the data processing expediter should be recruited to handle work in Lubumbashi. If initially supported with outside technical assistance, a student in statistics at UNAZA/Lubumbashi might be brought in on a part-time basis until the exact requirements for computer processing can be determined.

Concurrent with preparing for and carrying out the baseline survey, the DCA Chief at the Mbulula Research and Training Center will be collaborating with the extension communications specialist in teaching procedures for two-way communication (for further detail, see description of the sub-system for research and extension, Part III. B. I.). Beginning in January, all four DCA Chiefs in collaboration with the staff consultants can shift their attention to developing more completely the management information aspects of the information system and to conducting special data-collection and analysis activities as required. It may be possible to address these activities earlier, but priority should be given to the preparation and conducting of the baseline survey and to the training of the initial group of extension agents.

At various times during the course of the project a priority task (particularly for the DCA Center staff) will be the preparation for and assistance to the formal evaluations of the project. The first interim evaluation is scheduled to be made at the end of the second year. For further discussion of the Evaluation Plan, see Part V. C.

PART III. B. (cont'd)

(F) Institutionalization of the Data Collection and Analysis Capacity

At the end of the project, there are several alternatives for the institutionalization of the data collection and analysis capacity. Part of the staff may be absorbed at the zonal level while others may be placed at the regional or national levels. The Mbulula DCA Chief position will definitely be retained to continue the training program of Agricultural Assistants and Farmers' Council members as well as help the Mbulula Research and Training Center assess the socio-economic implications of new technologies. Overall, it is anticipated that the project experience will leave a useful comprehension of the needs and the methods for obtaining and analyzing decision-making information with extended families, Farmers' Councils/ Agricultural Assistants and government officials at all levels. Further, it should provide the means for structuring and carrying out the required data collection and analysis activities to meet these needs.

PART IV: PROJECT ANALYSIS

A. Technical Analysis:

1. Infrastructure Development:

(A) Office des Routes Institutional Background:

(1) Introduction:

The purpose of this section is to assess the institutional capability of OR to assist AID in supporting and carrying out the road program in the project area. The material presented was gained through: (a) extensive discussions with OR Zairois and expatriate staff; ONATRA; key representatives of the large, predominately U.S. Consortium Constructeurs Inga Shaba (CIS) and; the Ministry of Public Works and Lands; (b) extensive review of material available on OR and previous AID, UNDP, IRBD and FED road programs in Zaire since 1968; and finally (c) field visits to OR autonomous brigades outside of the project area and outside of Kinshasa.

Ample information has been made available to AID on the OR operation up to 1973; this section will update and expand the material as appropriate. Clearly, OR is a different organization than it was in 1971-1973. For the first time it is permanently established within the governmental framework and is now better staffed to do its job. OR truly has become a "body of public right" and has effectively been accorded formal jurisdiction status and financial autonomy.

(2) Summary Background:

In March 1971 OR was created within the Ministry of Public Works and Lands and given total responsibility for an initial 22,000 km. of the most important roads throughout Zaire (primary roads). Specifically, OR was responsible for improving, constructing, maintaining and rehabilitating roads, bridges and ferries. Funding was provided from the national budget.

In 1973 the Government decided to contract with locally based contractors for highway maintenance and to reintroduce "convention" arrangements for

PART IV. A. (cont'd)

41,000 km. of roads. In addition, OR was to maintain, with its own forces, 1,000 km. in 1974, increasing to 15,000 km. by 1980. About 40 maintenance contracts were signed on the basis of U.S. \$220/km. per year under the "convention" arrangements and at U.S. \$500/km. per year for the contractors. At that time, OR leased out most of its equipment (donor-financed included) for this purpose. This program was halted in 1974 and all contracts terminated because contract costs exceeded the total OR budget.

By March, 1974, OR had drawn up a completely new maintenance and rehabilitation program. It dropped its responsibilities for new road construction and major road improvements. (New construction is presently contracted out to expatriate construction firms by the Ministry of Public Works and Lands.) This shift indicated that after three years of trial and error and two major reorganizations, the GOZ finally realized OR could effectively manage a more modest role, namely, total responsibility for maintaining and rehabilitating primary routes throughout Zaire using mechanized autonomous brigades. To date, 22 autonomous mechanized brigades have been created. They are charged with rehabilitating and maintaining approximately 20,000 km. of priority roads, of which approximately 280 km. are within the proposed project's network.

(3) The Network of Roads in Zaire:

The network of recognized roads in Zaire totals 145,000 km. broken down as follows:

- (a) 20,000 km. of primary roads which the OR is responsible for rehabilitating and maintaining.
- (b) 77,000 km. of special interest roads which are serving the needs of special interests such as plantations, industry (e.g., GECAMINES, Inga Shaba, etc.), and specialized GOZ programs. Rehabilitation and maintenance of these roads is the responsibility of the special interest group.

PART IV. A. (cont'd)

- (c) 48,000 km. of local roads such as the secondary roads in the Kongolo area which are to be rehabilitated under the project. Although the OR is charged with the administration of these roads, the responsibility for their rehabilitation and maintenance normally rests with regional or local offices. (Note discussion below of the special arrangements which have been worked out with OR regarding future maintenance of these roads.)

Only 1,975 km. of the primary road system are asphalt surfaced. The remaining 18,043 are surfaced with gravel or select lateritic materials. In the latter category, 4,500 km. are maintained by hand. While this is nominally inexpensive, the level of repair is low.

The remaining 13,530 km. of primary non-asphalt roads are maintained by mechanized autonomous brigades similar to Brigade 19 in the Kalemie area discussed below.

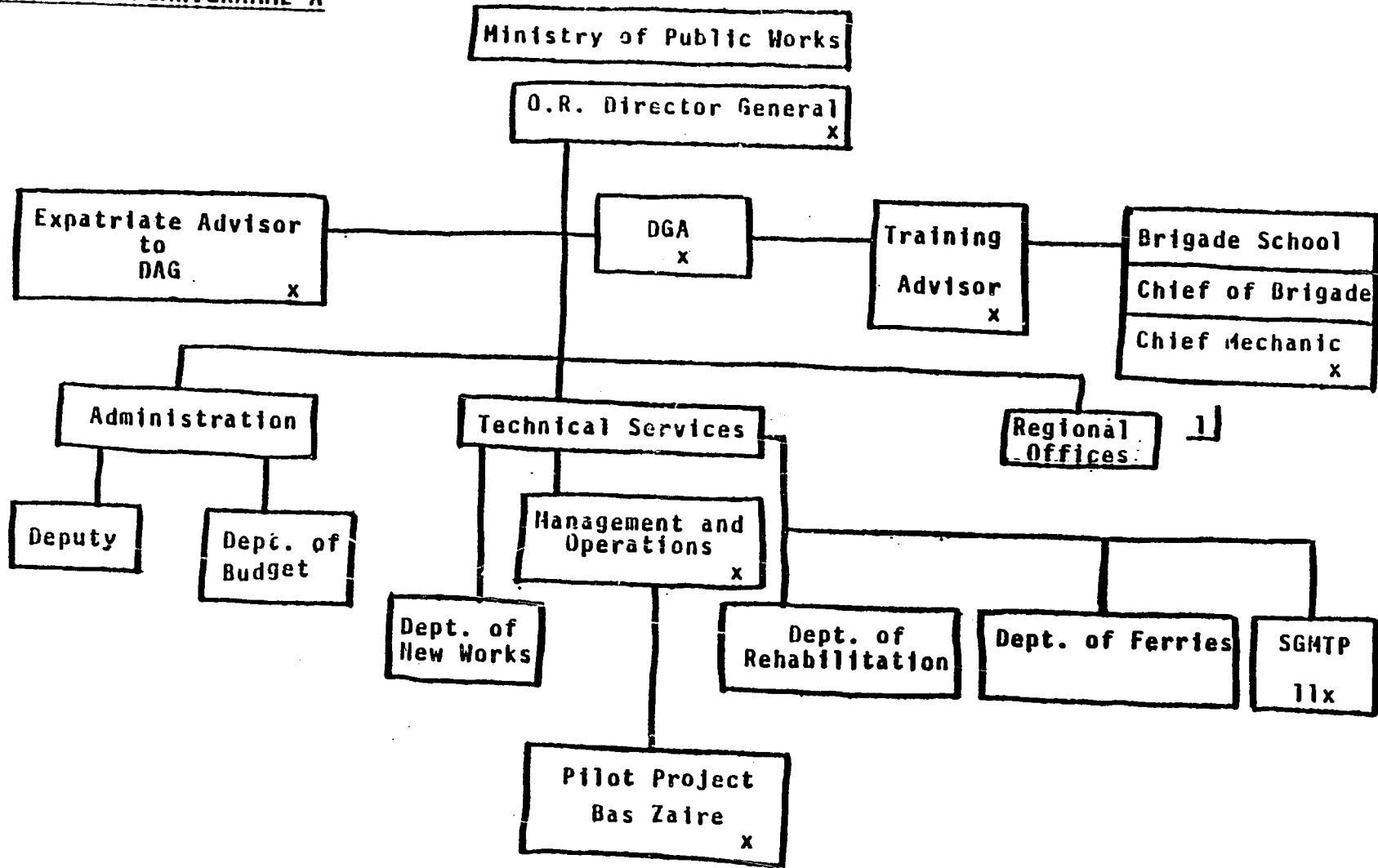
(4) OR Organization:(a) National Level:

At the national level, the OR is under the general supervision of the Ministry for Public Works and Lands. A summary organigramme is provided below for OR Kinshasa (A) and OR Regional (B). A detailed organizational map (C) of OR showing all administrative divisions is also provided for the entire country. It is partially staffed with 150 Zairois engineers, 100 technicians working in the national laboratory, and 28 expatriate technical experts. OR now employs approximately 2,000 persons countrywide, of which approximately 350 work in OR's Kinshasa headquarters. Many of these Kinshasa employees have duties involving travel to brigades in the Bas Zaire* and Bandundu regions.

Principal current responsibilities of the OR include:

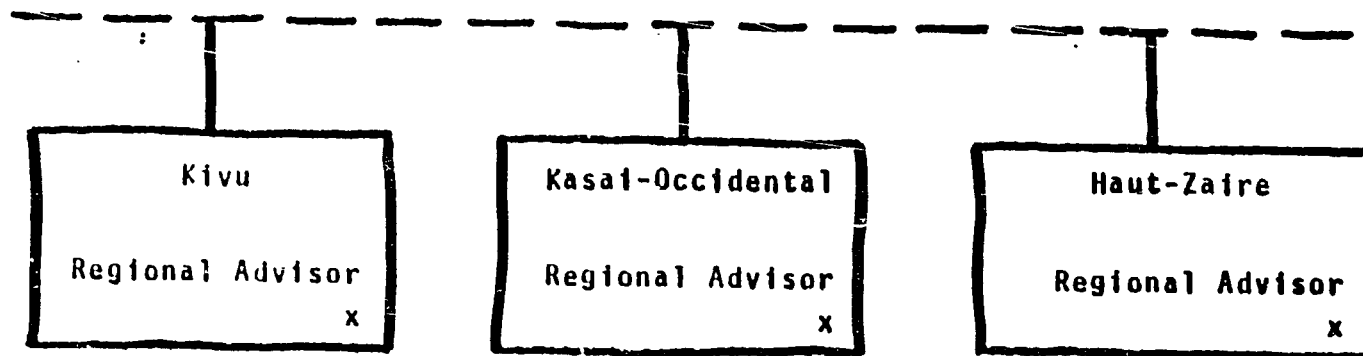
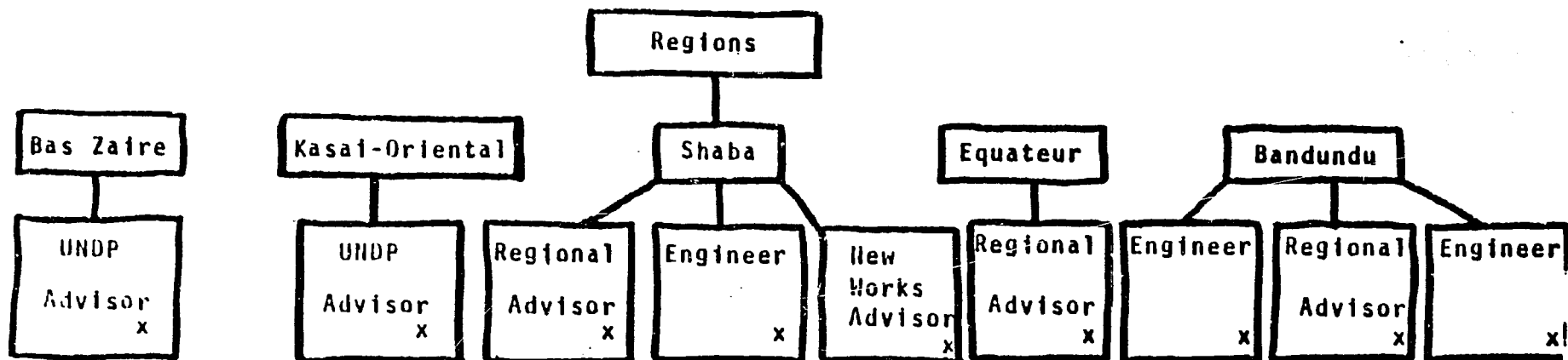
*See Annex for description of IRBD-funded pilot project.

PART IV: ORGANIGRAMME A



x = Expatriates

1 See following map for breakdown of Regional Field Office Organization



x = Expatriates

OFFICE DES ROUTES REGIONAL ORGANIZATION

PART IV: ORGANIGRAMME B

PART IV. A. (cont'd)

- (i) Maintenance of the existing network of roads. This is delegated to the Direction de la Rehabilitation (Office of Road Repair).
- (ii) The study and construction of new roads. This is delegated to the Direction des Travaux Neufs (Office of New Works).
- (iii) Improvement of the network of ferries. This is delegated to the Direction des Bacs (Office of Ferries).

As can be seen from the summary organigramme, OR has two main divisions, administration and technical services. The technical services division supervises all principal operational bureaus, i.e., Department of New Works; management and operations; Department of Rehabilitation; Department of Ferries, SGMP and the pilot project in Bas Zaire.

(b) Training:

Considerable training of highway personnel is being carried out at local institutions and under international and bilateral aid programs. (See Annex). A much greater effort is being made to coordinate these efforts. An expatriate training advisor was funded by the third IBRD highway loan. One of his primary responsibilities is to make an overall assessment of training needs in the highway sector and to arrange a coordinated training program to meet both present and future needs. In the meantime, training of highway personnel will continue under present arrangements. The project, as indicated later in this section, will rely principally on SGMP.

(c) Project Interface with the Office des Routes:

Two major departments will be most concerned with the project. They are: (a) Department of Rehabilitation; (b) Service de Gestion du Material des Travaux Publics (SGMP) (logistics and training).

PART IV. A. (cont'd)

(i) Organization of the Department of Rehabilitation: General Organization:

The organization of this department is of particular interest to the project since it is responsible for coordination of the road rehabilitation and maintenance activities carried out throughout Zaire under the brigade system. Briefly, the Department is organized under the following main divisions:

- Administration Division
- Division of Planning
- Division of Bridges
- Mechanization Division

The Department of Rehabilitation is in charge of the repair and maintenance of the primary road system. Since 1974 its greatest effort has been concentrated on 13,500 km. of road, utilizing 24 mechanized autonomous brigade, of which:

- 22 are autonomous brigades belonging to the OR. These brigades are structured, equipped and staffed like Brigade 19.
- 2 are brigades of private contractors assembled in areas where OR does not use autonomous brigades due to unusually complex technical or engineering problems, i.e., a major steel bridge at Inkisi on the Matadi Road. These brigades have heavy equipment at their disposal: bulldozers, graders, loaders, drills, trucks, etc. They function as independent units, with personnel and an annual budget determined by the number of kilometers worked on by the brigade. The budget is allocated on a monthly basis according to actual needs during the dry and rainy seasons.

The Department of Rehabilitation will supervise the work of autonomous Brigade 19 in Kalemie and insure

PART IV. A. (cont'd)

that the project primary roads are rehabilitated and maintained in accordance with the project agreement.

(ii) Organization of SGMP

This Department will be responsible for backstopping the project. In this context, it will arrange for the procurement and delivery of equipment, materials and supplies required by the project.

SGMP is in charge of the following OR operations:

- the ordering and distribution of spare parts;
- repair work done in its workshops;
- inspection of the equipment material of the brigades;
- the training of skilled personnel in the brigade school (equipment operators, mechanics, electricians, drivers);
- and at the SGMP headquarters in Kinshasa, advising the brigades.

SGMP is the logistical backbone of the entire OR organization. A new department, it was established as a result of the third IBRD highway project which began in 1975 and which will continue through 1978. (A fourth IBRD project is being discussed). SGMP is currently staffed with 11 expatriate professionals, some of whom are ORT technicians (previously AID-loan funded) with long experience in Zairois road programs. (SGMP also has an office in New York City to assist with U.S. procurement matters.) SGMP procures all OR equipment and is responsible for getting it to the site. It has been quite successful. For example, all 60 pieces of new and existing equipment (donor-financed) assigned to Brigade 19 in Kalemie are in Kalemie. Of this, 57 pieces were operational as of June 30, 1976. SGMP has also been responsible for the logistical support of all remaining 21 autonomous brigades. It has been reasonably successful in supplying these brigades,

PART IV. A. (cont'd)

though it has had some difficulty supplying brigades as far away as Kalemie; it is working to overcome the remaining bottlenecks such as delays in barge and rail car availability. Even so, it can supply these outlying brigades in no more than seven weeks once equipment reaches Matadi, provided it has available FX.

While there are certainly logistical problems ahead, SGMTP appears to be fully competent to deal with them and should be used by this project for ~~all~~ procurement-related matters, once the detailed specifications are developed by OR, and AID and IFB's are prepared and approved.

SGMTP and other OR offices (i.e., Personnel, Brigade School, etc.) can and will assist the project in selection of personnel and training, but supervision and the right to hire and fire the "special brigade" staff would be the project's responsibility since Brigade 19 will handle only primary roads in accordance with the project agreement.

Leadership is primarily provided through SGMTP's use of qualified expatriate technicians. However, funding for OR's entire training and technical assistance requirements including SGMTP, have been provided largely by the third IBRD highway loan. These funds include the following:

	<u>U.S.\$ Million</u>	<u>Zaires Million</u>
Foreign	3.03	1.52
Local	<u>2.28</u>	<u>1.13</u>
Totals	5.31	2.65

The formal channel of communication between the project and the OR will be the Department of Agriculture. In this context, a formal agreement will be entered into between the two GOZ offices clearly identifying the primary road rehabilitation and maintenance program to be carried out by the OR in the project area, the time frame within which it is to be completed, and the source and use of required funds.

PART IV . A. (cont'd)

2. Infrastructure Development Technical Soundness:(A) Road Rehabilitation:

The rehabilitation and improvement of the roads in the project area will be carried out by a specially established brigade which will work out of the Kongolo project office. This brigade will consist of 3 grading units, 1 surfacing unit, and 6 bridge construction units. Priorities within the outlined road system will be designated by the project manager.

(B) Vehicle Maintenance:

Two maintenance centers will be constructed. The major center at Kongolo will provide maintenance for the special brigade and base station equipment, as well as provide two mobile mechanic units which will work on call within the Kongolo area. The satellite shop at Nyunzu will be a smaller unit, providing service to fewer vehicles and providing one mobile unit on call to repair vehicles as necessary in the field.

(C) Bridge Construction:

The schedule of the various bridge unit activities will be coordinated with road surfacing maintenance activities and local village materials contracts so that the bridge crew access to the work site is graded before their arrival, and the materials are available on site at the time of their arrival.

Maximum utilization will be made of local unemployed or under-employed laborers, either on a contract basis or on a day-labor basis.

(D) Buildings:

The building construction is designed to utilize the least complicated building methods for on-site construction. Although the total numbers of units to be constructed is large, the units themselves are relatively simple. The infrastructure sub-section description lays out the construction plan and targets which can be realized.

PART IV. A. (cont'd)

(E) Labor Availability:

Unskilled laborers are fully available to accomplish all of the project's proposed activities. Field visits to about 100 villages indicate that the proposed arrangements are acceptable to local groups, and they are eager to respond to project needs.

Skilled and semi-skilled labor is available in sufficient supply in the project area or through the Office des Routes.

(F) Suitable Design of the Proposed Construction:

The proposed design and standards for road rehabilitation and the proposed bridge construction are consistent with the criteria of low-cost construction utilizing maximum labor-intensive methods. The scheduled performance shown in the linkage network is consistent with performance in other less-developed countries. Given the availability of local labor and skills and the mix of construction equipment provided by the project, production schedules can and will be realized.

3. Technical Soundness:

The project's road design standards and equipment requirements have been reviewed by AID/W SER/ENGR engineers and were found practical and in accord with sound engineering practice. The cost estimate prepared for the project is based upon recent projects bid by contractors currently working in this area of Zaire and the current c.i.f. prices for the new equipment. A technical review confirmed that costing of the equipment is realistic and the computed work units, and their quantities, estimated for the project, reflect the requirements of the project.

The project plans are appropriate for the construction proposed, and the estimate of the project costs is reasonably firm. The requirements of Section 611 (q) of the Foreign Assistance Act of 1961 as amended have been met.

PART IV.

B. FINANCIAL ANALYSIS

The total cost of the proposed six-year project is estimated at \$19,070,000, of which \$6,291,000 will be financed by AID grant funds, \$3,500,000 by AID loan funds and \$9,279,000 by the Government of Zaire.

The GOZ has agreed to increase substantially (from about 4.0 million at the PRP stage) its contribution to the project. As a result, nearly all local costs are covered by the GOZ. It is contemplated that most, if not all, of the GOZ contribution will be met through the use of counterpart funds generated under Title I PL 480 grain sales and those generated under the commodity import program loans. A formal agreement will be established with the GOZ regarding the use of these funds for the project.

The impact of the North Shaba program on the GOZ's recurrent budget following the termination of AID inputs will be well within its budgetary capability. It is estimated that, at a minimum, personnel costs of the Dept. of Agriculture (uninflated) will increase from Z 413,000 to Z 556,000. The latter figure will decrease to the extent that the project is successful in persuading farmer groups to pay all or part of the salaries of extension agents. Excluding fertilizer costs, it is estimated that overall FX costs to the GOZ for continuing the North Shaba program will average approximately \$500,000 per year. Figures are not available which would permit a comparison of this figure with current GOZ foreign exchange outlays in the area.

The financial analysis of the project is presented in the following tables:

-Table I - Presents a summary of FX and local costs by donor and by component.

-Table II - Presents a summary of loan and grant costs by component and expenditure categories.

- Table III - Presents a detailed breakdown of project costs by component. (Note, local costs are expressed in Zaires.)

TABLE II

SUBSYSTEM	FY 77		FY 78		FY 79		FY 80		FY 81		FY 82		TOTAL	
	LOAN	GRANT	LOAN	GRANT	LOAN	GRANT	LOAN	GRANT	LOAN	GRANT	LOAN	GRANT	LOAN	GRANT
I. Research & Ext.														
Contract Services		120		120		120		120		120		120		720
Commodities	40	115		21		20		53		63		12	40	284
Training		103		101		53		53		31		31		374
Other (Fuels)	6		6		6		6		6		6		36	
TOTALS	46	338	6	244	6	193	6	226	6	214	6	163	76	1,378
II. Farmer Group Devel.														
Contract Services		80		104		104		104					2	392
Commodities	24	12		2		4		28		5		2	24	73
Training		6		10		10		6		6		6		44
Other (Fuels)	2		2		2		2		2		2		12	
TOTALS	26	118	2	116	2	118	2	138	2	11	2	8	36	509
III. Intermediate Tech.														
Contract Services		68		20		20		20		20				148
Commodities	60	128		32		7		15-15		2		1	60	185
Training		4		14		14								32
Other (Fuels)	4		4		4		4		4		4		24	
TOTALS	64	200	4	66	4	41	4	.35	4	22	4	1	84	165
IV. Marketing & Credit														
Contract Services														
Commodities		95		3		3		3		3		3		110
Training		2		4		4								10
Other (Fuels)	12		12		12		12		12		12		72	
TOTALS	12	97	12	7	12	7	12	3	12	3	12	3	72	120
V. Infrastructure Dev.														
Contract Services		120		120		120		120		236		100		1,416
Commodities	1,320												1,660	
Training														
Other (Fuels)	12		36		328		328		116		116		936	
TOTALS	1,332	120	36	320	328	320	328	320	116	236	116	100	2,596	1,416
VI. Monitoring/Eval.														
Contract Services		88		88		48		80		80		80		464
Commodities	40	33		2		2		14		1		2	40	54
Training														
Other (Fuels)	5		5		5		5		5		5		30	
TOTALS	45	121	5	90	5	50	5	94	5	81	5	82	70	518
VII. Project Manag.														
Contract Services		176		176		168		168		160		160		1,008
Commodities	170	137		6		16		6		16		4	170	205
Training		12		12		12								16
Other (Fuels)	5		5		5		5		5		5		30	
TOTALS	175	325	5	194	5	196	5	174	5	196	5	164	200	1,249
GRAND TOTALS ALL SUBSYS														
Uninflated Totals From Above	2,200	1,319	70	1,037	362	925	362	990	150	763	150	521	1,294	5,555
Inflation Factors		1.00		1.06		1.12		1.19		1.26		1.34		
	2,200	1,319	74	1,099	405	1,036	431	1,178	189	961	201	698	1,500	6,291

Research/Extension Operations (cont'd)
(in 000s)

Item	FY77		FY78		FY79		FY80		FY81		FY82		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
Agricultural Assistants (no./yr.)		9(20)		18(40)		27(60)		36(80)		45(100)		54(120)		189
Administrative Staff/Zonal Level														
Secretaries (2 per year)		2.8		2.8		2.8		2.8		2.8		2.8		16.8
Drivers (2 per year)		1.4		1.4		1.4		1.4		1.4		1.4		8.4
<u>Additional Requirements</u>														175
INERA Support (\$ m/yr.) plus in-country transport and per diem		10		10		10		10		10		10		60
PIM Support US Advanced Training (\$850/m)	72	5	72	-	22	2	22	2					188	9
International Seminars and Workshops	5	5	5	5	5	5	5	5	5	5	5	5	30	30
Equipment and Supplies	20	10	20	10	20	10	20	10	20	10	20	10	120	60

Research/Extension Operations (cont'd)
(in 000s)

Item	FY77		FY78		FY79		FY80		FY81		FY82		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
<u>Mbulula: Staff Housing</u>														
Agronomist		6												6
PNM Senior Researchers (3)		18												18
OIC, Training		6												6
Asst. OIC, Training		6												6
Water System for Staff Houses	2	2											2	2
<u>Kongolo/Staff Housing</u>														
Deputy Asst. Project Director for Extension	10	20											5	10
<u>Nyunzi/Staff Housing</u>														
Deputy Asst. Project Director for Extension	10	20											5	10

177

Research/Extension Operations (cont'd)
(in 000s)

Item	FY77		FY78		FY79		FY80		FY81		FY82		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
EQUIPMENT/SUPPLIES														
<u>Vehicles: Maulula Center</u>														
Land-Rover Type (\$9,000)	9								9				18	
Pick-Up Truck (\$9,000)	9								9				18	
2-Ton Truck (\$12,000)	12								12				24	
Motorcycles (\$1,000)	4								-				4	
Bicycles (\$150)	2								2				4	
<u>Vehicles: Extension</u>														
Land-Rover Type (\$9,000)	9								9				18	
Motorcycles (\$1,000)	5								5				10	
Bicycles (\$150)	3		3		3		3		3				15	

R/1

Research/Extension Operations (cont'd)
(in 000s)

Item	FY77		FY78		FY79		FY80		FY81		FY82		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
<u>Equipment</u>														
Office Equipment														
Mbulula	8	2					4	1					12	3
Kongolo	2	1					2	1					4	2
Nyunzu	2	1					2	1					4	2
Training Equipment														
Mbulula	8	2					8	2					16	4
Research Equipment														
Laboratory	20	-					10	-					30	-
Fulnigation	16	1					8	1					24	2

Research/Extension Operations (cont'd)
(in 000s)

Item	FY77		FY78		FY79		FY80		FY81		FY82		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
<u>Materials</u>														
Training Materials for Mbulula and Farmers' Centers	4	1	6	1	7	2	9	2	7	3	6	5	39	14
Office Supplies														
Mbulula	3	.5	3	.5	2	2	2	2	1	3	.5	3	11.5	11
Kongolo	1	.5	1	.5	1	1	1	1	.5	1	.5	1	5	5
Nyunzu	1	.5	1	.5	1	1	1	1	.5	1	.5	1	5	5
Agricultural Supplies for demonstrations and research	3	-	2.5	.5	2	1	1.5	1.5	1	2	.5	2.5	10.5	7.5

Research/Extension Operations (cont'd)
(in 000s)

Item	FY77		FY78		FY79		FY80		FY81		FY82		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
TRAINING														
Third Country Study Tours (\$2,000 per man-month, including travel costs)	6	6	6	6	6	6	6	6	6	6	6	6	36	36
Training allowances for Agricultural Assistants		15		15		15		15		15		15		90
Training allowances for Farmer Leaders		5		5		5		5		5		5		30
..														
RECURRENT COSTS														
Vehicle Maintenance/ petrol costs (\$.25 per mile)	10		10		10		10		10		10		60	
Building Maintenance		-		5		10		10		10		10		45
	384	205	250	130	199	150	232	166	220	169	169	181	1,456	1,001

181

FX=Dollars
 LC=Zaires
 All uninflated

Sub-System: 2 Farmer Group Development
 (in 000s)

Item	FY77		FY78		FY79		FY80		FY81		FY82		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
PERSONNEL														
<u>Technical Assistance</u>														
Rural Development Specialist	80		80		80		80						320	
Short-term Consultant Assistance on village-level accounting and management systems (mm's) (\$8,000 per)			24(3)		24(3)		24(3)						72	
<u>GOZ</u>														
Director (2500/mo)		6		6		6		6		6		6		36
Animation Experts (\$2,000 per year)		10		10		10		10		10		10		60
Administrative Staff														
Secretaries (\$2,000 per year)		3		3		3		3		3		3		18
Drivers		1		1		1		1		1		1		6
	80	20	104	20	104	20	104	20		20		20	392	120

182

Farmer Group Development (cont'd)
(in 000s)

Item	FY77		FY78		FY79		FY80		FY81		FY82		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
INFRASTRUCTURE														
Staff Housing: Mbulula														
Director	10	10											10	10
Animation Specialist	2	3											2	3
Staff Housing: Nyunzu														
American Rural Development Specialist	10	20											10	20
Animation Specialist	2	3											2	3
	24	36											24	36

Farmer Group Development (cont'd)
(in 000s)

Item	FY77		FY78		FY79		FY80		FY81		FY82		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
EQUIPMENT/SUPPLIES														
<u>Vehicles</u>														
Land Rover Type (\$9,000)	18						18						36	
Motorcycles (\$1,000)	3						3						6	
Bicycles (\$150)	1						1						2	
<u>Materials/Equipment</u>														
Office Equipment ,,	2	2	-	-	1	-	-	-	2	1	-	-	5	3
Office Supplies	2	2	-	1	1	1	-	1	1	1	-	1	4	7
Training supplies, materials for farmer groups	5	1	1	2	1	2	5	1	1	3	1	3	14	12
	31	5	1	3	3	3	27	2	4	5	1	4	67	22

Farmer Group Development (cont'd)
(in 000s)

Item	FY77		FY78		FY79		FY80		FY81		FY82		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
TRAINING														
Third-Country (\$2,000 per m.m.)														
Animation & Travel	6	3	4	2	4	2	-	-	-	-	-	-	14	7
Cooperative Development Management & Travel	-	-	6	3	6	3	6	3	6	3	6	3	30	15
RECURRENT/OPERATIONAL COSTS														
Vehicle maintenance and petrol (.25/mile)	3		3		3		3		3		3		18	
Housing maintenance		-		1		1		1		1		1		5
	9	3	13	6	13	6	9	4	9	4	9	4	62	27
	144	64	118	29	120	29	140	26	13	29	10	28	545	205

185

UNCLASSIFIED
 LC-Zaires
 All uninflated

Sub-System: 3, Intermediate Technology
 (In 000s)

Item	FY77		FY78		FY79		FY80		FY81		FY82		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
PERSONNEL														
<u>Technical Assistance</u>														
Short-term Consultants:	(6M)													
a. Intermediate Technology Expert	48												48	
b. Storage Specialist	(3M) 20	-	(3M) 20	-	(3M) 20	-	(3M) 20	-	(3M) 20	-	-	-	100	
Machinist/blacksmith (2) Peace Corps Vols.	-	6	-	6	-	6	-	6	-	6	-	6	-	36
<u>KITC</u>														
Director (\$7,200)		6		6		6		6		6		6		36
ONACER Storage Specialist (\$6,000)		5		5		5		5		5		5		30
<u>Administrative Staff</u>														
Secretaries (\$1,600)		1.4		1.4		1.4		1.4		1.4		1.4		8.4
Accountant (\$3,000)		2.6		2.6		2.6		2.6		2.6		2.6		15.6
Driver (\$800)		.7		.7		.7		.7		.7		.7		4.2
Production Supervisor (\$4,000)		3.5		3.5		3.5		3.5		3.5		3.5		21.0
	68	25.2	20	25.2	20	25.2	20	25.2	20	25.2	0	25.2	148	151.2

186

Intermediate Technology
(in 000s)

Item	FY77		FY78		FY79		FY80		FY81		FY82		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
Production Workers (\$1,000)		(15WY) 13		(15WY) 13		(15WY) 13		(15WY) 13		(15WY) 13		(15WY) 13		78
Training Supervisor (\$4,000)		3.5		3.5		3.5		3.5		3.5		3.5		21
Trainers (\$1,000)		.9		.9		.9		.9		.9		.9		5.4
INFRASTRUCTURE														
<u>KITC</u>														
Rehabilitation of Work- shop Facility at Railroad Yard (or other location)	50	20	-	-	-	-	-	-	-	-	-	-	50	20
<u>Staff Housing: Kongolo</u>														
Director		5	-	-	-	-	-	-	-	-	-	-		5
<u>Staff Housing: Mbulula</u>														
ONACER Storage Specialist	10	20	-	-	-	-	-	-	-	-	-	-	10	20
	60	624	-	17.4	-	17.4	-	17.4	-	17.4	-	17.4	50	149.4

Intermediate Technology
(in 000s)

Item	FY77		FY78		FY79		FY80		FY81		FY82		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
EQUIPMENT/SUPPLIES														
<u>Vehicles</u>														
Pick-Up Truck (\$9,000)	9	-	-	-	-	-	9	-	-	-	-	-	18	-
Motorcycles (\$1000)	3	-	-	-	-	-	3	-	-	-	-	-	6	-
Bicycles (\$150)	1	-	-	-	-	-	1	-	-	-	-	-	2	-
KITC Equipment/machines	25	10	25	10	-	-	-	-	-	-	-	-	50	20
<u>Farmer Equipment</u>														
500 Shellers (\$50)	25	1	-	-	-	-	-	-	-	-	-	-	25	1
500 Hand Mills (\$20)	10	-	-	-	-	-	-	-	-	-	-	-	10	-
200 Peanut Decorticators (\$100)	15	5	-	-	-	-	-	-	-	-	-	-	15	5
100 Rice Decorticators (\$80)	8	-	-	-	-	-	-	-	-	-	-	-	8	-
100 Palm Oil Presses (\$150)	15	-	-	-	-	-	-	-	-	-	-	-	15	-
Agricultural Implements	10	20	-	-	-	-	-	-	-	-	-	-	10	20
	121	36	25	10	-	-	13	-	-	-	-	-	159	46

188

Intermediate Technology
(in 000s)

Item	FY77		FY78		FY79		FY80		FY81		FY82		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
<u>SUPPLIES</u>														
Materials for Experimenting with new Intermediate Techn.														
Supplies for Training Village blacksmiths	1	1	1	1	1	1	1	1	1	1	-	-	5	5
Materials for Grain Storage Construction	5	5	5	10	5	20	-	-	-	-	-	-	15	35
<u>TRAINING</u>														
<u>Third Country</u>														
Intermediate Technology Study tour (\$2,000 per man-month)	4	4	4	4	4	4	-	-	-	-	-	-	12	12
Grain Storage Study Tour (\$2,000 per man-month)	-	-	10	3	10	3	-	-	-	-	-	-	20	6
	10	10	20	18	20	28	1	1	1	1	0	0	52	58

189

Intermediate Technology
(in 000s)

Item	FY77		FY78		FY79		FY80		FY81		FY82		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
RECURRENT/OPERATIONAL COSTS														
Vehicle Maintenance/petro. (\$.25 per mile)	5	1	5	1	5	1	5	1	5	1	5	1	30	6
Building maintenance		5		5		5		5		5		5		30
	5	6	5	6	5	6	5	6	5	6	5	6	30	36
	264	139.6	70	76.6	45	76.6	39	49.6	26	49.6	5	48.6	449	440.6

190

FX=Dollars
 LC=Zaires
 All uninflated

Sub-System: 4. Marketing and Credit
 (in 000s)

Item	FY77		FY78		FY79		FY80		FY81		FY82		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
PERSONNEL														
<u>Technical Assistance</u>														
US Credit and Marketing Advisor (carried in Farmer Group Sub-Section)	X	-	X	-	X	-	X	-					-	-
ONACER Credit & Marketing Advisor		5		5		5		5		5		5		30
ONACER Credit & Marketing Advisor		5		5		5		5		5		5		30
Truck Investment Fund ¹		600		-		-		-		-		-		600 ¹
Crop Buying Fund ¹		450		-		-		-		-		-		450 ¹
Nyunzu Rail Siding Impr	25	10	-	-	-	-	-	-	-	-	-	-	25	10
Contingency Fund for Railroad Impr at Nyunzu	5	10											5	10
In-country training for small merchants	2	2	-	2	-	2	-	2	-	2	-	2	2	8
Third-country training for ONACER Employees in grain mktg (\$2,000/m) incl.													2	4
													2	4

191

Marketing and Credit (continued)
(in 000s)

Item	FY77		FY78		FY79		FY80		FY81		FY82		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
Project Grain Trucks (3)		75												75
Project AWD Pickups (6)	60												60	
Project Bicycles (10)	2												2	
Vehicle Operation and Maintenance	15	5	15	5	15	5	15	5	15	5	15	5	90	30
Field Staff (20/yr)		25		25		25		25		25		25		150
	109	1,187	19	44	19	44	15	42	15	40	15	40	192	1,397

192

(1) Counterpart Fund Loan by GOZ/AID to Financial Institution for Relending

FX = Dollars
 LC = Zaires
 All uninflated

Sub-System: 5. Infrastructure Development
 (in 000s dollars)

Item	FY77		FY78		FY79		FY80		FY81		FY82		TOTAL	
	DX	LC	DX	LC	DX	LC	DX	LC	DX	LC	DX	LC	DX	LC
Sec. Road & Bridge Rehab														
Equipment	1560	-	-	-	-	-	-	-	-	-	-	-	1560	-
Fuels	12	-	36	-	328	-	328	-	116	-	116	-	936	-
Other		30		60		600		530		140		100		1460
Farm Roads and Hand maintenance				27	-					8		8		43
Foreign Technicians	120		320		320		320		236		100		1416	
Bldg. & Maintenance Center Costs	260	145		145		5		10		15		21	260	341
	1952	175	356	232	648	605	648	540	352	163	216	129	4172	1844

193

FX=Dollars
 LC=Zaires
 All uninflated

Sub-System: 6. Project Monitoring and Evaluation
 (in 000s)

Item	FY77		FY78		FY79		FY80		FY81		FY82		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
<u>DCA Unit Personnel</u>														
DCA Center Chief		5.6		5.6		5.6		5.6		5.6		5.6		33.6
DCA Chief Research/Training		4.3		4.3		4.3		4.3		4.3		4.3		25.8
DCA Chief, Kongolo Zone		4.3		4.3		4.3		4.3		4.3		4.3		25.8
DCA Chief, Nyunzu Zone		4.3		4.3		4.3		4.3		4.3		4.3		25.8
Research Assistants (2)		7.0		7.0		7.0		7.0		7.0		7.0		42.0
Data Processing Exped.		3.5		3.5		3.5		3.5		3.5		3.5		21.0
Statistical Clerks' (3)		3.6		3.6		3.6		3.6		3.6		3.6		21.6
Secretary		1.2		1.2		1.2		1.2		1.2		1.2		7.2
Enumerators (3)		2.4		2.4		2.4		2.4		2.4		2.4		14.4
Subtotal (14)		36.2		36.2		36.2		36.2		36.2		36.2		217.2

194

Project Monitoring and Evaluation (cont'd)
(in 000s)

Item	FY77		FY78		FY79		FY80		FY81		FY82		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
TA AND OTHER SERVICES														
DOA Bureau d'Etudes/ TA/AG-BuCent-TA in EconAnal, Rural Dev, Info Syst.* Travel & Support	40.0	(10.0) 10.0	(40.0)	(10.0) 10.0	(40.0)	(10.0) 10.0	(10.0)	10.0	(10.0)	10.0	(10.0)	10.0	(120.0)	(60.0) 60.0
DOA Division Statistiques USDA/ERS-Baseline and Follow-up Surveys		12.0										8.0		20.0
U.S. based Consultants TA in Socio-Econ, Rural Dev, Info Syst, Project Evaluation	88.0		56.0 32.0		48.0		48.0 32.0		48.0 32.0		48.0 32.0		336.0 128.0	
Research Fund		10.0		10.0		10.0		10.0		10.0		10.0		60.0
Computer Services Programming, etc. Computer time		4.0 10.0		20.0 10.0		4.0 10.0		4.0 10.0		4.0 10.0		4.0 10.0		40.0 60.0
Subtotal :	88.	46.	88.	50.	48.	34.	80.	34.	80.	34.	80.0	42.0	464.0	240.0

*Costs not changed to Project

Project Monitoring and Evaluation (cont'd)
(in 000s)

Item	FY77		FY78		FY79		FY80		FY81		FY82		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
<u>VEHICLES AND EQUIPMENT</u>														
Motor bikes (11)	11.0						11						22.0	
Calculators, hand (11)	.7												.7	
Adding machine w/tape	.1												.1	
Mimeograph	.4												.4	
Typewriters (2)	.5												.5	
Telex consoles and related equipment	20.						2						20.0	
Capital replacement													2.0	
Subtotal	32.7						13						45.7	

Project Monitoring and Evaluation (cont'd)
(in 000s)

Item	FY77		FY78		FY79		FY80		FY81		FY82		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
<u>Recurring Expense</u>														
POL (220 days*2/day*11)	4.8		4.8		4.8		4.8		4.8		4.8		28.8	
Equipment Maintenance - Vehicles	0.6	0.5	1.1	1.1	1.7	1.6	0.6	0.5	1.1	1.1	1.7	1.6	6.8	6.4
Others	0.5		0.5		0.5		0.5		0.5		0.5		3.0	
Office Supplies		3.0		3.0		3.0		3.0		3.0		3.0		18.0
Subtotal:	5.9	3.5	6.4	4.1	7.0	4.6	5.9	3.5	6.4	4.1	7.0	4.6	38.6	24.4
<u>Staff Housing</u>														
Kongolo														
DCA Center Chief	12.0	18.0											12.0	18.0
DCA Chief, Kongolo Zone	12.0	18.0											12.0	18.0
Mbulula (rehabilitation)														
MCA Chief, Res.&Train.	3.6	2.4											3.6	2.4
Nyunzu														
DCA Chief, Nyunzu Zone	12.0	18.0											12.0	18.0
Subtotal:	39.6	56.4											39.6	56.4
Net Total :	166.2	142.1	94.4	90.3	55.0	74.8	98.9	73.7	86.4	74.3	87.0	82.8	587.9	538.0
Total*	206.2	152.1	134.4	100.3	95.0	84.8	99.9	83.7	86.4	84.3	87.0	92.8	707.9	598.0

*Includes costs not charged to project

FX - Dollars
 LC - Zaires
 All uninflated

Sub-System: 7. Project Management Unit (cont'd)
 (in 000s dollars)

Item	FY77		FY78		FY79		FY80		FY81		FY82		TOTAL	
	DX	LC	DX	LC	DX	LC	DX	LC	DX	LC	DX	LC	DX	LC
<u>PROJECT STAFF</u>														
a. Project Director (Kongolo)		9		9		9		9		9		9		54
b. Deputy Project Dir. (Kongolo-American)	80		80		80		80		80		80		480	
c. Assistant Proj. Dir. (Kongolo)		6		6		6		6		6		6		36
d. Assistant Proj. Dir. (Nyunzu)		6		6		6		6		6		6		36
e. Administrative/ Financial Manager ² (Kongolo)	80		80		80		80		80		80		480	
f. Senior Level Accountants (3)		12		12		12		12		12		12		72
g. Mid-level Accountants		2		2		2		2		2		2		12
h. Secretary Kongolo		1.5		1.5		1.5		1.5		1.5		1.5		9
i. Clerk typists (3)		4.2		4.2		4.2		4.2		4.2		4.2		25.2
Subtotal:	160	40.7	160	40.7	160	40.7	160	40.7	160	40.7	160	40.7	960	244.2

Project Management Unit (7) (cont'd)
(in 000s)

Item	FY77		FY78		FY79		FY80		FY81		FY82		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
<u>TRAINING</u>														
a. Three 4wk MGT Seminars	6	3	6	3	6	3	-	-					18	9
b. Three 3wk Acctg/Fin MGT Seminars	6	3	6	3	6	3	-	-					18	9
<u>CONSULTANTS</u>														
a. Short term MGT Special.	16		16		8	8	-	-	-	-	-	-	48	
B. Language Trainer (Swahili)		10		10		5		-	-	-	-	-		25
<u>OPERATING COSTS</u>														
a. Office materials	3	1	3	1	3	1	3	1	3	1	3	1	18	6
b. Bldg Maintenance	-	-	2	5	2	5	2	5	-	2	-	2	6	19
c. Vehicle Operation	6	1	6	1	6	1	6	1	6	1	6	1	36	6
d. Utilities														
Special Contingency Fund				43		43		43		43		43		215
Subtotal:	37	18	39	66	31	61	19	50	9	47	9	47	124	289

199

Sub-System: Project Management Unit
(in 000s dollars)

Item	FY77		FY78		FY79		FY80		FY81		FY82		TOTAL		
	DX	LC	DX	LC	DX	LC	DX	LC	DX	LC	DX	LC	DX	LC	
<u>CAPITAL REPLACEMENT COSTS</u>															
<u>(Vehicles)</u>															
a. Jeep type (2)									18					18	
b. Motorcycles (4)									4					4	
<u>Vehicles</u>															
a. Jeep type (2)	18													18	
b. Motorcycles (4)	4													4	
<u>Equipment</u>															
a. Office - calculators, typewriters, furniture	11													11	
b. Radio communications systems	100				10				10					120	
<u>FACILITIES</u>															
Main Office (Kongolo)	10	40												10	40
Sub-Office (Nyunzu)	5	25												5	25
Warehouse (Kongolo)	5	15												5	15
Restoration Service Fac.	20	80												20	80
<u>Housing</u>															
Restoration (5 houses)	10	20												10	20
Construction 4 houses (@ 30,000 ea.)	60	60												60	60
Furniture	60	60												60	60
	500	358.7	119	106.7	201	101.7	179	90.6	201	87.7	169	87.7	1449	833.2	

200

PART IV. (cont'd)

C. SOCIAL SOUNDNESS ANALYSIS:**1. Overview:**

This project design draw on the knowledge of two American anthropologists (who have lived in the project areas for the past two years) and local Zairois "experts" on social and farming systems. In addition, the PP team, which included the anthropologists, held discussions with over 100 farmer groups scattered throughout the project area. (A summary of field interview data concerning "Negative Constraints on Increased Agricultural Production" is included as Part 1 of Annex K.)

The following statements must be seen as additional comments on the project design. Many ideas and formulations which could have been included in the "social soundness analysis" section in fact form the core of project sub-system descriptions, the project area description, and other sections of the PP. To a large extent, this section offers project implementors operational guidance on the pitfalls and potentials of working in this area. Also, we underline here certain socio-cultural factors which will be relevant regardless of how the project is designed or implemented. (A separate section on Demographic Considerations is included as Part 2 of Annex K.)

Part IV. C. (cont'd)

2. Critical Socio-Cultural Factors in Project Implementationa. Avoiding Major Pitfalls of Current Statal and Parastatal Organizations in the Area

Identifying major pitfalls is important both in assessing possible roles of statal and parastatal organizations in the project, and in designing a project which avoids them in its own design.

Currently, job conscience is low, for many officials, including those in the agricultural service. Agronomes rarely get out to see a field. Rather, they spend their time in the office and at meetings. They lack adequate knowledge of how their job is performed and are not held sufficiently accountable for their work. It is recommended that selected agronomes be given re-training and increased supervision to improve their effectiveness.

A second problem is that officials holding positions of responsibility in the area come from other regions of Zaire. They have insufficient knowledge of the area and do not take advantage of local expertise. Furthermore, they are frequently transferred, and, consequently, respond poorly to the local population and initiate few constructive programs.

Given their experiences with them, people in the area are suspicious of these "outsiders". However, there are skilled and semi-skilled people in the area, who have valuable experience and good rapport with farmers. The project should, when possible, engage these people.

Equitable distribution of funds and resources in the area is another serious problem. Farmers and even some statal officials have stated that if the project is funded through "offices" (statal and parastatal organizations) which do not have the farmers' welfare as a priority, benefits will not reach farmers. Money allocated for secondary road construction has not reached local road crews. Medicine given free to the area is sold (often in reduced strengths) to the local population. There are further reports of officials being trusted with funds and resources, only to use them for personal benefit.

Because of the local population's lack of confidence in these "offices," it is necessary that a separate project unit be established. A full-time accountant-office manager

PART IV. C. (cont'd)

—(expatriate) must be engaged to authorize all expenditures, monitor arrival and disbursement of equipment, and perform related supervisory functions. Responsible people able to handle money do exist in the area, but the project should proceed with caution in identifying them.

Twenty years ago administrators did a substantial amount of their work out away from the zonal administrative centers. Today, only a handful of administrators do. Currently, statal and parastatal personnel spend little time "out in the zone" and nearly never sleep anywhere but in the zonal administrative centers. One subsequent problem is the exorbitant amount of gasoline and diesel fuel used to return to the zonal centers of Kongolo and Nyunzu each night. Moreover, the administrators do not learn nor do they get to much the area very well.

The statement of responsibilities in the project job descriptions must clearly require that personnel travel out from the centers so as to be effective in research, extension and marketing. Locating the Research and Training Center in Mbulula is an important first step, but personnel must move out from Mbulula to the rural Farmers' Center. Mbulula personnel and Farmers' Center personnel must both actively go forth and work with small farmer groupings in the areas surrounding the Farmers' Centers, too.

In addition, the project, in collaboration with farmers, should evaluate its personnel, especially the agricultural assistants. Their technical competence as well as the degree to which they are responsive to and have the confidence of area farmers should be considered. Project management should be prepared to discuss personnel whose performance is unsatisfactory. This situation helps point obviously, there is clear need for direct two-way communication between Farmers' Councils and project management.

PART IV. C. (cont'd)

b. Assuring Effectiveness of Personnel in the Project Area

To facilitate cross-cultural communication it is essential that expatriates speak Swahili. These specialists must be able to communicate directly with rural farmers. As everyone speaks Swahili, French will not be necessary.

Cultural differences in work habits between Americans and people of North Shaba could lead to cross-cultural misunderstanding. Accommodations will need to be made on both sides. Expatriates should consider that the workday begins very early in this farming region; how early work is begun is a sign to farmers about the seriousness of the work. (Some farm work begins before sunrise). Also hired workers and even skilled craftsmen in this area expect constant checking up on their work and will work well when they have frequent contact with the person for whom they are doing the work. Management should consider that, without this interaction, work may not go forward.^{1/} The project area preference for working together (as in women's flour grinding) or in the presence of others (man repairing a bicycle) contrasts with the American style of working alone in one's individual spaces. Attention should be given to further solutions to cross-cultural understanding and that programs needs to be examined in depth as they arise.

Having agricultural assistants responsible to Farmers' Center Presidents and Farmers' Councils creates a situation of accountability as described above. This relationship is further socially sound because the young agricultural assistant will not generally have sufficient social standing in the local community to be an effective leader. Hence a complementary relationship is to be set up with older, respected community leaders who will be crucial in the extension process.

^{1/} For an enlightening example (at the Arab/American cultural interface) of how work supervision expectations can differ cross-culturally, see Edward T. Hall, The Silent Language (New York: Doubleday 1959).

PART IV. C. (cont'd)

The project envisions that certain agricultural assistants will be selected by their own community to work in that community. However, experience with younger government officials suggests that assigning agricultural assistants to Farmers' Centers in the same general area but away from their home groupement or collective, though still in the same zone) may at times result in higher standards of professionalism. The project should remain flexible to the arrangements which are workable at particular farmers Centers.

217

PART IV. C. (cont'd)

c. Creating an Effective Research-Extension Program

An hypothesis of project planners is that farmers will be more willing to accept new farming techniques if they are involved in their development. Because they have more experience in and knowledge of local agriculture than do outside experts, area farmers will have important inputs. Again, it will be important that effective communications are established between these two groups and that information flow is genuinely a two-way process.

At the outset, variation in farming practices in the project area should be further investigated, with local farmers actively participating in these inquiries. The more productive practices utilized in a particular area could be extended to other farmers in the area with the help of those farmers who are particularly knowledgeable. The same applies for identifying, testing, and introducing certain locally successful techniques with farmers in other areas.

There are precedents for expansion of beneficial local practices to larger areas. An example is the use of mats for drying flour. Utilized in the northeast part of the Kongo project area, this technique was introduced by local schoolteachers into the surrounding area about two decades ago.

It will be important to involve farmer leaders in helping to plan, guide, and implement the animation process. Farmers also could be trained in procedures for scientific experimentation and be involved (together with the Agricultural Assistants) in the development of experimental plots both at the Farmers' Center, at test plots throughout the area served by the Center, and in their own fields.

The distinction (and the often unbridgeable gap) between "extension agent" and "farmer" needs to be minimized. This will be addressed on two fronts. From the outset, farmers will be recruited to receive training as Agricultural Assistants, as will former extension agents. Secondly, all Agricultural Assistants will be trained through

PART IV. C. (cont'd)

practical experience working in Farmers' Center areas. They will be responsible to the Farmers' Council, and can develop the knowledge and mutual respect necessary to work realistically and effectively in a particular local area.

Agricultural information does not effectively transfer between a husband and his wives. Therefore, extension efforts for women must be done directly with women and not indirectly through their spouses. As it is not appropriate for local women to deal directly with external men in these societies, a woman animatrice (expatriate) will be needed.

As it is crucial that women work with women, the project must also recruit women as Agricultural Assistants. Women cannot necessarily be expected to enter into a training program in the first year as women generally will be distrustful of the project before they see it "in action." Through personal contact with the female animatrice, certain women will emerge as candidates for training in subsequent years.

Women are currently more constrained than men from engaging in project-related activities due to responsibilities for food preparation and child care. A good time to hold meetings with women is in the mid-afternoon, after farming and preparing midday food are completed and before the tasks of carrying water and preparing evening food begin. Any verbal explanation and discussion with women should precede activities involving women's participation as they will not stay around to talk after the activity has taken place.

The intermediate technology aspect of this project will make more time available to women. Nevertheless, it will be important that training programs be devised which minimize commitments away from the vicinity of their homes.

Catholic Sisters in the area are often independent, self-reliant Zairian women who command respect, have learned to negotiate Europeanized systems, and do not have familial responsibilities. These Sisters make soap at the Sola and Makutano Missions and could be engaged to teach this intermediate technology. A problem with involving these Sisters in broader-based extension efforts is that their priorities differ from those of the project.

PART IV. C. (cont'd)

Local teachers are also effective change agents in this society. They introduce valuable local technologies from, for example, a local area into larger surrounding areas. Some, especially older and respected teachers, are quite successful in synthesizing the local and the foreign. Since children farm two days each week as part of their school program, new techniques could be rapidly introduced in schools, with a resulting long-term effect. Some teachers have expressed interest to members of the PP team in becoming involved with the project. These teachers could be given additional training through short seminars at the Mbulula Research and Extension Center. The project should be careful, however, not to involve these teachers at an expense to their other teaching responsibilities, as there is a critical teacher shortage.

PART IV. C (cont'd)

d. Developing a Marketing System Appropriate to Farmer Needs

One issue which should be raised is whether increased export of maize will lead to malnutrition or hunger in the farm population in areas where people eat maize bukari or maize-manioc bukari. (There should not be a problem, of course, where maize is grown only as a cash crop.) Such a problem would occur should people sell more maize before they have increased production, thus not having enough left for their families to eat.

The PP field team learned that in areas cut off from truck traffic people have sacks of corn waiting to be sold and have even decreased their production because of poor marketing. In these areas, malnutrition and hunger seem unlikely, as people currently have the capacity to grow more maize. However, at the Sola mission, which buys maize, grinds it into flour, and sells it back to the local population, a priest reported that some people sell too much maize during the buying season and then come to buy flour when their own supplies have run out. It is possible, however, that this is only what people tell the priest in order to obtain flour. This bears further investigation and is a good area for effective information exchange between farmers and management.

If evacuation of maize directly from rural areas to rail cars is extremely effective, obtaining adequate maize flour for consumption can be foreseen as a problem in the town of Kongolo. Kongolo has many urban dwellers who buy flour brought in from farming regions by rural women, who carry it on their heads. For the weight they can carry, it is currently more profitable for women to sell flour than maize kernels. If marketing opportunities in the rural areas are improved, this situation may change. The introduction of hand mills, which will facilitate flour production, may compensate to some extent.

It is recommended that the project marketing sub-system be concerned with developing an overall marketing system, especially in eastern Kongolo Zone and North Lukuga, in the areas where farmers grow a wide variety of crops for sale and family consumption (including rice, peanuts, palm oil, and manioc). Facilitating only the exportation of maize is ill advised. Not only can this indirectly undermine family

PART IV. C. (cont'd)

nutrition (if production of less marketable crops is reduced as a response to the marketing situation) but economic risk to farmers is increased.

Differential pricing (based on distance from the railhead) may be detrimental for overall increase in production. A farmer may move into areas where corn can be sold for a better price though the land is less fertile. Such a population shift would also work against GOZ policy of encouraging out-migration from near the towns. Differential pricing may be an extra manipulative factor which is not needed in this area, especially in Kongo Zone where the best land and most productive farm areas are more than 35-50 km. from the railhead. Looking at commercants' buying practices, maize is bought according to where it is most available; distance from the railhead, given road access, is a secondary consideration. Some maize production areas 110 kms. from the railhead are the first to be visited by the buyers. Basic issues of equity for farmers in distant locations are also relevant in this consideration. It might be noted that differential pricing in 1972-73 resulted in the lowest (most distant) price being paid everywhere in Kongo zone .

Buying price has been shown to be a direct incentive for increased production. When it was announced by a PRP team member that the corn price was being raised from 240 to 275/ton many farmers at Mbulula quickly planted more maize in their river-bottom lands.

Farmers have expressed interest in receiving credit, particularly for renting vehicles to ship their maize. Basic principles of credit are understood by people in the area. Nevertheless, credit should not be made available until they understood the fundamental self-help basis of this project. If and when available, credit should be handled by an official banking institution and not by project personnel involved in extension. This would prevent over-personalizing the loan, in which case repayment in a reasonable length of time would be highly problematic. With this cautionary note, it is still obvious that some project area farmers would responsibly and effectively utilize credit opportunities, especially at levels below those currently considered by the commercial banks.

A further caution might be observed: certain farmers (and people who are basically merchants) will claim to represent large groups of farmers in hopes of obtaining access to credit. Applications of this type should be examined most thoroughly.

PART IV. C. (cont'd)

Some other considerations, voiced by local area businessmen, are included in Annex K. "Negative Constraints on Increasing Agricultural Production in the Project Area" (Summary of Field Interview Data).

PART IV. C. (cont'd)

e. Encouraging the Development of Farmer Groups

As described in the Farmer Group Development Sub-System, the project will work through the Farmers' Centers to encourage the development of viable, economically sound farmer groups. The project design emphasizes the need to work with natural social groupings, particularly extended families where there exists a strong sense of mutual trust, as well as a tradition of collective action. It is important to perceive the Farmers' Center as a flow-through device to reach these groupings. In light of the socio-cultural systems within the project area, there are several considerations that should enter into the project's placing and design for use of the Farmers' Centers.

It is crucial that the project initially makes decisive moves to designate Farmers' Centers based on a detailed knowledge of the local socio-political topography. (See Annex J, "Backgrounding Information on Selection of Farmers' Centers".) Without taking a firm lead (based on good information) in allocating Centers, the project could become a pawn of local political struggles. Moreover, the intent of the project would be distorted if it were perceived by people in the area (farmers as well as local officials) as a means of unjustifiably negotiating and manipulating major shifts in existing balances of power. Zairian expertise on socio-political organization within the project area is available, and should (as planned) be tapped to guide initial project initiatives.

The project needs to be flexible to farmers' responses to initial designations of Farmers' Centers. A center location should be changed if the local population does not provide a sufficiently positive response. An additional Center can be established when other groups organize themselves and other conditions justify the placement of another Farmers' Center.

Farmers will be able to choose responsible community members to form the Farmers' Councils which direct the Farmers' Centers. They have a keen sense for equal representation of village groups, both in decision-making and participation in self-help activities. Nonetheless, as resources are channeled through the Centers, it will be important for the project to reassess whether there is equitable distribution or whether new mechanisms are required.

PART IV. C. 5. (cont'd)

Even though the Farmers' Centers are intended to be a catalyst for encouraging the development of small groups, animation directly with small groups will be important in strengthening the two-way information flow between project management and farmer groupings. The identification of organizational and technical skills the groups will also be required to help ensure that these groups become viable for agricultural development endeavors.

PART IV. C. (cont'd)

f. Introducing and Integrating Intermediate Technology into the Socio-Economic System

The Intermediate Technology Center in Kongolo will concentrate on producing equipment which is not now produced locally. Local blacksmiths could use more metal but are capable of fulfilling the area's needs for hoes, axes, and knives. These items should not be produced in the production center in direct competition with local blacksmiths.

In this area, blacksmithing is a skill passed on from father to son. Sons of local blacksmiths would, therefore, be good candidates for training as technicians at the Intermediate Technology Center. It is crucial, however, that blacksmiths who are to undergo retraining for repair work on intermediate technology in the rural areas not be required to spend long periods in Kongolo for this retraining. In contrast, in many West African societies, blacksmiths in North Shaba are also farmers and often important leaders in their community. It is inadvisable to require these men to leave their village responsibilities. Hence, valuable insights from West African development projects involving blacksmiths will need to be re-thought for viable application in this area.

Another factor mitigating against long periods of training in Kongolo, especially for younger trainees, is that the blacksmiths may not then return to the village to do the job for which they were trained. Though a town of only 20,000, Kongolo offers a much different set of life adaptations than those found in rural villages. Even those who would hesitatingly agree to go to Kongolo for a long period (not to mention those who are successful in this environment) may no longer wish to remain in the local village, thus undermining their commitments to return home after training. Decentralized training throughout the project area (perhaps at certain Farmers' Centers) is one possible solution to this problem.

Certain technologies found in this area, including rice storage and peanut storage (three different systems), are effective and not readily improved upon. The project needs to exercise caution and responsibility in introducing new technology. People in the project area are very receptive to change. Since this is the case, it is important not to bring in new technology if a local method is effective. This could unnecessarily destroy self-reliance.

PART IV. C. (cont'd)

Many farmers expressed very strong interest in obtaining the intermediate technology. Many also have a long-range vision of tractors, etc., but were quite pleased to learn of the more real and immediate possibilities of hand-operated intermediate technology.

All intermediate technology equipment should be sold on a cash basis in order that this equipment reach motivated, responsible groups of farmers. One group in that area has already invested in a corn sheller and peanut decorticator to realize future profits, though this required a high investment (Z180). The cost of equipment obtainable through the project will be considerably lower.

Attention must be given to factors which may inhibit or facilitate access of female farmers to intermediate technology as much of the equipment is for use in tasks primarily performed by women. It is important that machines go to women for jobs which women are now doing. This goal must be identified because there is a possible problem of men appropriating the machines.

For example, men in this area ride bicycles, women rarely do. On the other hand, the sewing machine in a family compound is used by both men and women as well as by teenagers of both sexes.

Not only is it important that these machines are accessible to women, it is also important that women can continue to work in the village groups of neighbors and friends in which they currently perform their tasks, using the intermediate technology.

In introducing hand-grinding machines, it is important that necessary measures are taken so that women can buy them and use them in their own work areas. Care must be taken not to create the kind of situation which now exists at a motorized mill in Keba, where women stand in line for three or four days to get their partial sack of flour. This does not save women time -- quite the contrary. The hand grinding machines could be first introduced in sufficient quantities in a small area to permit adequate coverage, and then expanded to other areas.

PART IV. C. (cont'd)

g. Being Responsive to Local Social Conditions in Implementing Infrastructure Rehabilitation Activities

Social, as well as technical, questions will be significant in implementing road and bridge rehabilitation in this area.

The arguments referred to in Part IV. C.2, concerning work style of expatriate personnel are applicable in the infrastructure system where the greatest amount of advanced technology is anticipated. There is a danger that people will lose incentive to use hand methods after they have experienced motorized machines, so that, when machines are not available, or not working because of lack of fuel or spare parts, work will not go forward. Therefore, care should be taken to not use machines rather than familiarize people in the area with effective manual techniques or the use of an intermediate (hand) technology both of which they now lack. This would appear to be very important in maintenance and other activities where local road crews might eventually need to continue this work themselves. Replicability by local people will also be important in bridge construction. Project design and construction of small bridges could give farmers technical knowledge useful in building bridges on roads not included in the scope of project roads but which nonetheless would enhance the farm road network.

In planning infrastructure implementation, careful consideration should be given to the fact that in Kongolo Zone (and Bena Kahela groupement) farmers are called away from their farming during the agriculturally-crucial late August/September-December period. They are required to work for days and weeks on roads, bridge, and building construction gangs, often under military and police supervision. According to farmers, as well as merchants, church leaders, and even local administrators, this is a particularly serious constraint to agricultural production. Farmers are fined and jailed for failure to participate, but farmers are reluctant to participate as they feel that they have no assurance that they will not be made to do more if they complete the first job.

Farmers argue that paid crews should do major public works projects and they themselves would continue to maintain voluntarily their farm access roads and bridges with no policing. Any additional public works expected of them should be requested in June and July, which is during the dry season, and not during the farming months. Finally, they want

PART IV. C. (cont'd)

the use of soldiers as foremen for public works projects stopped. In places where the PP team suggested to farmers that the project might be able to pay organized road crews, thus freeing farmers to farm, the suggestion was met with unanious farmer approval. However, implementation of the infrastructure program is currently scheduled to begin in 18 months, after road equipment has arrived. For the farmers this delay will mean two more years in which the late August-September-December agricultural season will be interrupted with forced road construction. This will undermine the project goal of increasing production during this period. If road rehabilitation by the project could begin in this period it would facilitate other project endeavors during the same period. Farmers would see what for them would be real-world high priority results. In light of these considerations, it is recommended that responsibility for road and bridge labor be shifted from farmers, and that road crews be organized to begin some work, however minor, before the equipment arrives. This should put a stop to farmers having to do this work (which, in the main, doesn't help roads much anyway). Local agricultural production will increase accordingly.

In the local area, young men will be available who are very interested in earning money but who are not yet particularly active farmers. Locally hired workers would be better received by the rest of the population and would fit more compatibly with the farming population than people coming from another region. The German contracting firm brought in workers on the Kabeya-Mayi bridge from outside the area. The Germans reported that they followed this practice because this crew was already trained, but it created problems with the local population. Since the bridge construction was confined to a small location, the problems could be ignored more easily. This is not true for road and bridge crews working throughout a large area.

In Nyunzu Zone, road construction by farmers did not appear to be as serious a problem. One reason may be that the roads do not require as much work to maintain. It was explained that there was a problem in that no excuses were accepted if a farmer failed to appear when he was called during non-peak farming periods. However, this was not stated by farmers to disrupt farming activities as in Kongolo, because Nyunzu farmers successfully refuse to do public works during the peak farming periods. Kongolo (and Bena Kahela) farmers who do try to refuse only succeed in being punished in ways that lose even more farmer-days/weeks of work.

PART IV. C. (cont'd)

h. Involving Women Significantly and Equitably
in the Development Process

Previous parts (3, 4, 5, and 6) of this section have considered women, who are integral to introduction and implementation of project sub-systems. This section considers current and potential social roles for women and cultural attitudes regarding women. It is appropriate that women receive this attention in a social analysis of this project. They are involved in all aspects of production, are very active in marketing produce at the local level, and, as stated in a preceding discussion (part 6), many items of intermediate technology facilitate tasks primarily done by women.

A cultural expectation in this area is that men meet with whites, male or female. This is clearly a Belgian colonial legacy. When meetings were called for the PP research team (including one woman), only men gathered. These men readily agreed that women were indeed farmers, and called women to the meetings at the request of the team. In mixed group meetings, women remained on the sideline and rarely spoke. It was found to be significantly more effective to have women meet separately with the PP team woman researcher. This was accepted by men; some male interference was easily removed with a statement from the researcher that this was a discussion among women. On the other hand, men would be opposed to local women meeting with a male outsider.

In project planning, subtleties in cultural conceptions of male and female division of labor should be recognized. Division of labor in certain activities is more rigid than in others. An example of high rigidity is house building. Women do not build houses. Activities which are rigid but permit exception are the procurement and dispensing of "European" medicines, which is primarily men's work. Finally, activities can be identified where the cultural ideal articulated by men appears rigid, but the situation in practice has considerable flexibility. For example, men say it is they who clear fields, parcel out land, and make the holes into which women put seeds. In actuality, women may clear fields, at times without the help of men at all, and do all planting activities. Land parceling is, as men report, a man's activity. Hopefully, these subtleties will be carefully examined in the project's implementation phase, since there is otherwise a danger that

PART IV. C. (cont'd)

divisions of labor could be rigidified. (Obviously, there is a difference between what people do and what they say they do.) It should be kept in mind that in this area research about women (as with extension efforts with women) is properly and effectively carried out by women.

People express the relationship between husband and wife as "the husband is in front. . . a wife should not surpass her husband." This attitude is particularly expressed in situations where men and women are together. Clearly, encouraging overt competition between husband and wife is strongly inadvisable.

Though "women behind" is a recurrent cultural theme, there are nonetheless precedents for women as leaders in the public sphere. A woman held the position of Collectivite Nyembo Sultani in the 1940's and was respected by most men as "being as good as a man" in the job. Also, there are female schoolteachers in this area who have leadership roles, not to mention the "traditional" leadership roles of curer and diviner.

An attitude manifest in two cooperative groups (one under Catholic auspices), that in "progressive farming" men farm for money and women for family food only, can be traced to ideas about "modernization" propagated by Catholic missionaries. They seek to relegate women to the home (based on European models). "Progressive farming" may also mean hiring laborers. Women are to cook for these laborers and not to farm commercial fields, where the men would have to pay them as laborers. Though these ideas were held by only a small number of people in the area, it is important that the project be aware of them as people holding these ideas are likely to seek the project out in the early stages. Such definitions of "progressive farmers" appear socially unsound since being a farmer is an important aspect of a woman's identity. Further, with labor-saving devices, women will need less time for household jobs.

Financial arrangements between husband and wives will require cautious attention in project implementation. Many women farm their own fields, often in addition to farming with their husband. This practice allows women to realize greater profit through their own efforts, and is no barrier to the project as designed. Problems may arise in other cases where husbands forbid their wives to farm additional fields because,

PART IV. C. (cont'd)

women say, men feel threatened when a woman has financial independence. Also, it has been reported that some husbands do not want their wives to know how much money they have. Such arrangements vary among families, but these attitudes in certain cases could pose problems in fostering female financial equity. Inquiries into these matters should be made with great care by sensitive and responsible researchers, as they are seen as private matters between a husband and his wives. Further, adequate safeguards for protecting personal and family privacy must be devised for data of this type.

These remarks have concerned "Baluba" and "Bahemba" women. Further research is needed to establish the extent of their validity for Pygmy women.

PART IV. C. (cont'd)

i. Assuring Equal Opportunity for Minority Groups

Equity problems for Pygmies who are used as laborers in South Nyunzu were expressed by the Pygmies themselves. Pygmy men complained that farmer-employers do not pay them enough and charge too much for food. The farmer-employers to whom the PP research team spoke reported that they pay laborers K50 per day. Wives of employers, on the other hand, said that Pygmy workers are often paid in kind (for example, a cloth) after farmers sell their maize. They further said that Pygmy women are given manioc in payment for carrying maize from the fields.

Not all Pygmies in this area are laborers. Some Pygmies are living in their own villages with a political organization the same, at least in overlay form, as their non-Pygmy neighbors and are farming their own fields. (Some also do a little wage labor as income supplement). They demonstrate a motivation to improve their standard of living, and some now own bicycles and radios. They report yields of 5-20 sacks of maize per year for a husband and his wives. These yields are low, say both groups, compared to average non-Pygmy farmers yields in the same area. Further investigation is needed to explain why Pygmies have lower yields. Possible explanations are that they do not employ farm workers themselves, that their farming techniques are less effective, or they just do not farm as much land, for whatever reason.

To facilitate agricultural and economic development, Farmers' Centers will be established for Pygmy groups farming their own land (two Centers have been provisionally located and three others are anticipated). Also, the project is prepared to hire Pygmies for road crews in Nyunzu, paying them on the same pay scale as it does other road workers.

Further discussion with Pygmies will be important in clarifying with them their particular needs and interests, and how these can be incorporated into project activities.

PART IV. C. (cont'd)

j. Protecting Human Rights and Further Considerations in Obtaining, Analyzing and Transferring Data

In the United States, lawyers, psychologists, psychiatrists, anthropologists, doctors, ministers all have training which makes them professionally responsible to protect rights of privacy. The U.S. Bureau of the Census uses complex procedures to ensure human rights by masking identity and making access to data below a certain level of specificity impossible. Ethical standards for U.S.-sponsored data collection in a rural area of an African country should not be less than those in the United States. In fact, it might be argued that one needs to be more careful to ensure privacy in such an area since, on the one hand, inadvertant violations of privacy may occur due to cross-cultural misunderstanding and, on the other hand, local people may be more naive about potential dangers of control, exploitation, and incrimination due to the irresponsible use of data gathered with Western-world techniques.

Procedures for appropriate screening of identities of individuals, extended family groups, and, for some data, names of villages, as well as appropriate safeguards on access to data, must be implemented at the project management level (Kongolo) before data collection is started.

People in North Shaba have had some acquaintance with these problems. Information collected by agronomes and other officials has had direct repercussions in fines, taxes, and even jail sentences. Farmers in the Kongolo area have also seen how Belgian administrators made decisions about political boundaries, the restructuring of local government, and the choices of individuals to fill newly created positions of power, on the basis of skewed and limited information, a less-than-accurate understanding of local social organization, and priorities which were not in the best interests of local farmers. Early mistakes have remained unchanged for decades. With such experiences, people are now wary of data collectors and are concerned about the use of information which is obtained.

It will be important that data requirements are specified so that data is not indiscriminately collected, since this could lead to farmers not wanting to give

PART IV. C. (cont'd)

information at all, undermining their willingness to participate in the project.

Farmers will be more willing to provide information if they are involved in decisions related to the initiation, design, and implementation of local-level data collection efforts, and if such data from this level and from other levels is made available to farmers.

In the North Shaba project, different groups will have needs for different types of data in order to make decisions, and an adequate design and implementation will assure an adequate and appropriate information flow at all levels. It is important to note that without access to relevant data, farmers will not be able to make effective decisions themselves or to develop procedures for sustaining the agricultural development effort beyond the project itself. Social scientists today are emphasizing that valid and effective research provides open and relevant information feedback for use by the group from which information was generated (at whatever level) in order to facilitate responsible and improved decision-making processes.

PART IV. C. (cont'd)

k. Ensuring that the Process of Development Becomes Self-Sustaining

The way in which the Zairos will deal with the white expatriates will reflect partly on their experiences with Belgians. It is essential to overcome the paternalistic legacy of the colonial period. The Belgians maintained an elaborate system of social welfare which sometimes stifled personal responsibility. It will be crucial^{1/} that the local people understand the self-help basis of this project, which is the only way the project can be self-sustaining.

Developing the financial and technical skills of farmers so that they themselves can solve problems locally, which is necessary to increased agricultural production and thus to realizing higher incomes, is a major objective of this project. This is especially important here where the provision of services by stataal and parastataal organizations is less than reliable or equitable. The project is approaching this in several ways.

The technology (improved traditional practices) being developed in the project will not require dependence on external assistance for credit or in delivery of agricultural supplies. Fertilizer and insecticides will be introduced only when they are shown to be economically feasible (from the farmers' viewpoint) and when there is a reasonable chance that the farmer will be supplied on a reliable basis. Credit will not be needed for farmers to obtain intermediate technology equipment, as all farmers are members of kinship and other groupings which will be able to pool necessary resources.

Second, the project will sell all inputs to farmers without subsidization. One main test of the acceptability of any innovation will be whether the farmer is willing to

^{1/} But note, the concept of "self-help" has been misapplied in the area with road crews (actually conscripted) from the local population. The project will thus pay road workers for secondary road construction and repair. According to local farmers, self-help is appropriate for clearing farm access roads and farm area penetration roads. In fact, farmers consider it their responsibility to clear their own farming roads and would not welcome paid road crews on these roads.

PART IV. C. (cont'd)

commit his resources even during the initial period of experimentation. Moreover, through farm journals, farmers will begin to develop a capacity for assessing their returns on investments. The farmers in the area are profit-oriented so they should be responsive to developing means to better assess profitability of production and marketing procedures. (However, it should be noted that based on experiences with local agronomes and other officials whose data collection is closely linked to fining and policing activities, farmers are wary of data collection. Participation in the "farm journal" activity should be truly voluntary).

Third, the project is attempting to develop the organizational and financial skills of local farmer groups. Farmers will be trained along with the Agricultural Assistants, and may, in fact, be more effective in extension work. Moreover, the project will encourage a system where farmer groups pay the salaries of the Agricultural Assistants, thereby increasing their accountability to the local population. Further, farmers' groups need to be permitted the option of dropping those Agricultural Assistants whom the farmers see as not benefiting them.

While the major thrust of project activities is to help build local problem-solving capabilities, the project should be concerned with several factors that will influence whether the project support system will be self-sustaining.

The life and work styles of expatriate personnel will set examples for Zairois trainees. Therefore, it is important that expatriates live and work in ways which can be continued by Zairois when the expatriates leave. This consideration should heavily influence decisions made by expatriates about the means used to do their work.

Project expenditures should be in line with the price structure in the area. Local people will at first demand unreasonably high prices for services; food, supplies, etc. They will meet the introduction of the project with high expectations of personal gain. During one PP team member's first two hours in Kongolo, he was asked

PART IV. C. (cont'd)

for a watch, shoes from the United States, and a scholarship to study math. Long-term expatriate residents in the area have experienced a steady flow of overpriced requests for goods and services for many months -- until local people saw that foreigners would live within local contexts. There is no need to pay the Kinshasa price in Kongolo, etc. though people will ask for it. The project must follow a hard line at first on amounts spent so that bad precedents are not established. Local, trustworthy personnel will be important for determining normal price structure. However, even the best informant may be misled by the apparently abundant resources of the project.

PART IV. C. (cont'd)

1. Taking Account of Socio-Cultural Context - Summary

As emphasized in the description of the project area and of the various project sub-systems, there are significant variations in the farming and social systems throughout the area. It is important that the project tailor its activities to take account of sometimes subtle differences even within small areas. Accomplishing this will require an ongoing dialogue with the farmers of each locality and in-depth socio-cultural contextualization.

Continuing communication with farmers and increasing knowledge of local conditions will help guide project initiatives, but there is a need for flexibility in project design and implementation. The project should permit re-direction of its activities resulting from farmer-inputs, new information, and changes in the social situation.

Tendencies toward "social engineering" should be avoided in the project. People in the area should be permitted to make their own syntheses of project innovations within their socio-cultural framework as they will be integrating a complexity of factors not fully identifiable in any social analysis. It is important for the project design to facilitate healthy synthesis by being compatible with, and building on, the local social/cultural strengths.

One note of caution is that local people do not necessarily yet have the relevant experience to think through the major consequences of adopting modern technology. People of this area are vulnerable, for they see some of the benefits and none of the problems of modern technology. A cultural assumption in the area is that all technology is good to have. It is important for the project to help develop a critical assessment capacity in relation to modern technology, just as it is important to help develop means in collaboration with farmers, which broaden farmers' capacities to shape the direction of project activities and agricultural development generally.

PART IV. C.

3. Social Consequence and Benefits Incidence

Throughout the project area there are slight variations in the size of land holdings, so the problem becomes one of helping all the farmers in the project area to improve their production, income, and self-reliance.

The project is designed to achieve certain major social objectives which are discussed below, with reference to specific problems that may occur.

a. Introduction of paid road crews for construction and maintenance of secondary roads will release farmers from road work which seriously disrupts agricultural production and which farmers view as repressive. This proposal has met with unanimous approval by farmers in meetings with the PP research team.

b. When the project begins to hire road workers at a fair salary and when other benefits of the project become known it is anticipated that out-migrants now living in urban areas will return to this farming region. This will help implement the national government policy of sending the urban unemployed to their home villages and offer a positive alternative to urban living. People in the area have also suggested that this phenomenon will occur.

c. During the first years of the project, the technology and improved practices that will be identified and developed with farmers will be mainly improved traditional practices. This will help insure that these improved techniques are accessible to all farmers.

Through use of palm oil presses, hand flour grinders, and other intermediate technology, the time women spend processing food will be significantly decreased. Women will thus be faced with the question of what to do during their newly available time. They could become more involved in crop production activities and other aspects of the project, but it cannot be assumed that they will automatically participate.

There is excellent potential for women to benefit from the project if they are given direct attention in project planning and implementation. As stated earlier, a female

expatriate staff member will be essential for the project to establish and develop meaningful contact with women.

e. The small natural group approach to farmer organization will help insure that benefits reach most elements of the population. Larger farmer groups controlled by a few farmers would be inappropriate in this social environment and would jeopardize equal access to benefits. Design of the Farmers' Centers seeks to avoid early over-centralization and misuse of resources. Nevertheless this should be closely watched by the Farmer Group Development Division, and appeal procedures should be made available if such misuses of power, money, etc., occur at Farmers' Centers.

f. As dealt with above (Part I, 10), appropriate measures to protect rights of privacy, including masking identities of particular individuals, family groups, and villages in data collection, to discriminate in types of data collected and; to control access to this information, will be necessary. In the wrong hands, monitoring and evaluation of the project could become a device to control, exploit, and/or incriminate specific people and groups in the project area.

f. It is difficult to predict the effect of the project on relations between Pygmies and their employers. Attention needs to be given to assuring Pygmy farmers equal access to the benefits of the project. The five Farmers' Centers designated for Pygmies, increased employment opportunities on road work, and use of Pygmy men and women as Agricultural Assistants are all steps in the right direction.

D. Economic Evaluation of Project:

1. Introduction

We wish to emphasize the very tentative nature of this economic analysis. Full use is made of data generated by the two design teams' field work, COZ/DOA statistics, ONACER reports, MINOKA records, etc. Rigorous economic data on an area as remote as North Shaba simply does not exist. Indeed, a major sub-section of the project is designed to obtain and analyze project area data. In view of this dearth of data, we are making conservative assumptions where sufficient data does not exist; these assumptions are based on formal evaluations of similar development projects around the world, and upon similar activities within Zaire.

The economic benefits flow from the interaction of the various project inputs, which should substantially increase the amount of maize marketed from the project area.

The methodology utilized in calculating the project's net economic benefits involves the quantification of commercial corn production with the project less the production which would have been realized without the project. The present value of the incremental production of corn has then been compared to present value of project costs. A number of additional benefits are likely to materialize as the project progresses. These socio-economic benefits are briefly noted but not quantified. However, based on the analysis of data systematically collected under the project, they will be assessed as the project progresses.

In the current analysis, the cost of imported corn at the mill (Likasi) has been used as the base price which most closely expresses the economic value of the incremental corn production to the Shaba region. The advantage of choosing this price base is that it represents a market price rather than a price set by administrative decree. Two such costs might be used: U.S. corn delivered to MINOKA mills at \$200/MT (i.e. ZI72/MT) or Rhodesian corn at \$189/MT (ZI63/MT). We use the latter in calculating benefit/cost ratio and IRR, as Rhodesia is the current supplier.

2. Major Assumptions

a. In view of (1) the lack of detailed information regarding the farming systems which are being utilized in the project area and (2) the significant shifts which have occurred since independence in Zaire's economic and financial situation, a ten-year economic life of project has been assumed.

b. We are not counting a depreciated salvage value of the improved roads and bridges and administrative and financial infrastructure at the end of ten years. An estimate would be

so contentious and arbitrary, we are assuming a salvage value of zero. This assumption yields a lower internal rate of return than would otherwise be generated.

c. Based in part on the considerable knowledge of the anthropologists who have been living in the project area, it has been assumed that excess labor capacity exists in the project area such that considerable expansion of maize production can be achieved without significantly effecting the production of other crops. Further, the labor supply should be effectively expanded through the introduction by the project of labor-saving intermediate technology.

d. It is assumed that all increased production -- whether brought on by expansion of the area under cultivation or by increased yields -- will be marketed because of improved marketing services achieved under the project.

e. It has been assumed that land availability is not a constraint.

f. The average production per farmer is equal to the estimated total production, 22,000 metric tons (MT), divided by the total number of farmers, 18,000, or 1.22 MT per farm unit.

3. Major Benefits Quantified

a. Road improvements -- Completion of road improvements in four major categories will result in expanded production and marketing:

1) Improvement of existing and currently useable roads, including secondary and farm penetration. It is estimated that 55% of the existing secondary and 100% of the existing farm-penetration road system fall in this category.

2) Improvement of currently existing but unuseable roads. This includes only secondary roads. It is estimated that 45% of the secondary system falls into this category.

3) Construction of new farm roads. It is estimated that approximately 500 kilometers of farm roads will be constructed during the project period using tools provided by the project.

b. Yield increases resulting from the adoption of the better traditional practices presently used by superior farmers in the project area. These include practices involving time and method of planting, plant density and increased weeding/thinning practices.

c. Yield increases resulting from improved seeds developed under the project. The improved seeds will be utilized in combination with improved practices.

d. Yield increases resulting from the use of fertilizer. The fertilizer will be utilized in combination with improved seeds and practices.

4. Benefit Calculation

a. Road Improvements - The impact of road improvements is calculated on the basis of the estimated zone of influence, which varies according to the type of road involved (primary, secondary or farm penetration), the population density in the area which the road traverses and whether or not the road is currently usable during the marketing season.

1) Existing Roads on Which Some Marketing Currently Takes Place

Substantial savings in operating costs can be obtained for a typical 6.5 ton truck operating on improved roads. Operating cost on unimproved roads are estimated at \$.521; improved roads operating costs drop to \$.304 makuta per kilometer - a savings of \$.217 per kilometer, or 41.7%.

The improvement of existing roads thus permits the merchants to extend their range of market at a given profit level. For each kilometer improved, the merchants can extend their range .417 kilometers on unimproved roads or 0.714 kilometers on improved roads. It is assumed that as a result of project marketing inputs, intensified competition will force merchants to extend their operations on to the unimproved roads. It is further assumed that the area in which the merchants will expand their operations has the same population density as exists in the zone the improved road traverses.

Based on the following breakdown of road improvements by type and location (in terms of population density), the benefits flowing from the road improvement program have been translated into increased production.

Economic Analysis
Table I
Impact of Road Improvements
Currently Usable Roads

Average Population Densities	Number of Kilometers Improved						TOTAL
	1977	1978	1979	1980	1981	1982	
I. <u>35 people/sq km</u> A. Secondary			47				47
II. <u>15 people/sq km</u> B. Secondary			110	104			214
III. <u>2 people/sq km</u> A. Secondary			36	102			138
B. Farm Penetration			50	50			100
TOTAL			243	256			499

Thus, for example, in 1979, 47 kilometers of secondary road will be improved in an area with a population density of 35 people per square kilometer. This would permit the merchants to extend their operations by $.417 \times 47$, or 20 kilometers. Arbitrarily assuming approximately 7 persons per family, this would include approximately $35 \div 7 = 5$ farm units per square kilometer. It is further assumed that the area of influence is approximately 5 kilometers on each side of the road, for a total zone of impact of 10 km X 20 km or 200 square km. With 5 farmers per sq. km., 5×200 or 1000 farmers would be involved. Assuming a 50% increase in production as a result of improved access to marketing services, a net increase of $1.22 \text{ MT} \times .5$ or $.61 \text{ MT}$ would be produced per farmer. Thus, the total net increase in production resulting from the improvement of this section of road is $.61 \times 1000 = 610 \text{ MT}$. Following this approach for the improvement of the remaining kilometers of road in this category, the following increases in production were derived by year.

1977	1978	1979	1980	1981	1982
-	-	1,857	1,210	-	-

2) Existing Roads on Which Little or no Marketing Takes Place

Improvements of these roads will result in increased marketing and production along the total length. Two types of road fall under this category: secondary roads which already exist and will be rehabilitated and farm roads which will involve new self-help construction using tools supplied by the project.

a) Secondary Roads - The method of calculating the increased production resulting from these roads will be similar to that used in the previous example. Table II provides a breakdown of the secondary roads to be rehabilitated in the various population zones. In 1979, 38 kilometers of road are scheduled to be rehabilitated in an area with 35 people per sq. km. Again, assuming a five kilometer zone of impact on either side of the road, a total of 38×10 or 380 sq. km. of area would be affected. Assuming 7 persons per family, there are 5 farmer units per sq. km. A total of 5×380 , or 1900, farmers would be affected by the improvement.

b. Improvements in Production Technology - Improvements in the production technology to be developed and extended to farmers in the project area are of three types: Those involving practices, those involving seeds and those involving fertilizer.

1) Yield increases which Flow from the Adoption of Improved Practices As states in Part III. B.1 above, the starting point of the project's research effort will be an intensive farm-level data collection and analysis effort designed to gain an understanding of farming systems in use within the project area. The primary focus will be on farm location, size, labor and cash inputs, current practices and their timing, yields and net income by crop.

Based on this information, during the first and second year the project will replicate the basic farming systems in use within the project area. The objective will be to identify the improved practices which are currently being used by the more productive farmers and which may be recommended to other farmers within their area to help increase yields.

It is anticipated that by the third growing season the project will have identified certain improved husbandry practices involving date of planting, sowing techniques, plant density, weeding and thinning practices, time of harvest and methods of storage which are location specific and which can be recommended to farmers.

In coordination with this research effort, the project will initiate a program which will lead to the establishment of up to 75 Farmer Centers during the life of the project. Concurrently, the project will train agricultural assistants who will work under the supervision of the farmer councils operating the Farmer Centers. The project will also provide training in improved agriculture technology to farmer council members. The agricultural assistants, the president of the farmer councils and farmer council members will be expected to assist in the dissemination of improved agricultural techniques.

It is estimated that, on the average, each Farmer Center will represent approximately 240 farm units. Table V shows the estimated rate at which the Farmer Centers will be established and the corresponding number of farmers served by the centers.

Economic AnalysisTable IIImpact of Road ImprovementsExisting Currently Unusable Roads

Average Population Density	Number of Kilometers Improved						TOTAL
	1977	1978	1979	1980	1981	1982	
I. <u>35 people/sq km</u>							
A. Secondary			38				38
II. <u>15 people/sq km</u>							
A. Secondary			90	85			175
III. <u>2 people/sq km</u>							
A. Secondary			29	83			112
TOTAL			157	168			325

Assuming as before a 50% net increase in production, or .61 MT per farmer, a total increase of $.61 \times 1900 = 1,160$ MT would occur. Using this methodology, the following production increases were calculated.

1977	1978	1979	1980	1981	1982
-	-	4,615	2,363	-	-

b) Farm Roads - The location and number of kilometers of farm roads to be constructed under the project are presented in Table III below. Because these roads involve new construction, the zone of impact has

Economic Analysis
Table III
Impact of Road Improvements
Construction of Farm Roads

Average Population Density	Number of Kilometer						
	1977	1978	1979	1980	1981	1982	Total
I. <u>3.5 People/sq. km.</u> Farm Roads			50	50	25	25	150
II. <u>15 People/sq. km.</u> Farm Roads			25	100	50	50	225
III. <u>2 People/sq. km.</u> Farm Roads			25	50	25	25	125
Total			100	200	100	100	500

been reduced to 5 kilometers on either side of the road. The following production increases have been calculated.

1977	1978	1979	1980	1981	1982
			1,133	567	567

Table IV below presents a summation of the production increases which accrued to the road improvement program.

Economic Analysis
Table IV
Summation of Production Benefits
Flowing from Road Improvements

Category	1977	1978	1979	1980	1981	1982
1	-	-	1,334	637	207	-
2	-	-	2,309	1,182	403	-
3	-	-	1,873	2,832	1,416	1,416
Total	-	-	5,516	4,651	2,026	1,416

TABLE V
Projected Schedule for
Establishment of Farmer Centers

	1977	1978	1979	1980	1981	Cumulative Totals
Centers Established	10	15	15	15	20	
Farmers Year Served						
1	2,400					2,400
2		3,600				6,000
3			3,600			9,600
4				3,600		13,200
5					4,800	18,000
6						
Cumulative Totals	2,400	6,000	9,600	13,200	18,000	

The experience of the maize program in Western Kenya^{1/} (which took place in an ecological zone similar to that of North Shaba) as well as the similar experience of the FAO fertilizer project in the Kasai area of Zaire (as described to the team by the FAO Project Manager), indicate that significant yield increases can be obtained at minimum cost through the adoption of improved practices.

The major new practices which will be introduced beginning in the third year involve early planting, increased plant density and more frequent and timely weeding. In the Kenya example these new practices resulted in production increases of as high as 72%. Normally, however, not all practices are adopted by all farmers and, of those which are adopted, recommended practices may not be strictly adhered to. Therefore, it is estimated that on the average, those farmers who adopt the recommended practices will increase yields by 60%.

It is estimated that a 15% annual rate of acceptance of the recommended practices by farmers served by the Farmer Centers will be achieved beginning in the third year. Thus, in the third year 15%, or 1,440, of the 9,600 farmers served by the Farmer Centers in 1979 will adopt. Based on an average production by adopters of $1.22 \times 1.6 = 1.95$ MT or a net increase per adopter of .73 MT, the total net increase for adopters then is $1440 \times .73 = 1.051$ MT. Using this methodology, the annual production increases were calculated through year seven of the project, when 85% of the farmers in the project area would have adopted the improved practices. The results of these calculations are presented below.

^{1/} Gerhart. op. cit.

77	78	79	80	81	82	83	84	85	86
-	-	1051	1445	1971	1971	1971	-	-	-

2) Yield Increases from the Adoption of Improved Seeds

Although the primary initial focus of the research program will be on identifying improved practices, work will begin immediately on the identification and selection of improved seeds. Some progress has been made by PNM/CIMMYT in South Shaba with respect to the development of improved seeds. The project will build upon this work in North Shaba. In this context, it is estimated that improved varieties acceptable to small farmers in the project area will be available at low cost for introduction by 1981. It is further estimated that when combined with the improved practices, there will be an additional net increase in yield of 40% over that achieved through improved practices. That is, the adoption of the new seeds in combination with improved practices will result in an additional net increase in production of $.4 \times 1.95 = .78$. A total of 2.73 MT of maize will be produced by those who adopt.

Because significant results can be achieved at low cost (assuming current prices of 7.5 makuta/kilo), it is expected that a 10% rate of adoption can easily be achieved. Thus, in 1981, 20% of the 18,000 farmers served by the Farmer Centers, or a total of 3,600 farmers, will adopt the improved seeds. Based on a net increase of .78 MT per adopter, a total increase of $.78 \times 3600 = 2808$ MT per annum through 1984 will be realized.

3) Yield Increases from the Use of Fertilizer

Research efforts to identify an economically viable fertilizer package will begin in the first year of the project. As in the case of seeds, the project will be building on the considerable progress already achieved by PNM/CIMMYT. Thus, it is expected that a viable fertilizer package acceptable to small farmers will be available for dissemination to farmers by 1982.

Assuming that the GOZ has adopted a definitive policy in support of fertilizer use for food production and has established a reliable delivery system, the fertilizer package will be introduced. It is assumed that the fertilizer will be used in combination with improved practices and new seeds and that the net increase in production will, on the average, equal 40% above those gains already achieved. Thus, the net increase in production per farmer adopter will be $.4 \times 2.73 = 1.09$ MT. Total production for those farmers adopting the complete package will be 3.82 MT. It is estimated that the rate of adoption will be considerably lower than that achieved with respect to seeds. This is a result of the higher cost of fertilizer as well as the risks associated with availability or late delivery as perceived by farmers. Thus, 10% adoption rate for fertilizer

is estimated beginning in 1982 for the 18,000 farmers served by the Farmer Centers, or $10\% \times 18,000 = 1800$ farmers. The total increase in production in 1982 will be $1800 \times 1.09 = 1,962$ MT. This net increase will be realized annually through 1986.

Table VI below presents a summation of the production increases which are expected to flow from improved technical packages developed under the project.

TABLE VI
ECONOMIC ANALYSIS
Summation of Production Benefits
Flowing from Improved Technological Packages

Benefit Category	1978	79	80	81	82	83	84	85	86
I Improved Practices	-	1,051	1,445	1,971	1,971	1,971	-	-	
II Improved Seed				2,808	2,808	2,808	2,808		
III Fertilizer					1,962	1,962	1,962	1,962	1,962
Total		1,051	1,445	4,779	6,741	6,741	4,770	1,962	1,962

An array of project production increases and benefits is presented in Table VII. As stated above, we have used the current delivery price of Rhodesian corn at MINOKA mills as the opportunity price of corn to calculate the benefits of the project. Current imports of corn from Rhodesia are at a rate of 150,000 MT/year. Thus all incremental production in the life of the project are computed as import substitution.

5. Project costs

a. Included under project costs are all development investment costs which will occur during the project period. This includes on-going investments such as fertilizer (see discussion below). Also included are recurrent costs which would occur without the project, such as salaries of DOA extension agents, ONACER/PNM personnel in the project area and other operational costs such as fuels, office materials etc. Thus, project costs are considerably overstated.

It is estimated that the cost to the GOZ for continuing the programs developed under the project will average about \$1,600,000 per annum uninflated. About \$1,000,000 of this amount will be required for

TABLE VII

ECONOMIC ANALYSISPrimary Benefits of Increased Corn Production
(In constant Uninflated Dollars)

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
MT's without Project	22,000	23,000	23,400	24,000	24,700	25,400	26,200	27,000	27,8000	28,600
MTs with Project	22,000	23,000	29,567	35,663	42,468	50,625	57,366	62,136	64,098	66,060
Incremental Production Road Improvements			6,516	4,651	2,026	1,416	-	-	-	-
Incremental Production Technological Package	-	-	1,051	1,445	4,779	6,741	6,741	4,770	1,962	1,562
Net Increase in Marketable Production	-	-	6,607	12,603	19,408	27,565	34,306	39,306	41,038	43,000
Value as Import Substitution (\$000's) Using Price of Delivered Rhodesian Corn (189/MT)	-	-	1,130	2,382	3,668	5,210	6,484	7,385	7,756	8,127
Value as Import Substitution (\$000's) Using Delivered Price of US Corn (200 /MT)	-	-	1,301	2,521	3,882	5,513	6,861	7,815	8,208	8,600

240

foreign exchange items such as POL, vehicle and construction equipment replacement, supplies, etc.

In addition, it will be necessary for the GOZ to provide foreign exchange for fertilizer procurement. Consistent with the conservative approach of this analysis, we have assumed higher levels of fertilizer application (100 kilos Urea & 100 kilos of DAP per hectare) than those currently being recommended by PNM. Based on these assumptions, the number of tons of fertilizer was calculated. The cost per ton is based on estimates provided by TVA. Table VIII below presents the results of these calculations.

TABLE VIII
FERTILIZER REQUIREMENTS
(000) US \$

Activity	82	83	84	85	86
Total Has. Under Fertilizer	650	1310	1960	2620	3270
Tons Required @ 200 Kilos/Ha	130	262	392	524	654
Total Cost @ \$350/Ton	46	92	137	183	229

Including the cost of fertilizer, the total estimated cost during the ten-year life of the project is as follows: (in \$ US 000)

1977 - 6,154	1982 - 1,409
1978 - 1,930	1983 - 1,692
1979 - 2,542	1984 - 1,737
1980 - 2,498	1985 - 1,783
1981 - 1,624	1986 - 1,829

6. Internal Rate of Return Calculation

As a result of increased yields and expanded production which will be generated by the project, an Internal Rate of Return of 18 % has been calculated. The basis of this calculation is presented below.

ECONOMIC RATE OF RETURN - TABLE IX

<u>Year</u>	<u>Annual Cash Flow</u>	<u>Discount Factor For 18%</u>	<u>Present Worth Discount at 18%</u>
1	-6,154	.8474	-5,215
2	-1,930	.7181	-1,386
3	-1,412	.6086	- 859
4	- 116	.5157	- 60
5	2,044	.4371	893
6	3,801	.3704	1,408
7	4,792	.3139	1,504
8	5,652	.2660	1,503
9	5,973	.2254	1,346
10	6,298	.1910	<u>1,203</u>
			+335

254

PART V: IMPLEMENTATION PLAN

A. Administrative Arrangements

(1) Recipient:

There are both private and public sector agencies directly involved in the implementation of the project. These include:

- (a) The Department of Agriculture, and, under it, the National Office of Cereals (ONACER)
- (b) The Office des Routes (Brigade 19)
- (c) The Bank of Kinshasa

The GOZ agencies directly and indirectly involved in the implementation of the project are all established offices of the GOZ. The primary responsibility for coordinating their activities will rest with the Department of Agriculture.

Under the Department of Agriculture, two offices will participate directly in the implementation of the project: The Office of Production and Extension, the main body of the Department, which is under the Director General for Agriculture, and the sub-office, ONACER (office of National Cereals), the grain-buying office, which is under a Delegate General. Section II. C. presents an analysis of the DOA's organization, administrative structures, and operations at the national level.

At both the project and national levels, there are important constraints to the development of an effective Department of Agriculture program in the project area. A major problem facing the DOA is the absence of a coordinated, consistent approach for dealing with small farmers. This problem arises because the DOA has a production branch which operates under the Director General and a marketing and research branch which operates under Delegate Generals.

Each branch has its own staff and its own objectives and responsibilities. The production branch is responsible for bringing about expanding acreages of all crops. The marketing branches (e.g., ONACER, ONAFITEX, etc.) are trying to market the maximum amount possible of the particular crop for which they have marketing responsibility. In addition, both of these groups carry out their own extension or propaganda programs.

PART V. A. (cont'd)

Thus, in the project area the farmers are receiving somewhat contradictory pressures for at least three extension operations under the same department of government. This can, and often does, involve inefficiency, unhealthy competition, and bad relations with farmers.

A second problem involves the late, incomplete, or non-payment of DOR staff salaries and operating costs. This problem results in low morale and ineffective operations. Recently, with the financial crisis, this problem worsened. This has resulted in increased incidence of DOA personnel abuse of farmers, e.g., fining farmers, and issuing planter cards (50K registration). These activities are not condoned by the Department of Agriculture.

The latter examples point up a third problem, the lack of an effective communications link between the national offices and their staff in the field. This situation also leads to morale problems and abuse of authority.

In addition, there is the related problem of lack of supervision and support of agriculture agents in the field by the Agronomes at the zonal level. As a result, these agents are at best ineffective.

The National Office of Cereals will carry out marketing operations in the project area under the guidance of the project. A description of its organization and operations is presented in Section II. C. (Project Background). Its operations in the project area are described in detail in Annex I. The primary problem faced by ONACER at the project level is the lack of personnel with adequate training and experience in the management and financing of a viable marketing operation.

The primary objectives of the project in the marketing sub-sector will be to facilitate the development of an expanded, viable private sector. In this context, a program for rationalizing the operations of ONACER will be carried out so as to enhance its capability to play a positive role in facilitating competition in corn marketing in the project area.

The Office des Routes will also play a major role, having responsibility for rehabilitating and maintaining the primary roads in the project area. An institutional analysis of OR is contained in Section IV. A., above.

PART V. A. (cont'd)

The Bank of Kinshsa (BOK) will provide banking facilities in the project area. The BOK will address two needs of the project. It will: (a) provide banking services for the disbursement of project funds; and (b) provide credit services for small commercants.

The BOK has considerable experience in providing effective banking services. However, it does not have experience in providing credit to high-risk clients, such as small commercants or small farmers. Under the project, technical assistance will be provided to the BOK to develop this capability.

In designing the project, detailed consideration was given to the capacity of the DOA, its sub-offices, and the OR to carry out their roles. In this context, and in view of the remoteness of the project area from Kinshsa, the design strategy focuses on establishing the financial and logistical independence of the Project Management Unit in order to: (a) minimize the administrative burden on the DOA and the Office des Routes; (b) maximize the potential for small farmers participation in and accountability for project operation; and (c) maximize the potential for spread effect.

In support of this strategy, the DOA has agreed that, once established, the Project Management Unit will be in charge of all agricultural activities in the project area.

Because the implementation of the project involves inputs by several independent agencies, special measures have been taken at the national and project levels to ensure proper coordination of decisions at both levels.

At the national level, a Project Steering Committee will be formally established. This committee will provide a forum for analyzing the implications of national-level policy and decisions with respect to the implementation of the project, as well as the social, political, and financial environment in the project area as determined through the data collected and analyzed by the project staff. This committee will be chaired by the Commissioner of State for Agriculture or his designee. It will meet twice a year to review progress reports, to review and approve annual work plans, and to address any important problems or policy issues which may arise. This committee will include representatives of the GOZ agencies whose operations can have a significant effect on the success of the project. Those agencies are identified in Section III. A.

PART V. A. (cont'd)

A Project Liaison Staff Committee will also be established at the national level to ensure adequate levels of ongoing technical, logistical, and communications support to the PMU. This committee will include counterparts to the AID project manager from the GOZ office most directly involved in the implementation of the project. These include the DOA and its National Office of Cereals/National Maize Program, the Office des Routes, the Bank of Kinshasa, and the Department of Finance. It is contemplated that this group will meet on a monthly basis.

In addition, the AID project manager will maintain informal contacts with all GOZ offices impacting on the project on an as-needed basis (see further discussions below).

To further facilitate the coordination of government decisionmaking at the national level, a special, though informal, relationship will be established between the Office of the Presidency and the project. The Office's Agricultural Advisor will participate in periodic reviews of the project, making inputs at the policy level, and communicating, as appropriate problems which cannot be resolved by the various offices involved.

At the project level, the Commission of State for Agriculture has agreed that the project will be responsible for all DOA activities related to research, extension, farmer group development, and grain marketing. All funds related to the implementation of these activities will be handled through a special project fund to be established with the Bank of Kinshasa.

The primary objective, therefore, will be to establish an effective mechanism at the project level to carry out this mandate (which may serve as a model for the organization of GOZ agricultural services at the zonal level).

To accomplish this objective, the project will establish under the Project Management Unit a management system capable of providing the coordination and direction required to assure that project inputs are appropriately integrated.

(2) Project Management Unit (PMU):

An organization diagram for the Project Management Unit is presented in Section III. A. (Summary Project Description). The organization and responsibilities of the various divisions, including the data collection and analysis unit operating under

PART V. A. (cont'd)

the PMU, are described in Section III. B. (Detailed Project Description). The purpose of this section will be to describe the management and administrative functions of the PMU's top-level management.

The Project Director will be a Zairois with some field experience in program management. He will be stationed at the Kongolo Center and will be responsible for all DOA operations and staff within the project area. In collaboration with the Assistant Director of the Administrative/Financial Unit, he will be responsible for the disbursement of all project funds and the hiring and dismissal of all Zairois project staff. He will be responsible for ensuring that project staff are properly trained and their work appropriately supervised at all levels. He will, in collaboration with the Deputy Project Director and the Assistant Director for Administration and Financial Management, develop a comprehensive management system which will support the achievement of project objectives. In this context, he will ensure that adequate formal communications take place among the directors of the various sub-systems within the framework of the data collection and analysis system, and that informal communication channels remain open and effective. He will ensure that effective two-way communications exist between the project staff at all levels and the target population.

The Project Director will also be responsible for maintaining a dialogue with zonal level officials in both Kongolo and Nyunzu Zones. In this context, and in collaboration with the Deputy Project Director, he will establish the Project Advisory Committee, clearly indicating its purpose and functions and in particular its relationship to the PMU.

The Deputy Project Director (an American) will assist the Project Director in carrying out the above functions. However, the Deputy Project Director will have a primary responsibility for ensuring the effective functioning of the information system. In this regard, he will provide technical direction and support to the Chief of the Data Collection and Analysis Unit.

The Assistant Director for Administration and Financial Management (an American) will be responsible for establishing administrative and management procedures for the PMU. He will work with the technical staff in developing operation plans and directing the conduct of activities which include personnel activities, project-wide training programs, procurement and management of equipment and supplies, office services, and logistical support for project staff.

PART V. A. (cont'd)

He will be responsible for controlling, scheduling, and maintaining motor vehicles assigned to the PMU central office staff. He will be responsible for maintaining required motor vehicle, supply, and equipment records and for the preparation of pertinent reports. He will coordinate the PMU personnel functions with the Project Director and the Deputy Project Director.

The administrative financial officer will also be responsible for the establishment and administration of a comprehensive accounting system designed to provide effective control of project resources. He will be responsible for hiring and training the financial management staff. He will direct the preparation of financial reports and statistical data on the management and utilization of funds. He will serve as certifying officer for the project and provide direction over project cashiers. He will advise the Project Director on financial policy and fiscal procedures. He will participate in all aspects of budget formulation, especially the administrative budget. He will direct payment of local contracts and monitor the disbursement under these agreements.

Assistant Project Directors will be located at Kongolo and Nyunzu. Their primary responsibilities will initially involve the supervision of project extension operations in their respective zones. They will receive training during the project period in the whole range of project activities including management, research, extension, farmer group development, marketing/credit, data collection/analysis, and project management. They will assume progressively greater responsibility for the management of these activities. By the end of the project, it is planned that they will absorb full responsibility for all zonal-level DOA activities. In this capacity they will become direct advisors to the Commissioners of the Zones.

(3) AID

The Mission agriculture/rural development program involves an integrated effort aimed at developing the DOA's capabilities to plan, monitor, and implement viable food production programs, directed mainly at small farmers.

At the national level, technical assistance has been provided to the DOA through Project 050. The focus of this project is to develop a project planning and monitoring capability within the DOA's Bureau d'Etudes. It was under the 050 program that the North Shaba project, among others, was proposed by the Bureau.

PART V. A. (cont'd)

The project described herein is a natural follow-on to the 052-050 effort. It provides a mechanism to train Zairois in the implementation of small farmer production programs. Because of the flexible nature of this project, as well as its comprehensive data collection and analysis component, it will also provide important training experience in planning and monitoring at both the project and national levels.

The Mission is developing a follow-on project to 050 (specifically, Project 052) and plans to begin design of a follow-on rural development effort with the anticipated approval of this project.

In addition, the Mission is designing a research project with INERA involving development within that organization of a research capacity in two areas important to future Zaire agricultural development, i.e., soils testing and food legumes. (A project to assist Zaire with the development of an effective grain marketing system on a national level is currently being developed under Project 069.)

With the recently approved fisheries cooperative project, the anticipated approval of 052, the grain marketing project, INERA and this project, the Mission's Food and Agriculture Office expects to have five active agriculture/rural development projects by the end of calendar year 1978.

In view of the complexity of this project and the increased monitoring/management requirements which will flow from the above-mentioned new projects and anticipated design requirements, the Mission Food and Agriculture Office requested and was granted an increase of two slots in the Food and Agriculture Office. Both have been filled. One of these slots was allocated for the position of Project Manager for the North Shaba project. In addition, the Mission recently was allotted an IDI slot, which was also been filled. Substantial assistance is also anticipated from a continuing program agricultural economist assigned to the Program Office. It is contemplated that the IDI will work closely with the Project Manager in monitoring the North Shaba project. Together, these officers will be responsible for all appropriate activities of their projects, including:

- (a) Monitoring/evaluation of project operations and progress to assure that management of AID resources is satisfactory in all respects;

PART V. A. (cont'd)

- (b) Assisting in the maintenance of liaison with intermediaries (contractors) and with relevant host country officials, providing advice and assistance on matters pertaining to the project grant procedures;
- (c) Assisting USAID in consultations and negotiations with host country officials on project implementation matters;
- (d) Assisting in providing the USAID Director and AID/W with project information sufficient for them to assess and evaluate progress achieved;
- (e) Assisting in maintenance of project reporting and record keeping systems, including Financial Management Information Systems (FINMIS) and Project Performance Tracking Systems (PPTS);
- (f) Assisting in the preparation of project implementation documents (ProAgs, PIO's, etc.);
- (g) Assisting in the establishment and maintenance of official project files; and
- (h) Recommending approval of contract terms for project activities and monitoring their implementation.

(4) Contracting Procedures:

In view of the complexity of the project, with its six major sub-systems, it is of major importance that the contracting approach followed result in the centralizing of project responsibility. This, in turn, would provide a framework within which the various sub-activities under the project can be appropriately integrated.

To achieve this important objective, a single umbrella contract will be entered into with an institution or consulting firm to carry out the project. Such an umbrella contract will cover all project activities.

Because of the wide degree of variation between the Sub-System for Infrastructure Development and the other sub-systems, the umbrella contract may involve a sub-contract with a construction management or engineering firm.

PART V. A. (cont'd)

Because of the complexity of this contract, the required number of full-time and short-term consultants, and the difficulties which will be involved in providing appropriate logistical support, a contract will be executed directly between AID and the institution or consulting firm selected to execute this project.

The normal AID competitive bidding procedures will be followed in selecting the contractor. Close collaboration between the GOZ/DOA and AID will be essential in selecting a contractor for the project. Thus, GOZ participation in the selection process will be instituted in accordance with AID regulations.

B. Implementation Plan:(1) Project Start-up, Pre-Contract Activities:

As described in the project area description, there are limited facilities available at the Kongolo, Nyunzu and Mbulula centers where project staff will be located. At the same time it is essential that project staff (expatriate and Zairois) arrive in the field not later than April 1, 1977, or an entire farming season will be missed. Adequate housing must be available by that date. There are a sufficient number of houses available at each site, but they will require some restoration to make them liveable.

In this context, within two weeks of the signing of the Project Agreement, the project will enter into a personal services contract with a construction management specialist who will:

- (a) Analyze the immediate minimum restoration requirements in terms of both facilities and services at the three centers to allow project staff to operate in the area while more permanent restoration takes place;
- (b) Design a program for achieving minimum restoration of ten houses by April 1, 1977. This analysis should cover minimum furniture, water and similar requirements;
- (c) Arrange for contracting with local builders to carry out the program;
- (d) Supervise the implementation of that program.

PART V. A. (cont'd)

AFR/DR will prepare the scope of work for recruitment and selection of the construction management specialist with the approval of the Mission.

Agreement will be reached with the firm selected for project implementation to include the services of the construction management specialist on the contractor's staff for a period of up to 18 months following contract execution.

As the implementation schedule for project start-up indicates, procedures for contractor selection must begin immediately upon approval of the project. If necessary, these services (in preparation of IFB, RFP, etc.) should be contracted for by AID/W or the Mission. It is important that the project start-up schedule be met if a comprehensive research effort is to be undertaken during the first year's crop cycle, which will begin in August of 1977.

In order to insure adequate mobility for the team when they commence operations, it will also be necessary to obtain three vehicles prior to the team's arrival in Zaire. Delivery of vehicles procured from the U.S. would require up to 18 months; therefore, the USAID Mission will try to procure vehicles locally if possible, through GM outlets in Kinshasa for delivery to the project area in time to coincide with the arrival of the team.

With adequate housing and transportation available, it will be possible for the team to begin effective operations in the field by April 1.

(2) Implementation Schedule:

The implementation plan for major project events under each sub-system from the date of approval until project completion is presented below. Separate Planned Performance Tracking (PPT) charts and critical performance indicators are presented in Annex

A summary schedule showing the arrival time and projected period of service for all full-time expatriate staff is presented below.

EXPATRIATE PERSONNEL

PROPOSED TENURE NORTH SHABA

SPECIALIST	FY 77	FY 78	FY 79	FY 80	FY 81	FY 82
DEP. PROJECT DIR/DATA COLLECTION	←					→
ADMIN/FINANCIAL MG'T.	←					→
AGRONOMIST/EXTENSION	←					→
RURAL DEVEL/MARKETING CREDIT	←					→
CCNSTR. MANAGEMENT	←					→
BRIDGE/BUILDING	←				→	
ROAD BUILDING		←			→	
MECHANICAL MAINTENANCE		←				→

c. Evaluation Plan

During the project, four categories of evaluation will be performed.

- o Formative (on-going) evaluation
- o Annual evaluations
- o A major Mid-project evaluation
- o End of project evaluation

The formative evaluation system is described in detail in Part III B. 6 (A Sub-System for Project Monitoring and Evaluation). The data collection and analysis system described therein will also provide the information base necessary to carry out the periodic evaluations which are scheduled during the project period.

Annual evaluations will be carried out under the project at the end of years 1, 2, 4, and 5. The purpose of these evaluations will be to reexamine project strategy and to assess actual performance against planned performance as presented in the logical framework. Based on the results of these evaluations, which will be reviewed by the Project Steering Committee, corrective action will be identified. These actions will be reflected in the annual work plans to be prepared by the contractor and approved by the Steering Committee.

The mid-project evaluation, to be conducted at the end of year three, will be the most extensive evaluation. It will be undertaken by a combined team representing, at a minimum, the Department of Agriculture (including the Bureau de Etude and ONACER), AID, the contractor and at AID's discretion, an outside consultant. Based on the results of this major evaluation, adjustments will be made as necessary and agreed upon by AID and the GOZ, in the basic project design the final three years of the project. This will cover all aspects of the project including strategy, approach, implementation and financing.

The Data Collection and Analysis unit will play an important role in carrying out this evaluation as well as the annual evaluations. Beginning one month prior to this evaluation the DCA will: (1) organize data and analyses produced for the previous evaluations and for this mid-term evaluation

into a format that will facilitate use by the evaluation team; and (2) attempt to foresee special information needs of the evaluation team, and collect this information for its use. This special information might be internal to the project and/or project area, but may also include periodic or special reports of the GOZ, U.S. Government, or other donor organizations.

When the evaluation team arrives, it will assess its tasks and organize any additional special studies and surveys to be undertaken in collaboration with the DCA.

As in the annual evaluations, the first task of the evaluation team will be to assess actual performance against planned performance. Planned performance can be identified by the targets and indicators of the project's logical framework. It will also be necessary to refer to the PP for supplemental information regarding the project's original intent (the Log Frame represents only a summary of that intent).

The next task (these tasks are not necessarily sequential and probably will overlap) will be a reassessment of the project's environment. It is here that the major issues will appear and the information necessary to discern causality for performance achievement (or lack thereof) will be obtained. The team should use the Log Frame assumptions for guidelines as to possible issues. However, it must also go beyond this, as there will be issues not foreseeable by the project design team. An assessment should be made regarding each assumption and each new issue as to how in their current state they will affect the project. A determination will then be made of which corrective action must be undertaken to achieve those objectives.

The evaluation team will reassess the project hypotheses (i.e., Is the goal still important? Is the project purpose still the most appropriate and effective means to achieve the goal? Are the outputs still the most appropriate and effective means to achieve the project purpose? Are the inputs still the most appropriate, effective, and efficient means to produce the outputs?) The evaluation team will present its findings, conclusions and recommendations to the Project Steering Committee and AID for decisions regarding changes in the project objectives and/or strategy. After approval, the changes will be built into an updated Logical Framework for the project.

The evaluation can be divided into the following functions:

1. Descriptive: Level of performance and state of environment;
2. Diagnostic: Why objectives were or were not achieved as planned;
3. Prognostic: What achievement can be expected with or without changing strategy (level and type of inputs);
4. Prescriptive: What changes should be made.

This evaluation will be undertaken over a period of six weeks. U.S.-based Ph.D. information systems specialists (preferably persons who have been involved in setting up the information system for the project) will arrive with the evaluation team and remain two weeks after conclusion of the evaluation. These last two weeks will be spent readjusting the information system to reflect changes in the project design.

The final end of project evaluation, will be oriented to summing up project achievement. It will assess causality and analyze the replicability of the project strategy and operations in terms of their utility in other projects and regular Department of Agriculture operations at the zonal and sub-region levels.

PART V (cont'd)

D. CONDITIONS PRECEDENT AND COVENANTS

The following conditions and covenants to disbursement of loan funds are recommended as additional to those normally included under a loan.

1. Conditions Precedenta. Primary Road Rehabilitation

The Department of Agriculture shall enter into a formal agreement with the Office des Routes under which the latter will commit itself to the rehabilitation of the 240 kilometers of primary road within the project area. This agreement will clearly indicate the following:

- The standards to which the roads are to be rehabilitated;
- The time frame within which the roads are to be rehabilitated;
- The procedures for rehabilitating the roads, including phasing, etc.;
- The source of funding for completing the rehabilitation program;
- The program for maintaining the roads following their rehabilitation, including the cost per kilometer and the source of funding.

b. Improvement of Loading Facilities and Project Housing

The National Railway System of Zaire (SNCZ) will enter into a formal agreement with the DOA under which the SNCZ will present formal plans for the extension of the rail-road siding at Nyunzu to enable expeditious extraction of the projected expanded production for the Nyunzu area. The siding should be long enough to allow a sufficient number of cars so that not more than 300 MT of maize will be left unloaded at any one time for lack of railroad cars. This agreement will include a plan which indicates:

PART V (cont'd)

- The time frame within which the extension of the siding will be completed;
- The length of the extension;
- The cost of the extension;
- The source of funding for the extension.

The SNCA's agreement with the DOA will also cover the terms and conditions for the rental or lease of SNCZ houses in the project area to the project.

c. Establishment of a Special Account

The GOZ shall agree to establish a special account through which all in-country project expenditures shall flow. Such an account will be set up at a banking facility to be established in the project area or at an existing facility in Kalemie which would provide periodic banking services within the project area. This agreement will clearly indicate the terms and conditions for the use of project funds and the responsible signators on payment vouchers. This agreement will provide for annual replenishment of the account in accordance with financial requirements indicating the source of the funding and the conditions under which changes in the size of the account may occur to meet unexpected project costs.

d. Formal Establishment of the Project Steering Committee

The GOZ shall formally establish the Project Steering Committee to be chaired by the Commissioner of State for Agriculture or his designate for the purposes outlined herein. The membership of this committee shall include, at a minimum, representatives of those GOZ offices and private groups identified in Part III A herein. The document officially establishing this committee shall indicate the number of times it shall meet each year and the circumstances under which special meetings may be called.

e. Project Organization and Authority

The GOZ shall formally approve the proposed organizational structure, the implied staffing pattern, functions and delegations of authority for the Project Management Unit. In accordance with verbal agreements with the Director General, DOA, the PMU will be given responsibility for all DOA operations

PART V (cont'd)

in the project area related to research, extension, farmer group formation and grain marketing.

2. Covenants

- The GOZ shall covenant to take appropriate measures to insure that adequate fuels are delivered to the project area during the maize marketing period and that such fuels will be available at competitive prices to ONACER, and other groups carrying out marketing activity in the project area.
- The GOZ shall covenant that the Office des Routes will maintain the secondary roads in the project area after the project is completed.
- The GOZ will covenant to take action aimed at improving the timing and coordination of pricing decisions related to maize at various marketing levels and the integration of these decisions with those involving other crops.

ANNEX A

PRP APPROVAL MESSAGE



A-1

Department of State

TELEGRAM

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AFR PAGE 01 STATE 094579

GC 64
ORIGIN AID-20

GC INFO OCT-01 AF-08 EB-07 /030 R

GC DRAFTED BY AFR/CWA/DAGRIFFITH/AFR/OS/RSHOEMAKER

GC APPROVED BY AFR/CWA/DAGRIFFITH

GC AFR/OS:SHCOLE

GC AFR/OP:ABAUSTEIN

GC AFR/GC:STISA (INFO)

GC PPC/OPPE:RRUBEL (INFO)

GC TA/DA:RTINNERMEIER (INFO)

GC TA/AGR:KMCDERMOTT (INFO)

007561

GC P 192205Z APR 76
FM SECSTATE WASHDC
TO AMEMBASSY KINSHASA PRIORITY
INFO AMEMBASSY ABIDJAN PRIORITY

UNCLAS STATE 094579

AIDAC

AGR E.O. 11652: N/A

TAGS:

SUBJECT: N. SHABA INTEGRATED MAIZE PRODUCTION

REF: GRIFFITH-SPENCER TELECON

ABIDJAN FOR REDSO/WA

1. PRP REVIEWED BY PROJECT COMMITTEE AND DISCUSSED WITH INTERESTED AGENCY OFFICES. IN GENERAL, REACTIONS VERY FAVORABLE. PRP CONSIDERED WELL CONCEPTUALIZED AND PLANNED. MAJOR AREA OF CONCERN EXTENDS TO QUESTION OF IMPLEMENTATION FEASIBILITY. FOLLOWING PREFLTMNARY OBSERVATIONS/COMMENTS MAY BE USEFUL IN USAID REVIEW.

2. WHILE PROJECT PURPOSE IS TO CREATE A REPLICABLE SYSTEM

UNCLASSIFIED

5



11-2

Department of State **TELEGRAM**

UNCLASSIFIED

PAGE 02 STATE 094579

AND THE INSTITUTIONAL CAPACITY TO INCREASE SMALL FARMER PRODUCTION, ITS MAJOR FINANCIAL ELEMENT IS INVOLVED WITH THE REHABILITATION/MAINTENANCE OF RURAL ROADS. THIS CONSTRUCTION ELEMENT WHICH INVOLVES UP TO 500 KM STANDAOS AT A TOTAL COST OF ABOUT DOLS LL MILLION IS A SUBSTANTIAL PROJECT IN ITSELF AND EXPOSED TO THE SAME SPECTRUM OF RISKS AND UNCERTAINTIES ASSOCIATED WITH ANY ROAD CONSTRUCTION PROJECT. THE ISSUE APPEARS TO BE WHETHER THE ARRANGEMENTS CONCEPTUALIZED FOR THE REHABILITATION AND FUTURE MAINTENANCE OF PROJECT AREA ROADS WILL PROVIDE REASONABLE ASSURANCE TO AID THAT THESE ELEMENTS OF THE PROJECT CAN BE ACHIEVED, OR WHETHER ALTERNATIVE IMPLEMENTATION ARRANGEMENTS SHOULD BE UTILIZED.

3. THE FOLLOWING CONCERNS EMERGE: A) AUTHORITY AND RESPONSIBILITY IS FRAGMENTED BETWEEN OR AND THE PMU, B) OR PAST PERFORMANCE ON THIS TYPE OF COMMITMENT IS UNKNOWN; HOWEVER ITS GENERAL CAPACITY FOR PERFORMANCE IS QUESTIONABLE, C) IN THE STRENGTH AND CAPACITY OF THE OR BRIGADE IN KONGOLO ADEQUATE FOR THE TASK AT HANO? IF NOT HOW CAN IT BE STRENGTHENED? D) DEVELOPING THE TECHNICAL CAPACITY AND INSTITUTIONAL STRUCTURE IN THE PMU FOR ROAD REHABILITATION AND MAINTENANCE, EQUIPMENT SERVICING, SPARE PARTS SUPPLY AND LOGISTIC SUPPORT IS AN ENORMOUS TASK. THESE CAPACITIES HAVE PROVEN EXTRAORDINARILY DIFFICULT TO DEVELOP EVEN IN OPERATING PUBLIC WORKS DEPARTMENTS. E) IS THE CREATION OF THIS TYPE OF LOCAL ROAD REHABILITATION AND MAINTENANCE CAPACITY COMPATIBLE WITH GOZ NATIONAL OR REGIONAL PLANNING. MOREOVER IS IT REPLICABLE ELSEWHERE? HOW WOULD EQUIPMENT FINANCING BE OBTAINED? F) ASSUMING AID FINANCED EQUIPMENT LIFE OF FOUR YEARS, WHERE DOES THE EQUIPMENT FOR ROAD REHAB AND MAINTENANCE IN PHASE II OF THE PROJECT COME FROM? G) IF PMU PHASES OUT OF ROAD REHAB AND MAINTENANCE, WOULD LOCAL AUTHORITIES HAVE THE CAPACITY TO ASSUME THIS WORK? H) WOULD OR ASSUME ALL OF THE ROAD REHAB AND MAINTENANCE WORK CONTEMPLATED UNDER THE PROJECT IN PHASES I AND II. IF SO, WHAT TYPE OF ADDITIONAL SUPPORT FOR OR MIGHT BE REQUIRED?

4. COST ESTIMATES FOR THE ROAD REHABILITATION AND MAINTENANCE SUBSYSTEM CONTAINED IN THE PRP FINANCIAL

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A-3

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TELEGRAM

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PAGE 03 STATE 094579

ANALYSIS SHOWS A TOTAL COST OF DOLS 9.8 MILLION. THIS FIGURE DOES NOT APPEAR TO REFLECT THE RECENT DEVALUATION AND SALARY INCREASES, ADEQUATE CONTINGENCIES FOR INFLATION ON LOCAL AND FOREIGN EXCHANGE COMPONENTS, SUFFICIENT CONTINGENCY AND PROVISION FOR ADDITIONAL MAINTENANCE EQUIPMENT WHICH WILL LIKELY NEED TO BE PROCURED BY THE FOURTH YEAR OF THE PROJECT.

5. IT IS RECOGNIZED THAT SPECIFIC ANSWERS TO ALL THE FOREGOING CONCERNS ARE NOT AVAILABLE AT THIS TIME. HOWEVER, BEFORE MOVING TO A PP IT IS NECESSARY TO APPROVE THE CONCEPT FOR ROAD CONSTRUCTION WHICH MUST BE BASED ON AN ASSESSMENT OF RISK AND UNCERTAINTY RELATED TO THOSE CONCERNS. THE FUNDAMENTAL QUESTION IS WHETHER THE PROPOSED IMPLEMENTATION ARRANGEMENTS FOR ROAD BUILDING ARE SUFFICIENTLY ASSURED TO WARRANT AN DOLS 8 MILLION COMMITMENT BY AID.

6. FULL CONSIDERATION MUST BE GIVEN TO THE USE OF THE FIXED AMOUNT REIMBURSABLE (FAR) METHOD OF CONSTRUCTION FINANCING. THE POSSIBILITY OF ITS USE AND THE METHOD OF ITS APPLICATION ARE NOT CLEAR.

7. ANOTHER ASPECT OF IMPLEMENTATION FEASIBILITY CONCERNS THE ELEMENTS OF THE PROJECT AND GIVES RISE TO THE FOLLOWING CONCERNS: A) CAN AID SUCCESSFULLY RECRUIT, FIELD AND SUPPORT UP TO 9 FRENCH SPEAKING TECHNICIANS AND THEIR FAMILIES ROUGHLY 1500 MILES FROM KINSHASA? B) IS THE GOZ ADMINISTRATIVE STRUCTURE IN THE NORTH SHABA AREA STRONG ENOUGH TO SUSTAIN THE OBLIGATIONS THE GOZ WILL INCUR IN THIS PROJECT? FOR EXAMPLE, THE QUESTIONS OF GAS FOR PROJECT VEHICLES AND THE TIMELY DELIVERY OF FARM INPUTS.

8. ONE METHOD OF CENTRALIZING PROJECT RESPONSIBILITY AND PROVIDING A MEANS TO OBTAIN, SYNCHRONIZE AND COORDINATE AID FINANCED INPUTS IS THRU A MANAGEMENT-CONTRACT COVERING ALL PROJECT ACTIVITIES. SUCH AN UMBRELLA CONTRACT COULD BE ESTABLISHED UNDER THE PMU WITH APPROPRIATE SUBCONTRACTS (OR DIRECT HIRE PERSONNEL) TO PROVIDE EXPERTISE IN ROAD CONSTRUCTION, AGRICULTURAL MANAGEMENT,

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H-4

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TELEGRAM

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PAGE 04 STATE 094579

ETC.

9. IN VIEW OF THE POTENTIAL COSTS OF CREDIT ACTIVITIES AND THE EXTRAORDINARY DIFFICULT SYSTEMS FOR ITS DELIVERY WHICH COULD INVOLVE THE SPECTRUM OF AGRICULTURAL INPUT REQUIREMENTS, AID MUST HAVE A BETTER FEEL OF THE CREDIT SYSTEM BEFORE PROCEEDING WITH AUTHORIZATION.

10. THE EMPHASIS TO BE PLACED ON PRIVATE SECTOR ROLE IN MARKETING OPERATIONS IS NOT ALL TOGETHER CLEAR. IT APPEARS THAT LICENSING OF PRIVATE BUYERS MAY BE OPEN TO CONSIDERABLE ABUSE AND DIFFERENTIAL FARM GATE PRICING WOULD BE DESIRABLE. ONACER'S ROLE AS A DEFICIT BUYER IN REMOTE AREAS NEEDS CLARIFICATION.

11. GIVEN WHAT APPEARS TO BE EXTREMELY DIFFICULT RECRUITING REQUIREMENTS FOR AID FINANCED TECHNICIANS, THE POSSIBILITY OF PEACE CORPS INVOLVEMENT SUGGESTS CAREFUL EXAMINATION. IT APPEARS THAT PEACE CORPS ACTIVITIES COULD BE INTEGRATED WITHIN THE CONCEPTS OF THE PROJECT MANAGEMENT UNIT AND THE USE OF AN UMBRELLA TYPE MANAGEMENT CONTRACT.

12. CONCEPTUALIZATION AND PLANNING FOR THE SEED MULTIPLICATION COMPONENT REQUIRES ADDITIONAL WORK.

13. REQUEST MISSION COMMENTS. KISSINGER

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ANNEX B

INFRASTRUCTURE DEVELOPMENT

- B-1: Road Standards**
- B-2: Secondary Road Listing**
- B-3: Bridge Plans**
- B-4: List of Project Bridges**
- B-5a: Equipment List**
- 5b: Staffing and Materials Costs**
- B-6: Logistics**
- B-7: IBRD-Funded Project in Bas Zaire**
- B-8: Technical Assistance to the Bureau of Roads**
- B-9: Job Descriptions**

ANNEX B: Infrastructure Development

1. Make Title Page, set up as follows:

ANNEX B: INFRASTRUCTURE DEVELOPMENT

B-1: Road Standards

B-2: Secondary Road Listing

B-3: Bridge Plans

B-4: List of Project Bridges

**B-5: Equipment List
Staffing and Materials Costs**

B-6: Logistics

B-7: IBRD-Funded Project in Bas Zaire

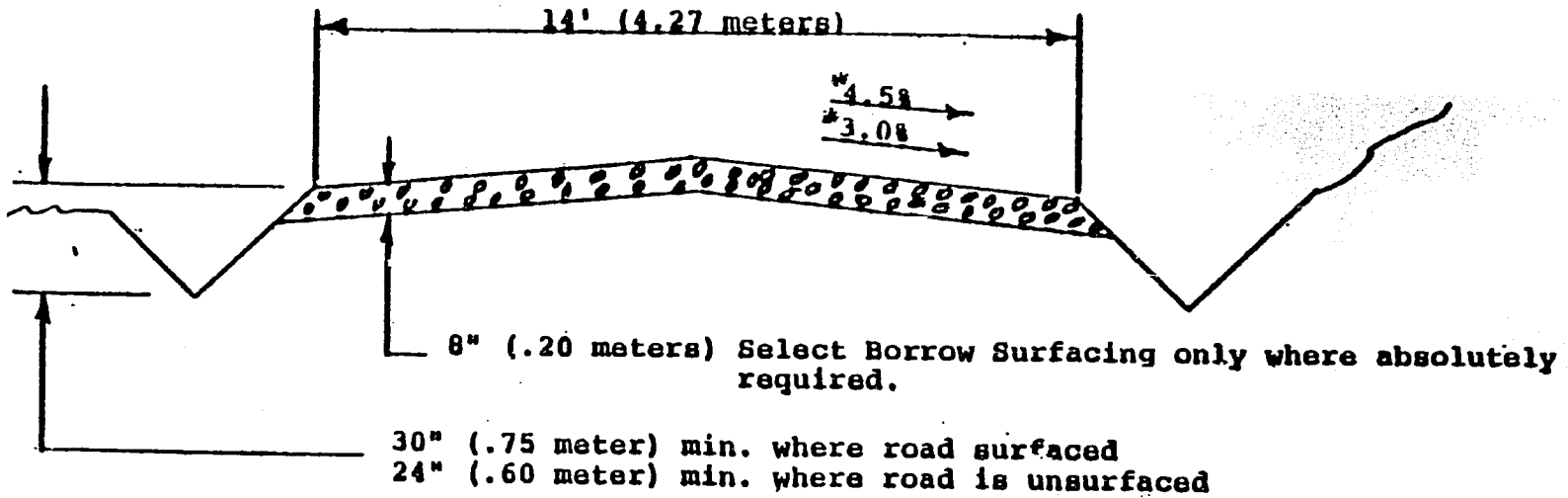
B-8: Technical Assistance to Bureau of Roads

B-9: Job Descriptions

2. (On this Annex, I would number pages as follows:

For each sub-division such B-5, I would number each page B-5, B-5, B-5etc. B-6, B-6 ,.....

COST BASED ON FOLLOWING ROAD STANDARDS



- * Crown 3% on Profile Grades less than 4%
- „ 4% to 5% on Profile Grades in excess of 4%

Turn out passing locations shall be intervisable.

ROAD CROSS SECTION

ANNEX B-1

ROAD STANDARDS

0
1
-

B-2

ANNEX B-2

SECONDARY ROAD LISTING

ZONE KONGOLO

<u>Termini</u>	<u>Length - Kms.</u>
Munono - Kabala	6
Kibulubi - Mugizha	14
Sola - Munono	24
Kateba - Makutano	48
Matata - Kiluzi	6
Lubinga - Binanga	15
Lubovia - Mukoko	56
Kibambi - Kahesha	4
Mlulula - Makutano	34
Kabenga-Savi-Mutombo	16
Mlulula - Kibele	18
Lunga - Kasanga Luhazi	9
Bidobo - Mahundu	10
Mwanangoy - Ilunga	9
Kasenzi - Bugarapiana	7
Binanga - Kiluzi	7
Nonge - Kansela	10
Keba - Kahenga	20
Sola - Kabwibwa	2
Senge - Lwangali	7
Kibeli - Ngole	8

15-2

ANNEX B-2 (cont'd)

Mukoko - Yayi	
Kibuti - Muhaba (via Buganamwehu)	35
Kilubi - Ketaba - Luika River	45
Numbi - Mukolo	10
	<hr/>
Total	428 Kms.

ZONE NYUNZU - NORTH OF THE LUKUGA RIVER

<u>Termini</u>	<u>Length - Kms.</u>
Mahundu - Kahinda	15
Kahinda - Kalundu	12
PR - Tambwa, Konge	7
Kitangetenge - Mbeya	30
Kitangetenge - Muguya I	30
Kabeya - Mayi - Kabeya - Mulunga	20
	<hr/>
Total	132 Kms.

3-3


ANNEX 8 - 3

BRIDGE PLANS

PONTS EN BOIS

PLAN — TYPE

1973.

OFFICE DES ROUTES.	ANNEXE AUX PRESCRIPTIONS TECHNIQUES.	DATE : 30-3-1973.
		ECHELLES : 1/20 - 1/50 - 1/10.
DPT. PONTS.	DESSINE PAR : KABUNDA MUT.	DRESSE PAR : APPROUVE PAR : 73-TP.OR-1

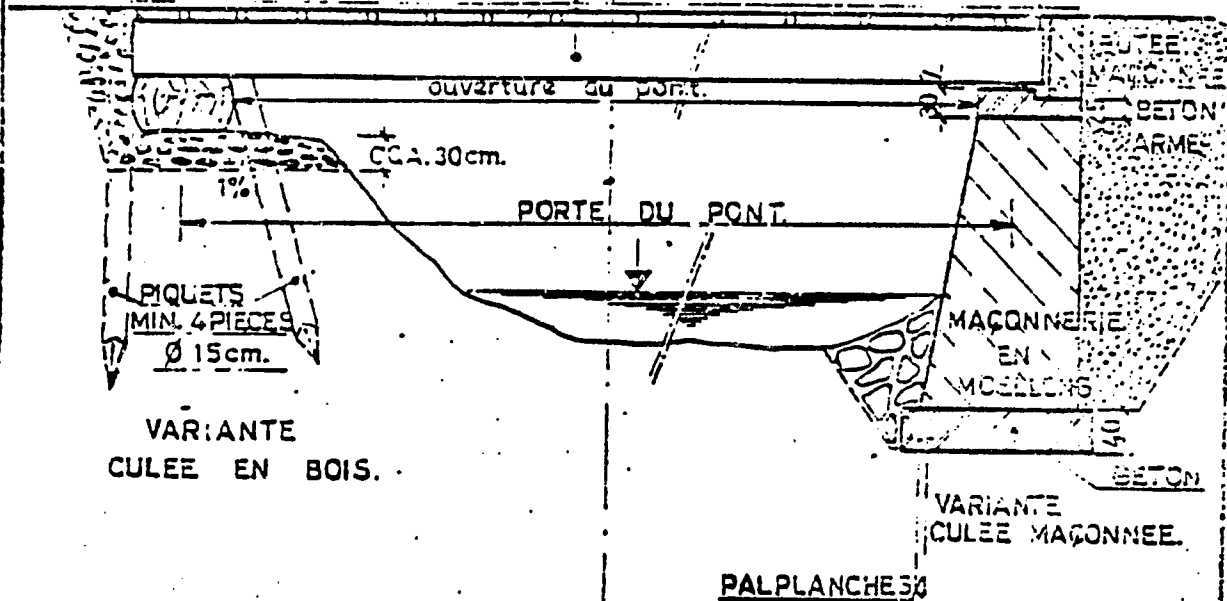
B-3 COUPE LONGITUDINALE D'UN PONT TYPE EN

BOIS.

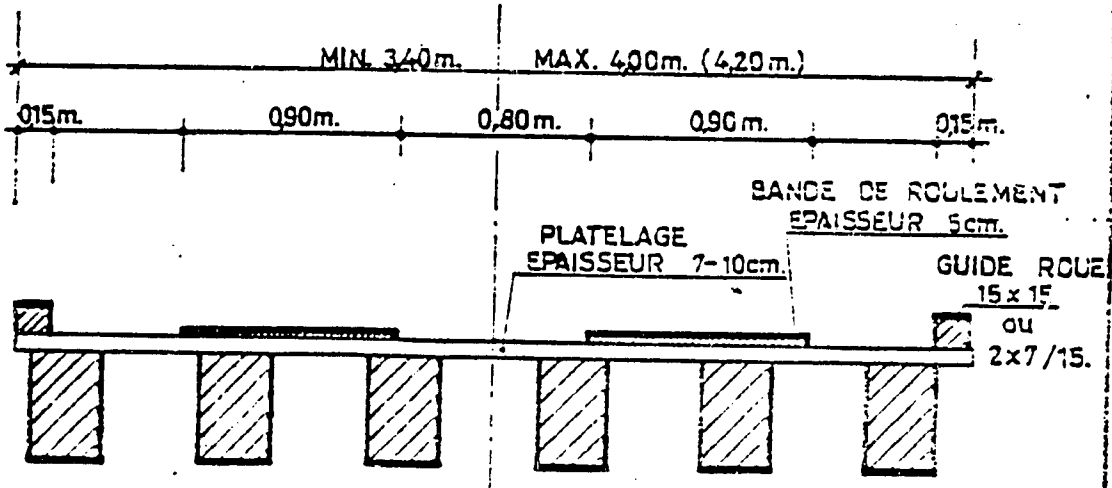
PIERRALLE
PETITS MOELLONS
(EN CAS DE DISPONIBILITE.)

CHASSE ROUE 15x15cm ou 2x7/15cm.
BANDE DE ROULEMENT EPAISSEUR 5cm
PLATELAGE EPAISSEUR 7-10cm.
LONGERONS.

ESPACES 5-6cm.



COUPE TRANSVERSALE.

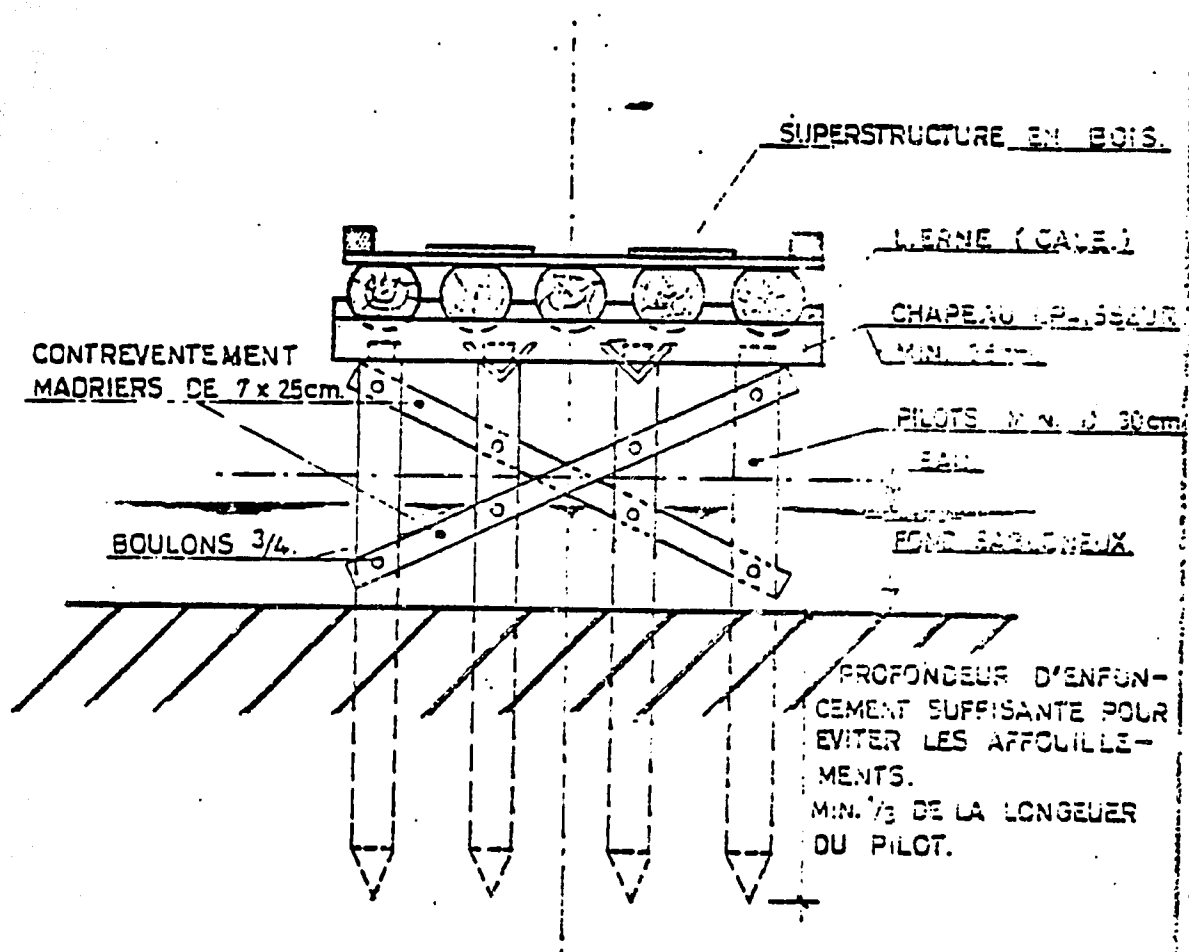


Ech.: 1/50. ①

B-3

SUPPORTS INTERMEDIAIRES.

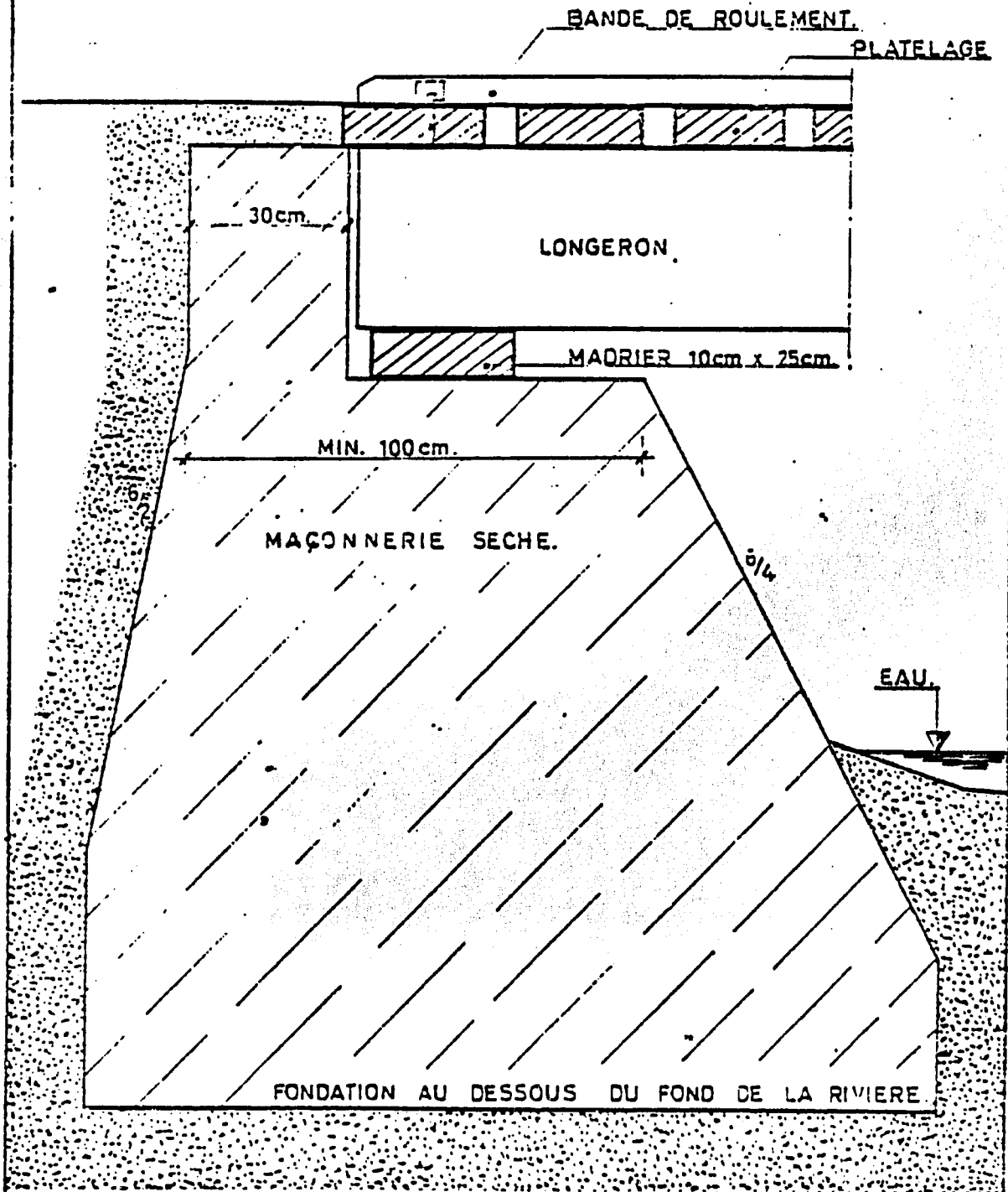
A. PALEE DE PILOTS EN BOIS.



- B. LES PILES MAÇONNEES (OU EN BETON) SONT A EXECUTER SOUS LA SURVEILLANCE DU SERVICE TECHNIQUE DE L'OFFICE DES ROUTES (DE LA REGION OU DE SOUS REGION.)

B-3

CULEE EN MAÇONNERIE SECHE.

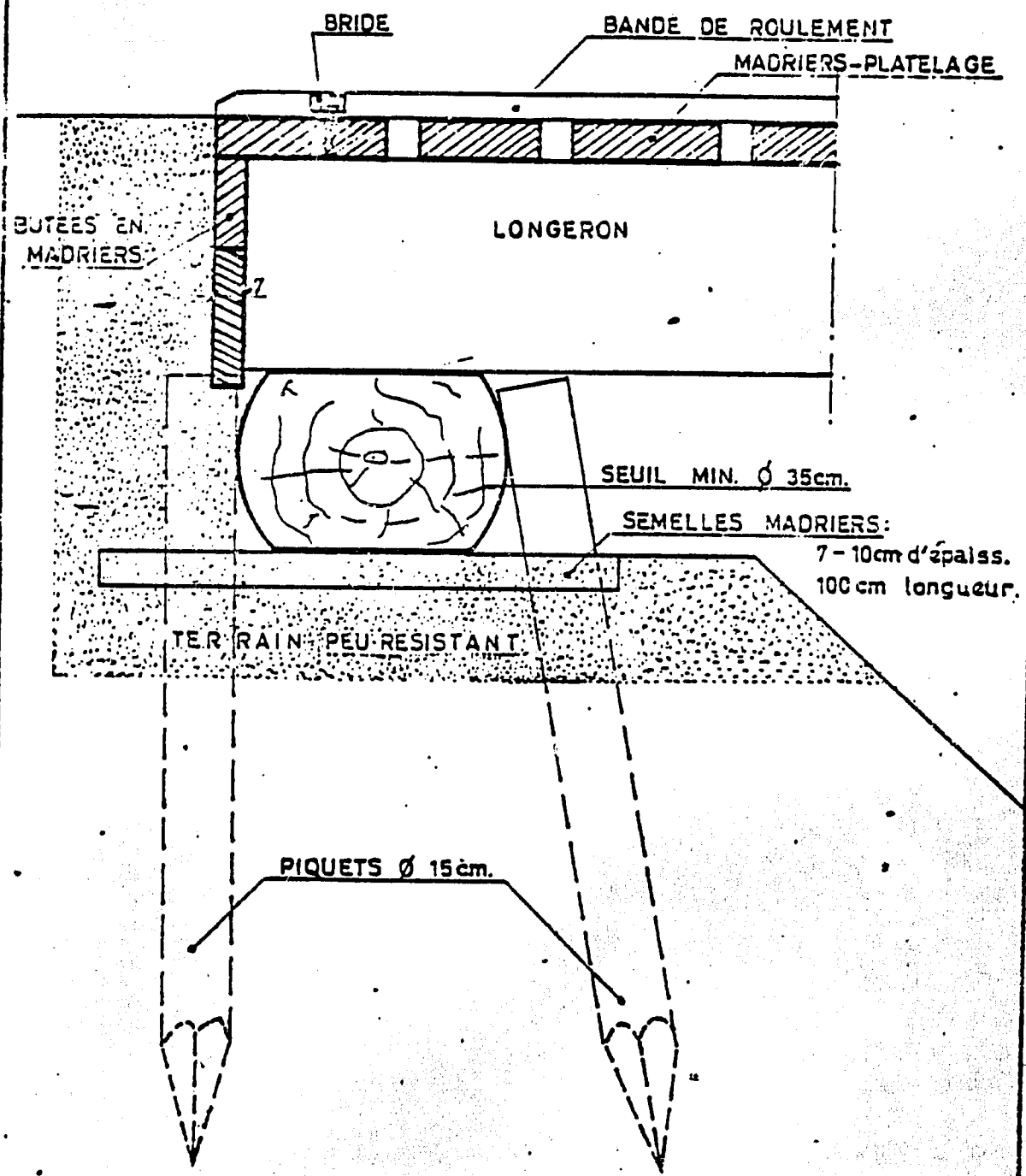


Ech.: 1/10.

3

B-3

CULEE EN BOIS. (VOIR 1.4.2)

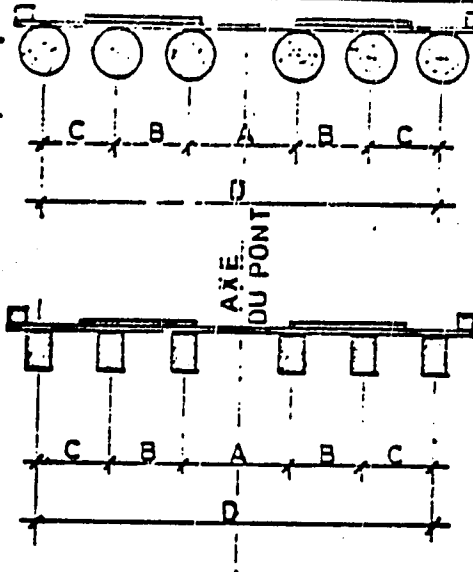


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4

SCHEMA DE REPARTITION TRANSVERSALE

DES LONGERONS.



VARIANTE 1.
(GRUMES.)

VARIANTE 2.
(EQUARRIERS.)

TABLEAU.

(SYSTEME 6 LONGERONS.)

PORTEE DU PONT m.	LONGUEUR POUTRES m.	SECTION POUTRE CM		ENTRE DISTANCES OPTIMA METRES.			
		NON EQUARRIE Ø cm.	EQUARRIE larg haut.	A	B	C	D
5	6	30 - 35	22/30	0,80	0,60	0,60	3,20
6	7	35 - 40	25/35	0,80	0,60	0,60	3,20
7	8	40 - 45	28/45	0,50	0,50	0,60	3,20
8	9	45 - 50	30/45	0,50	0,60	0,60	3,20
9	10,20	50 - 55	33/50	0,60	0,60	0,60	3,20
10	11,20	55 - 60	35/55	0,60	0,65	0,65	3,20
11	12,40	60 - 65	40/60	0,80	0,70	0,70	3,30
12	13,40	65 - 70	45/65	0,80	0,70	0,70	3,30

B-7

ANNEX B- 4

LIST OF PROJECT BRIDGES

Kongolo Zone:

<u>Kateba - Makutano Road:</u>	<u>Deck Size in Meters</u>
Kafito River	4 X 4
Musogo River	7 X 4
Yenga - Bwanibwa	6 X 4
Bwanibwa - Zola	8 X 4
Bwanibwa - Zola	4 X 4
Bwanibwa - Zola	7 X 4
<u>Lubinga - Binanga Road:</u>	
Kalumbi - Moniatwa	12 X 4
Cumbu River	7 X 4
<u>Lubovya - Mukoko Road:</u>	
Luvilu River	17 X 4
Kaviluvilu River	14 X 4
Kasankisna River	7 X 4
Kasanga - Magezi	5 X 4
Mazingu River (Lubinga - Kahenga)	6 X 4
<u>Kibanibi Kahesha Road:</u>	
Lwiu River	6 X 4
<u>Mbulula - Makutano Road:</u>	
Luvilu River	10 X 4

Annex B-4

Kongolo Bridges cont.Kabenga-Sayi - Mutombo Road:

Simbi River	8 X 4
Lubindu River	5 X 4
Kalinyumbu River	6 X 4

Mbulula - Lunga Road:

Kasekanya River	10 X 4
Lufutuka River	14 X 4

Kibeli - Kasanga Luhazi Road:

Mabambu River	6 X 4
Luguya River	3 X 4

Nonge - Kansele Road: (est. length)

Lusa River	5 X 4
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Keba - Kahenga Road:(est. length)

Chala - Mundula	6 X 4
Mundula - Mayenze	3 X 4
Mayenze - Kulula	9 X 4
Ngulube - Kahenga	9 X 4
Ngulube - Kahenga	4 X 4

Kibeli - Ngole Road:

Katonde River	4 X 4
Lubuya River	9 X 4
Creek	- 8 X 4
Lufutuka River	13 X 4
Creek	4 X 4

15-4

Annexe 3-4

Kongolo Bridges cont.

Lufutuka River (Misaba) 7 X 4

Kiluba - Luika River Road:

Kifuta River 8 X 4

Kibute - Muhaba (via Kayenge) Road:

Mahambwe - Kabenga 6 X 4

Kabenga - Bugana Mwehu 4 X 4

Kabenga - Bugana Mwehu 4 X 4

Luvilu River 9 X 4

Luvilu River 6 X 4

Luvilu River 6 X 4

Kahuf River 8 X 4

Kilenge - Mukolo Road:

Kanyati River 5 X 4

Creek/gully 8 X 4

Kabemba - Mukolo 7 X 4

Keba - Kibozia Road:

Kanye River 10 X 4

Nyunzu Zone - North Lukuga

Kahinda - Kalundu Road:

Kasangai River 6 X 4

Kahinda - Kalundu Road:

Kabalai River 6 X 4

PR Tambwe Road:

Kikuka River 6 X 4

Annexe B-4

Nyunzu Zone - South Lukuqa cont.

Bibe River	9 X 4
Kihenge River	3 X 4
<u>Gombe - Mwana - Humba Road:</u>	
Mwelu River	9 X 4
<u>Genda - Muleya Road:</u>	
Unnamed River	6 X 4
<u>Luizi - Maloba Road:</u>	
Kikaba River	8 X 4

TOTAL BRIDGES FOR PROJECT

4 each 3 meter X 4 meter	
13 each 4 meter X 4 meter	
4 each 5 meter X 4 meter	
15 each 6 meter X 4 meter	
7 each 7 meter X 4 meter	
8 each 8 meter X 4 meter	
8 each 9 meter X 4 meter	
3 each 10 meter X 4 meter	
2 each 12 meter X 4 meter	
1 each 13 meter X 4 meter	
2 each 14 meter X 4 meter	
1 each 15 meter X 4 meter - repair only	
1 each 16 meter X 4 meter	
1 each 17 meter X 4 meter	
2 each 24 meter X 4 meter - replace deck on one bridge only	
<hr/>	
72 Bridges	

D-4

Annexe B-4

Nyunzu Zone - North Lukuga cont.

Mukundi - Kitengetenge Road:

Kimbili River	6 X 4
Lubo River	8 X 4
Kitengetenge River	7 X 4

Kitengetenge Mbeya Road:

Lubondo River	12 X 4
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Kitengetenge Muquya I Road:

Lubondo River	4 X 4
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Kabeya-Maji - Kabeya-Mulunga Road:

River Name Unknown	4 X 4
River Name Unknown	16 X 4
River Name Unknown	6 X 4
River Name Unknown	4 X 4

Nyunzu Zone - South Lukuga

Mukeza - Makumbo Road:

Mahunga River	4 X 4
Creek	4 X 4
Lueyeye River (Repair only)	15 X 4
Muela River	9 X 4
Mubile (Deck only)	24 X 4
Mutshibye River I	6 X 4
Mutshibye River II	4 X 4

Makimo - Ngoy Road:

Mwelu River	9 X 4
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B-5

ANNEX B-5-A

EQUIPMENT LIST

<u>TYPE</u>	<u>QUANTITY</u>	<u>UNIT COST</u>	<u>TOTAL</u>
Bulldozer, 135 HP	2	\$79,000	\$158,000
Grader, 125 HP	3	60,000	180,000
End Loader, 1 1/2 Cu. Yd.	1	50,000	50,000
Backhoe End Loader, 1/2 Cu. Yd.	1	30,000	30,000
Fuel Trucks (diesel engine) 2,000 gal.	2	29,000	58,000
Water Trucks (diesel engine), 2,000 gal.	1	29,000	29,000
Flat Bed Trucks (diesel engine), 5 ton	2	25,000	50,000
Dump Trucks (diesel engine), 5 Cu. Yd.	9	35,000	315,000
Rollers, Rubber Tired, 15 ton	2	20,000	40,000
Concrete Mixers, 1/2 Cu. Yd.	2	4,000	8,000
Pickup Trucks, 2x4 1/2 ton	10	6,200	62,000
" " 2x4 3/4 ton	2	7,000	14,000
" " 4x4 3/4 ton	2	9,000	18,000
Truck-Mounted Grease Unit	1	30,000	30,000
Flat Bed Trailers, 15 ton	2	10,000	20,000
Compressor w/Jackhammer/Tools	1	10,000	10,000
Water Pumps, 10 1/2"	2	3,000	3,000
Misc. Hand Tools	1 lot	40,000	40,000
Motorcycles, Recon.	2	1,000	2,000
		<u>Subtotal:</u>	<u>\$1,120,000</u>

15-0

ANNEX B-5-A (cont'd)

<u>30% Spares:</u>	<u>336,000</u>
<u>Sub Total:</u>	<u>\$1,456,000</u>
<u>Inflation 1 yr @ 7%:</u>	<u>102,000</u>
	\$1,558,000
<u>(Say) TOTAL FX:</u>	<u><u>\$1,560,000</u></u>

5-0

ANNEX B. 5.B

STAFFING AND MATERIALS COSTS

1. Staff Salaries (Excluding Ex-Patriates)

(A) Counterpart/Project 4 @ \$5,000 x 5 years	\$100,000
(B) Construction Bosses/Project 4 @ \$4,000 x 2.875 years	46,000
(C) Skilled (including Crew Bosses) (Drivers, Masons, Mechanics, Carpenters, etc.) 100 @ \$1,400 x 2.875 years	402,500
(D) Laborers: Full-time, Semi-Skilled 120 @ \$500 x 2.875 years	172,500
(E) Casual Labor to provide rock, sand, and timber.	28,400
(F) Labor to clear and side-ditch secondary system. 100 man/days/km. (100 x \$1 x 724)	<u>72,400</u>
<u>Sub-Total:</u>	\$822,000

2. Material Costs:

(A) Bridging Live Streams Total Lin. = 526 meters (526 x \$500)	\$263,000
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150

ANNEX B. 5.B (cont'd)

(B) Cross Drainage: 3 lines/km.

@ \$150 each = \$150 x 3 x 724

\$325,800

Sub-Total: (say)

\$589,000

3. Fuels:

Full production 950 gals/day

190 days x 950 x \$1.44/gal = \$259,920

2 1/2 years full and 1 1/2 years 1/3 =
3 years

\$259,920 x 3 years (say)

\$780,000

4. Distributed Costs for Roads:

	<u>Bridges</u>	<u>Roads</u>	<u>End of Proj. Residual Equip. Value</u>	<u>Total</u>
(A) Equipment	\$300,000	\$902,000	\$358,000	\$1,560,000
(B) Salaries	405,000	417,000		822,000
(C) Materials	263,000	326,000		589,000
(D) Fuels	275,000	505,000		780,000
(E) 20% b.c.d. con- tingency	<u>189,000</u>	<u>250,000</u>		<u>439,000</u>
<u>Totals:</u>	\$1,432,000	\$2,400,000	\$358,000	\$4,190,000

5. Expatriate Costs (Other than Housing):

(A) Construction Management Supervisor

Term: 5 years. \$65,000 x 5 =

\$325,000

10-0

ANNEX B. 5. B (cont'd)

(B) Bridge Building Construction	
Term: 4.2 years. \$60,000 x 4.2 =	\$252,000
(C) Master Mechanic	
Term: 5 years. \$55,000 x 5 =	275,000
(D) Roads Construction Supervisor	
Term: 3.5 years. \$55,000 x 3.5 =	<u>193,000</u>
<u>Sub-Total:</u>	\$1,045,000

6. Sub-System Buildings & Equipment Center Costs:

(A) Base Maintenance Center (Kongolo).

Building contains:

(1) 8 bays for equipment repair @ 570 sq. ft. each. 4 with pits. (8 x 570 x \$11) =	\$50,160
(2) One tire shop. 300 sq. ft. @ \$9 =	2,700
(3) Welding Shop. 400 sq. ft. @ \$9 =	3,600
(4) Machine Shop. 400 sq. ft. @ \$9 =	3,600
(5) Tool Room. 150 sq. ft. @ \$9 =	1,350
(6) Warehouse. 900 sq. ft. @ \$12 =	10,800
(7) Compressor Room. 120 sq. ft. @ \$9 =	1,080
(8) Office. 320 sq. ft. @ \$12 =	3,840

(B) Other Costs:

(9) Fuel Dump with pumps	15,000
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U-U

ANNEX B. 5. B (cont'd)

(10) Generator, 15-20 kw.	\$13,000
(11) Compressor	5,000
(12) Shop Tools	40,000
(13) Mechanics Tools	11,000
(14) Site work: water, toilets, etc.	10,000
(15) Fencing	4,000
<u>Sub-Total:</u>	<u>\$165,120</u>
<u>Contingency (15%):</u>	<u>24,768</u>
<u>Rounded Sub-Total:</u>	<u>\$190,000</u>
(C) Base Maintenance Center (Nyunzu). 1/2 of Kongolo Maintenance Center cost =	95,000
(D) Houses for 8 Expatriates and C.P.'s 8 x \$30,000 =	240,000
(E) Furnishings for 8 houses listed (D) above. 8 x \$9,000 =	72,000
<u>Sub-Total (Section 6):</u>	<u>\$597,000</u>
<u>Building Maintenance (4 years = 10%)</u>	<u>60,000</u>
<u>Sub-Total (Section 6):</u>	<u>\$657,000</u>

U 0

ANNEX B-6

LOGISTICS

There are four major supply routes into the project which can serve as delivery systems for all project equipment and supplies. These routes provide potential for supply, but each route also has inherent problems. The routes are as follows:

1. Entry via Port of Matadi; by rail to Kinshasa; barge to Kindu; and then via rail to the project site;
2. Entry via Port of Dar-es-Salaam, Tanzania; rail to Kigoma; by barge to Kalemie and then via rail to the project site;
3. Entry via Port of Benguela, Angola; via Benguela railroad to project site.
4. Entry via southern rail route which passes through Rhodesia.

At the present time, Routes 3 and 4 are politically unacceptable and will undoubtedly remain so for some time. That leaves a choice of either Route 1 or 2. Based on the situation as it now exists, Route 1 is the preferable route. This judgment is based on the following facts:

1. SGNTF is presently successfully using this route to supply equipment to its brigade units. Some of the rolling stock was convoyed overland to Kongolo and Kalemie. Construction units shipped by river/rail were sent in groups accompanied by equipment operators. Very little damage resulted from pilferage or rough handling. Units shipped by this route took from 27 to 71 days to deliver from the dock at Matadi to the site (delays due to availability of river barges and railcars for the differential).

2. SGNTF has experience in handling the duty-free customs clearance formalities at Matadi, and is now successfully expediting shipments.

3. SGNTF has agreed to handle all shipments from the States to the project site.

13-6

ANNEX B.6. (Cont'd)

4. Conditions at the Dar-es-Salaam port, and on the rail line to Kigoma are resulting in shipping times from Dar-es-Salaam to Kalemie of 14 to 21 days. Additional delays would also be encountered on the Kigoma-Kalemie barge/rail system. Additional time would also be lost in the longer ocean transit time to the port of Dar-es-Salaam as compared with shipments to Matadi.

Therefore, based on the present situation, the best logistical supply route is through the Matadi port. A further comparison of the situation at the time large shipments are to be made should be made to assure that the situation hasn't changed.

ANNEX B-7IBRD-FUNDED PILOT PROJECT IN BAS ZAIRE

The Department of Rehabilitation has instituted an IBRD-funded program to institutionalize the maintenance of roads. A pilot program was tested and is being successfully carried out primarily in Bas Zaire. It is being replicated throughout Zaire at the present time. The program contains information and guidelines to be followed in implementing all the activities related to road maintenance, including a method for controlling traffic. Among these guidelines is information for the brigades responsible for the construction and maintenance of bridges, including costs for building different types of road bridges (costs at 1974 prices). This includes the cost of all the material and personnel. It can be summarized as follows:

Brigade Autonomes
(Heavy Construction)

800 hours/year	Z 313,420
1,000 hours/year	372,490

Brigade RC/Z
(semi-heavy)

800 hours/year	179,880
1,000 hours/year	210,690

Road Maintenance Brigade

800 hours/year	77,190
1,000 hours/year	89,690

Bridge Brigade

Per year	98,240
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ANNEX B-8TECHNICAL ASSISTANCE TO THE BUREAU OF ROADSOBJECTIVE

The purpose of technical assistance to the Bureau of Roads is to improve its operation and to develop local expertise in highway administration through counterpart advising and training programs.

Scope of Technical Assistance

Twenty-four experts will be employed for a period of 36 months each. One expert will be in executive function, eighteen will be advisers to local key personnel and five will be program coordinators. Job descriptions for the different members of the team and the qualifications required are given below.

Individual Job Descriptions1. Director General, Bureau of Roads (1)Duties

Will be general manager of the Bureau of Roads with duties and rights as established in the statutes of the Bureau. Will report to the Minister of Public Works.

Qualifications

Civil engineer with minimum 15 years experience in the administration of highways and demonstrated management capability. A minimum of 5 years relevant experience in developing countries is desirable.

2. Adviser, Director Maintenance Division (1)Duties

Will advise the Director of the Maintenance Division on matters relating to the rehabilitation and maintenance of roads and roadway structures.

ANNEX B-83. Institut National du Batiment et des Travaux Publics (INBTP)

The INBTP has been in existence since 1961. The program comprises four years in engineering but the degree is not equivalent to a university degree.

4. Institut National du Preparation Professionnelle (INPP)

The INPP was created in 1964 and is not a professional school or training center in the usual sense. Rather, it is an institution with the following stated objectives:

- promote professional training in all sectors (industry, trade, etc.);
- coordinate training efforts in the public and private sectors;
- assist the Ministry of Public Works (Service National de l'Emploi) in the general field of training; and
- enhance the value of human resources in the country.

The INPP updates workers' skills and trains unskilled people in following fields:

- General mechanics
- Electromechanics
- Auto mechanics
- Construction
- General administration
- Training methodology

5. Universite National du Zaire

The university has a civil-engineering curriculum. The percentage of civil engineering students among all engineering students is, however, quite low (about 10%).

6. 27 Vocational Schools Throughout the Country

The programs offered by these schools varies from school to the next. Training is normally offered in the following areas:

B-8

ANNEX B-8

- (i) construction;
- (ii) general and specialized mechanics;
- (iii) electrotechnics

Most of these schools are quite run down and, in some, the curriculum exists only on paper.

7. 21 Long-term Technical Schools

These schools offer a four-year curriculum after six years primary school and two years preparatory school in the following fields:

- (i) General mechanics;
- (ii) electrotechnics;
- (iii) construction.

8. 10 Short-term Technical Schools

These schools offer a three-year combined formal/on-the-job curriculum after six years primary school and two years preparatory school in the following fields:

- (i) general mechanics;
- (ii) auto mechanics;
- (iii) electromechanics;
- (iv) construction.

9. Extension Services

(Centres de formation professionnelle pour adultes)

These centers, still limited in number, have been created by the Ministry of Education. Their function is to train adults in a relative short period comprising: (i) three months preparation; (ii) four to six months formal training; (iii) on-the-job training in the general fields of construction and mechanics.

Training Under Bilateral and International Aid Programs

1. Ecole des Agents Voyers (EAV)

This school was created in 1970 and is being operated with financial and technical assistance provided by the Federal

ANNEXE B-8

Republic of Germany. Its sole function is to train road construction and maintenance technicians (inspector of works) and road foremen. This school operates very successfully.

2. Training arrangements under the Second Highway Project.

- (i) USAID financed training of road equipment operators and mechanics, road foremen and storekeepers comprising both formal and extensive on-the-job training which is carried out by the Swiss consultants ORT. This program terminates in January 1975; no extension is planned. About 800 Zaireans have been trained. The program was a success.
- (ii) IDA/UNDP-financed training of Bureau of Roads managers, Bureau of Roads administrative personnel, Bureau of Roads inspection and secretarial staff. This training was carried out by four experts of the AIZR team of technical experts in the Bureau.
- (iii) FAC-financed training of laboratory personnel. This is being successfully implemented.

ANNEX B-9JOB DESCRIPTIONS1. Construction Management Specialist:

The construction management specialist shall have at least 20 years experience in the construction field of which the last 5 years shall have been at the construction superintendent or project manager level. The requirements of this position are for overall project management of a difficult buildings, bridge and road construction operation. Logistics will be especially difficult; therefore, the background of the incumbent must include procurement planning suitable for a large but relatively unsophisticated building program.

His major tasks will include the following:

A. Preparation of detailed specifications for all construction equipment and formulation of an appropriate invitation for bid package (IFB) for advertisement under AID procurement regulations, (i.e., Regulation I); sample documents will be made available to guide this work.

B. Working from standard building plans and specifications, the incumbent will prepare a detailed list of hardware and electrical supply items required at the individual sites and place orders through the appropriate government procurement system for delivery to site as soon as possible.

C. The incumbent will have to arrive in Kongolo, Zaire, in time to coordinate with the bridge/buildings construction specialist (i.e., no later than 14 months after project approval) and will recruit, organize necessary construction crews, and undertake the building construction effort.

D. Shall, with the assistance of the building/construction specialist, organize construction crews and start a road-building program using hand labor and equipment to undertake the construction of 724 km. of unpaved roads and 72 bridges.

ANNEX B-9 (cont'd)

All of this work is to be accomplished in the time frame shown in the implementation schedule of this document. The integration of the labor-intensive and mechanized construction will require close coordination.

French and Swahili speaking ability will be given high priority in the recruitment for this position.

2. Buildings/Bridge Construction Specialist:

The incumbent, working under the direction of the construction management specialist, will be in charge of a large buildings/bridge construction program. He must have experience in the building and/or bridge construction field for a period of not less than 15 years, at least 4 years of which shall have been performed at the superintendent level. He should have experience in management of both bridge and building construction projects.

Tasks to be performed by the incumbent are as follows:

- A. Working in coordination with the construction management specialist, will assist in preparing materials list for hardware to be ordered immediately from the U.S.A. for delivery to the site.
- B. Shall prepare lists of hand tools necessary to be delivered to the site, as well as a priority list of those tools which must be air shipped if not available in Zaire. Assistance will be given to research local procurement channels in Zaire for those items on the list which may be available for purchase within country.
- C. Will immediately depart with the construction management specialist and take up residence at the Kongolo site.
- D. Will commence organizing the local skilled craftsmen available in Kongolo into construction crews and begin training these units in the construction/restoration of the project buildings.
- E. As construction progresses, will shift organized crews from Kongolo to also construct the facilities at Nyunzu and Mbulula.

B-9

ANNEX B-9 (cont'd)

F. Will organize six bridge crews on completion of the project buildings.

G. Will coordinate the construction of bridges with the road rehabilitation units.

H. Will assist in the contracting with village/local groups to furnish masonry materials for bridge construction.

The incumbent shall have worked at isolated areas where the commercial sector can provide only the minimum necessary foodstuffs. Camp construction site will be isolated from any but the rudimentary recreation or support services.

3. Road Construction Specialist:

This specialist will be in charge of rehabilitation and maintenance of 724 km. of rural (secondary and farm) unpaved roads during the life of the project. This individual must have worked in road construction for a minimum of 15 years, at least six of which should have been as a construction superintendent. While this segment of the project is relatively simple rehabilitation, the critical factor is the time frame in which the bridge construction and road rehabilitation is undertaken. Very close coordination will be required between the bridge and road activities in accordance with the implementation schedule.

This individual must be skilled in all aspects of road construction and road rehabilitation, and preferably should have worked in a country with similar environmental conditions as sub-Sahara Zaire (i.e., sub-Sahara Africa). This individual should expect to work on expediting solutions to logistical problems and will probably have to travel occasionally between the project site, Ilebo, and Matadi to resolve logistical bottlenecks.

Tasks to be performed by the incumbent are as follows:

A. Support and assist work in coordination with the construction management specialist.

B. Take up residence at the Kongolo site with the construction management specialist.

C. Assist with organizing local manpower from the Kongolo area into construction crews and assist with

B-9

ANNEX B-9 (cont'd)

training both the road rehabilitation and construction crews.

D. Assist with supervision of the various site crews during construction and rehabilitation.

E. Organize the road crews.

F. Coordinate with road maintenance endeavors.

G. Assist in preparation of documentation for procurement.

The incumbent shall have worked at isolated areas where the commercial sector can provide only the minimum necessary foodstuffs and other amenities. The camp construction site will be isolated from all but the most rudimentary of recreational or other support services.

4. Maintenance Specialist:

The incumbent should have a minimum of 15 years of equipment maintenance experience, mostly field oriented, and five years in charge of a maintenance center operation. The incumbent should be qualified as a master mechanic. His primary job will be to insure that local mechanics are properly trained and possess the necessary skills to work in the project maintenance center. The incumbent will insure that all project vehicles are properly repaired and will assist the project construction management specialist in ordering and insuring timely arrival of spare parts. This individual must possess a sensitivity to facilitate smooth working relationships with the local national employees. He will have the additional responsibilities of:

A. Actually organizing the Kongoio and Nyunzu maintenance shops. This job will entail heavy training requirements in order to insure the development of journey-men skills.

B. Overseeing the maintenance shops, warehouse, and spare parts inventory, as necessary, in order to insure the proper servicing of project equipment.

C. Planning in advance the timely arrival of supplies required to meet project needs.

D. Supervising operation of the fuel dump including implementation of anti-theft measures.

E. Assisting and coordinating with other infrastructure specialists.

The incumbent shall also have had experience working at isolated construction sites where only the bare minimum in terms of necessary foodstuffs and amenities were supplied.

ANNEX C

INITIAL ENVIRONMENTAL EVALUATION

ANNEX CINITIAL ENVIRONMENTAL EVALUATION
NORTH SHABA MAIZE PROJECTThe Project

The project goal is to increase production and marketing of maize in the Republic of Zaire to establish the government as a net exporter of maize, thus reversing the economic impact of its present position as an importer (185,000 metric tons in CY75). This, of course, is a long range program of development, and as a first step toward the goal, the US Government has agreed to finance certain activities in the North Shaba area of Eastern Zaire to demonstrate the viability of a proposed system to increase production and expedite marketing within this maize production oriented region.

More specifically, the project will enter into six activities, which are:

1. A sub-system of research and extension.
2. A sub-system of marketing supply and extension.
3. A sub-system of infrastructure development.
4. A sub-system of farmer group/cooperative development.
5. A sub-system of intermediate technology.
6. A sub-system of data collection and analysis.

Various sub-system activities have a potential for environmental impact, as follows:

1. The research and extension sub-system includes operation of a research farm, and the introduction of fumigants and fertilizers. Vehicles and equipment proposed do not produce a significant potential of environmental damage. Farming methods proposed on this flat ground will not adversely affect the ecology.

2. The marketing supply and extension sub-system will introduce fertilizers and possibly fumigants for use by local farmers.

ANNEX C (Cont'd)

3. The infrastructure development sub-system includes the rehabilitation of roads throughout the project area. Also, a substantial building construction program will be administered under this sub-system.

4., 5., & 6. The last three above-named sub-systems will have no physical impacts on the environment. Those actions which have a potential environmental impact are, for all sub-systems, as follows:

- A. The rehabilitation of roads.
- B. The construction of buildings.
- C. The introduction of fertilizers and fumigants.
- D. The effects on the rural cultures of the increased access to, and the greater interaction with, the modern society.

In responding to potential A, road rehabilitation, some background is necessary. The terrain is flat or gently rolling. The original construction of the routes was of very low standard, and was accomplished, in some cases, over 40 years ago. Some form of maintenance was realized on a continuing basis until the early 1960's. Betterment work was also being done until that time, including the construction on some routes of permanent cross-drainage and bridges. Since the early 1960's virtually the only work on the road has been done by the local grain dealers, who fix only those sections which absolutely stop their access, precluding their "forcing" vehicles over the routes. Some local villages have done brush cutting and very minor surface patching. When bridges over 15 feet long failed, the routes were closed because the dealers couldn't afford to fix them.

The proposed rehabilitation is to re-grade the road surfaces and renew the drainage. Work on bridge sub-structures will be accomplished by hand (masonry and wood construction). Little silting will result from the construction, and a net decrease in siltation will result from the drainage system renewal. Some irretrievable resource will be committed, such as side borrow of select materials, use of bridge construction materials, and permanent culvert installation. These are minor, and the restoration's resultant reduction of adverse effects will more than offset those commitments.

ANNEX C (Cont'd)

There no longer exists any significant wildlife population in the project area. Adverse effects on this resource from road construction, if there was an adverse effect, had already been realized when the routes were constructed.

The building construction, program B, will be in established centers. The site plans will provide for proper drainage and adequate sewage disposal systems. No sewage will be disposed of near live water courses. The adverse effects of the construction will be minimized by the construction methods used, and the resulting effects are not considered significant.

The fumigant, C, proposed for use is phostoxin. This material is widely used throughout the world as a grain fumigant, and when used, turns into a gas-phosphine-- PH_3 . The residual, other than gas, is ALCO_3 . No adverse environmental effect is inherent in the use of this chemical.

The fertilizers proposed for use are all widely used, bio-degradable fertilizer materials. These are used throughout the US in agriculture and are not considered to have adverse effects on ecological systems. No insecticides other than the fumigants mentioned above will be utilized. No adverse effects will result under this activity within the project area.

Referring to potential D, the effects on the rural cultures, there is a net beneficial effect from the proposed project. The areas which will be opened and affected have had a continual linkage with the outside world through the colonial administration prior to independence. Over a gradual period, this linkage has been closed, and the project is addressing a cultural desire for re-access to the economy. Since these areas have already undergone the cultural shock of association with moder society, no adverse effects are expected in re-establishing this association.

Items outlined in the "Environmental Assessment Guidelines Manual," AID September 1974, have been

ANNEX C (Cont'd)

addressed, and the analysis has revealed project activities will result in no significant adverse effect on the environment.

Therefore, SER/ENGR has determined that no environmental assessment will be required for this project.

ANNEX D

LOGICAL FRAMEWORK

LOG FRAME

GOAL: Achieve self-sufficiency in maize production.

OVI: 1. Net increase of 300% in quantity of marketed maize in the Kongolo and Nyunzu Zones within 6 years. Total Kongolo/Nyunzu production increase of maize from 22,000MT in 1976 to est. 98,000MT in 1986.

MOV: 1. Project records.
2. Department of Agriculture records.

ASSUMPTIONS: Higher order objectives and other long-term benefits:

1. improved economic and social conditions for rural population.
2. improved balance of payments.

PURPOSE:

Rural development process for improving small farmer production and incomes identified for replication in other parts of the country.

END OF PROJECT STATUS:

1. Annual maize marketed in North Shaba project area from 16,000 tons in 1976 to 48,000 tons in 1982.
2. Maize marketed in project area continues to increase at rate of 10% per year after project terminates thru 1986.
3. Production of manioc, peanuts, rice and palm oil increase by 20% between 1977 to 1982.
4. Net income of small farmer project participants increased 100% by end of project for those with at least 3 years' participation.

MEANS OF VERIFICATION:

1. Information system.
2. DOA records from zonal agriculture chiefs.
3. Information system.
4. Information system.

PURPOSE TO GOAL ASSUMPTIONS:

1. GOZ perceives benefits from project and gives full support (budget, personnel, etc.) to expanded rural development program.
2. Replicability of rural development process demonstrated by implementation in other parts of the country.

OUTPUTS:

1. Maize and other crop technologies developed to suit project area.
 - a. Best crop technologies currently used in project area identified by 6/78.
 - b. New technologies suitable for project area (not dependent on imported ag inputs) identified by 6/80.
 - c. New technologies suitable for project area (dependent on imported ag inputs -- e.g., mechanized equipment, hybrid seed, fertilizer, insecticides) identified by 9/81.
 - d. All technologies accepted as suitable only after successful experimentation on farmers' own fields (applied research).
 - e. Research operation fully under GOZ control and supervision (for continued operation) at end of project (GOZ capability developed by project and tested by expatriate research director before termination).

2. Improved technologies extended to local farmers.
 - a. 75 Agricultural Assistants, 20 middle-level extension staff, 4 senior level extension staff trained and operational by 9/82.
 - b. 225 Farmers' Council Leaders receive para-professional training in agriculture by 9/82.
 - c. 25% of small farmer participants adopt extended "best currently used" crop technologies by 5/79; 50% by 5/80.
 - d. 25% of small farmer participants adopt extended new (non-imported ag inputs) technologies by 5/81; 50% by 5/82.
 - e. 75% of small farmer participants show change in agricultural techniques by end of project.
3. Viable Farmers' Councils developed.
 - a. Farmers' Councils and sub-councils initiated: 10 by 9/77; 25 by 9/78; 55 by 9/80; 75 by 9/81.
 - b. 50 percent of Farmers' Councils (pre-coops) viable (revenue exceeds costs that include support of the Agricultural Assistant as well as Council activities) by 9/82.
 - c. Small Farmer Groups (below Farmers' Council level) formed and carrying out economic production activities: 30 by 9/79; 75 by 9/80; 120 by 9/81; 165 by 9/82.
 - d. 75% of Farmers' Councils have sub-councils for women.
4. Intermediate technology production and maintenance capacity developed.
 - a. 40 village blacksmiths trained in intermediate technology production and maintenance techniques by January 1979; 80 by end of project..

- b. Trainees make their own tools to take back to their villages.
 - c. A production capacity developed in urban areas (Kongolo/Nyunzu/Mbulula) for sustained production of technologies too sophisticated for village-level production. Heavy intermediate technology production equipment belonging to the project is transferred (or sold) to local private enterprises (if production viability is indicated). All by end of project.
 - d. A project intermediate technology production/training center producing supply of intermediate technology equipment sufficient to meet pre-coop demand until the end of the project.
 - e. Intermediate technology equipment not produceable (but maintainable) in project area distributed in project area through farmer councils.
 - f. ONACER capable of advising and assisting farmers in construction and use of improved storage facilities.
5. Roads (secondary and farm feeder roads) and bridges rehabilitated.

Rehabilitation completed as follows:

	<u>Project Year</u>					<u>Total</u>
	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>1/82</u>	
KMS. Secondary Roads	0	350	374			724
KMS. Farm Roads						
No. of Bridges	4	26	35	7		72

6. Project area marketing capacity expanded:
 - a. Number of merchants operating in project area increases 20% per year 1978-1982.
 - b. Loading facilities at Nyunzu and Kongolo railyards expanded to meet full cash crop production needs of project area through 1982.
 - c. Private sector marketing operation expanded to meet full cash crop production needs of project area through 1982.
 - d. Private sector marketing enterprises judged by project marketing director as financially sound for continued operation after completion of project.
 - e. ONACER marketing operations judged by project marketing director to be financially and administratively sound and supportive of private sector after completion of project.
7. Information system developed and functioning. Information system provides information in a timely manner adequate to meet decision-making needs for decision-makers at following levels: farmer, pre-coop, extension worker, researcher, IT village enterprise merchant, project management, local and national GOZ orgs. (e.g., sub-regional) authorities, DOA, office of Pres.), external market and suppliers, USAID.
8. Integrated Department of Agriculture program developed for post-project operations in Nyunzu and Kongolo Zones.
 - a. Zairois trained to undertake DOA operations in project zones.
 - b. DOA program developed for post-project operations integrates agricultural support activities (research, extension, road maintenance, marketing, information system).
9. Model organizational structure developed for Department of Agriculture to carry out rural development process within other zones.

MEANS OF VERIFICATION:

1. a. Information system
b. Information system
c. Information system
d. Information system
e. Report of Expatriate Research Director
2. a. Information system
b. Information system
c. Information system
d. Special survey
3. a. Information system
b. Information system
c. Information system
4. a. Information system
b. Information system
c. Report by Intermediate Technology Director
d. Information system
e. Information system
5. Quarterly reports by Construction Management Specialist.
6. a. Information system
b. Special study by Marketing Director
c. Information system
d. Special study by Marketing Director
7. Special studies by evaluation teams
8. a. Information system
b. Final Evaluation Report
9. Information system

OUTPUT TO PURPOSE ASSUMPTIONS:

1. Price structure for maize is maintained at level that allows maize to remain competitive in production with other crops; and that allows an adequate profit margin for grain merchants and millers.

OUTPUT TO PURPOSE ASSUMPTIONS: (continued)

2. Incentives exist for farmers to want to increase income through increased agricultural production (consumer goods available access to education, etc.)
3. Office des Routes continues primary and secondary road maintenance program after project terminates.
4. Local government officials do not implement obligatory public works that impinge upon agricultural production activities.
5. Department of Agriculture operations in project area subsequent to project termination continue to support farmer councils by providing information necessary for farmer council decisionmaking and, as appropriate, delivering inputs to farmer councils on low-cost and timely basis.
6. Cost of basic necessities does not increase at greater rate than price of food crops produced by project area farmers (relates to GOZ price policy).
7. Adequate fuel supply for private sector continues after project termination.

INPUTS: (ACTIVITIES)

1.
 - a. Identify best existing agricultural practices in project area.
 - b. Experiment with new technologies at research center and Farmer Centers.
 - c. Test new technologies in farmers' fields.
2.
 - a. Select extension workers from DOA staff and local population.
 - b. Train extension workers.
 - c. Select farmer groups as extension targets.
 - d. Develop extension worker/farmer rapport, set up demonstration plots, communicate new technologies and market info to farmers.

2. e. Update extension worker knowledge of technologies from research center.
3. a. Identify farmer groups or potential grouping for pre-coop development.
 - b. Establish Farmer Council and facilitate selection of president.
 - c. Select, in collaboration with Farmer Councils, and train para-professional agricultural assistants.
 - d. Train council presidents.
 - e. Promote farmer group activities.
 - f. Train participant farmers.
4. a. Distribute (sell) through Farmers' Councils improved intermediate technology.
 - b. Identify existing technologies with utility in project area.
 - c. Set up intermediate technology production/training facility.
 - d. Select trainees from project villages.
 - e. Train in production and maintenance of IT.
 - f. Test new technologies in project villages.
 - g. Identify and develop additional technologies as needed.
5. a. Provide support to Brigade 19 of OR.
 - b. Mobilize special Brigade/construct project facilities.
 - c. Rehabilitate secondary roads and bridges.
 - d. Improve farm roads with manual road teams.
 - e. Organize an on-going road and bridge maintenance system.

6.
 - a. Provide credit to small merchants.
 - b. Provide merchants with access to transport equipment.
 - c. Improve railyard loading facilities.
 - d. Facilitate merchant/farmer and merchant/mill communications.
7.
 - a. Train senior Zairois DCAU staff and extension workers.
 - b. Conduct baseline survey.
 - c. Set up DCAU communications system.
 - d. Collect data, analyze data, communicate info as needed for decision-making (for continuous monitoring and periodic evaluation).
8.
 - a. Draw information from Planning and Evaluation Unit on successful project methodologies for GOZ intervention in the agricultural sector.
 - b. Develop program for Department of Agriculture post-project operations in collaboration with DOA officials.
 - c. Train DOA officials (counterpart on-the-job training) for post project operations.

(RESOURCES)

	<u>Contract Services</u>	<u>Commodities</u>	<u>Partici- pants</u>	<u>Other</u>	<u>Total</u>
1. Research/Extension	\$720,000	\$324,000	\$374,000	\$36,000	\$1,454,000
2. Farmer Group Dev.	\$392,000	\$ 97,000	\$ 44,000	\$12,000	\$ 545,000
3. Intermediate Tech.	\$148,000	\$245,000	\$ 32,000	\$24,000	\$ 449,000
4. Marketing & Credit	\$ -	\$ 92,000	\$ 10,000	\$90,000	\$ 192,000

(Uninflated)

(RESOURCES) continued

	<u>Contract</u> <u>Services</u>	<u>Commodities</u>	<u>Partici-</u> <u>pants</u>	<u>Other</u>	<u>Total</u>
5. Infrastructure Dev.	\$1,416,000	\$1,660,000	\$ -	\$936,000	\$4,012,000
6. Monitoring & Eval.	\$ 464,000	\$ 94,000	-	\$ 30,000	\$ 588,000
7. Project Management Unit	\$1,008,000	\$ 375,000	\$36,000	\$ 30,000	\$1,449,000
TOTAL (uninflated)	\$4,148,000	\$2,887,000	\$496,000	\$1,158,000	\$8,689,000

INPUT TO OUTPUT ASSUMPTIONS:

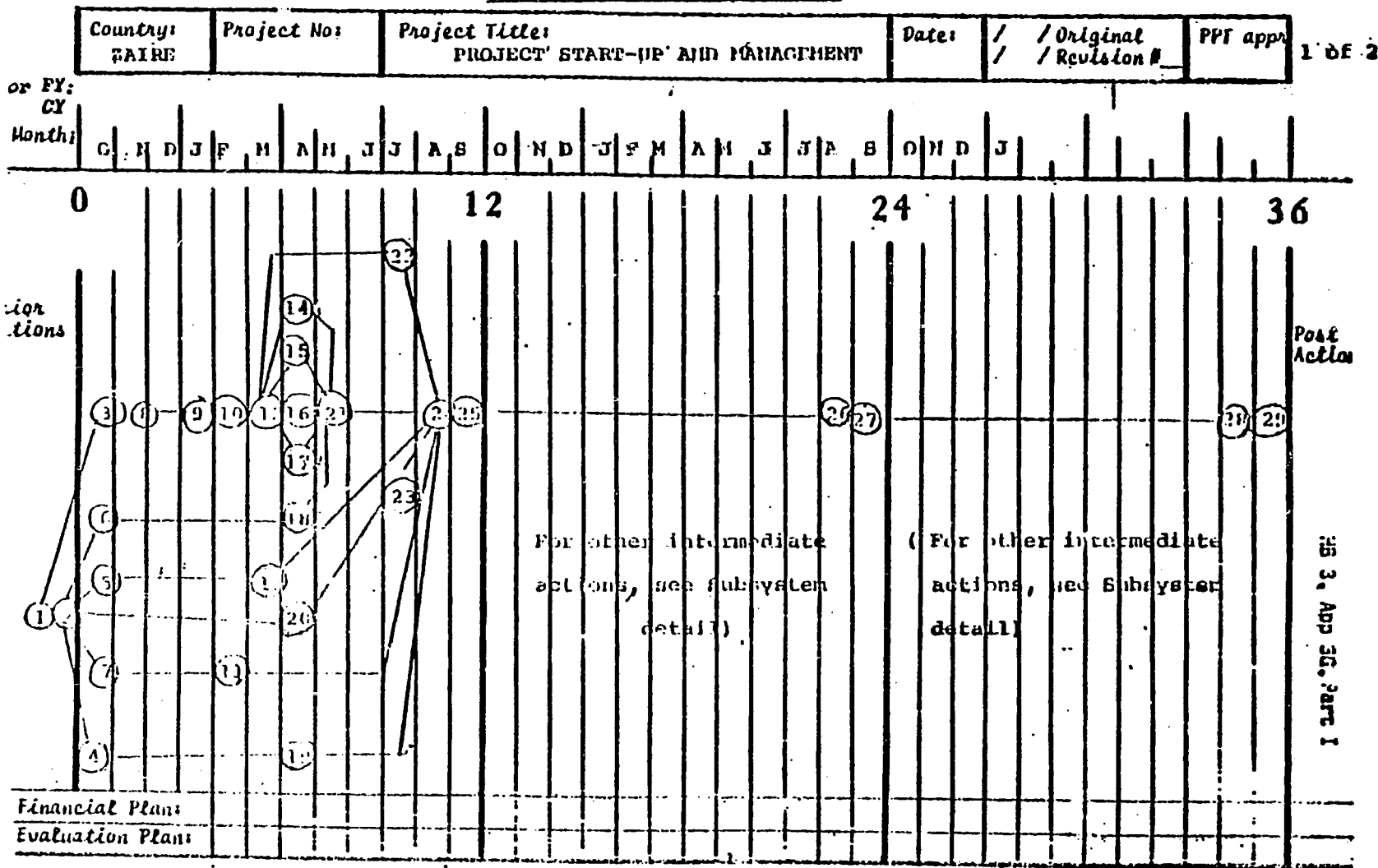
1. The GOZ/DOA will establish a definitive supportive policy regarding the importation of advanced agricultural inputs (fertilizer, pesticides, etc.) for food crop production by small farmers.
2. Small farmers will cooperate with extension personnel on data collection activities.
3. Small farmers will accept applied research experimentation on portions of their own fields.
4. Small farmers will cooperate in selecting qualified local people who will work as Agricultural Assistants.
5. Small farmers will cooperate in the development and operation of farmer groups and Farmers' Councils.
6. Village elders will accept leadership position and operational responsibilities for Farmers' Councils.
7. Fuel for project (Special Brigade and Brigade 19, other) purchased with project FX, can be delivered to project.

8. Project equipment and materials can be delivered to project area on time without serious loss or damage.
9. Office des Routes staff seconded to project are qualified to handle assigned tasks.
10. Office des Routes Brigade #19 can rehabilitate primary roads to planned standards as per schedule.
11. Small farmers will continue to provide self-help labor to construct and maintain farm access roads.
12. Project trucks rented to merchants will not incur theft or improper use.
13. Fuel for private sector marketing will be available in sufficient quantity to allow for full-scale operation.
14. Likasi mill will not have prolonged breakdowns/ can obtain spare parts when needed.
15. Likasi mill will continue to make sacks available to merchants at reasonable cost.
16. Theft of agricultural produce transported by rail will not increase more than 10% over 1976 level.
17. Merchants can operate in 1977 at at least 65% of 1976 level.
18. Merchants can continue to make sufficient profit from marketing corn that they will not be lured away into other commercial activities (as a function of GOZ pricing policies).
19. GOZ can coordinate price setting so that price changes respond directly (and in timely manner) to market needs.
20. Local maize maintains competitive advantage over imported maize.
21. SNCZ capable and willing to transport all exportable agricultural products from project area.

ANNEX E

PROJECT PERFORMANCE TRACKING NETWORK

PP: JRM
(May be Expanded as Appropriate)

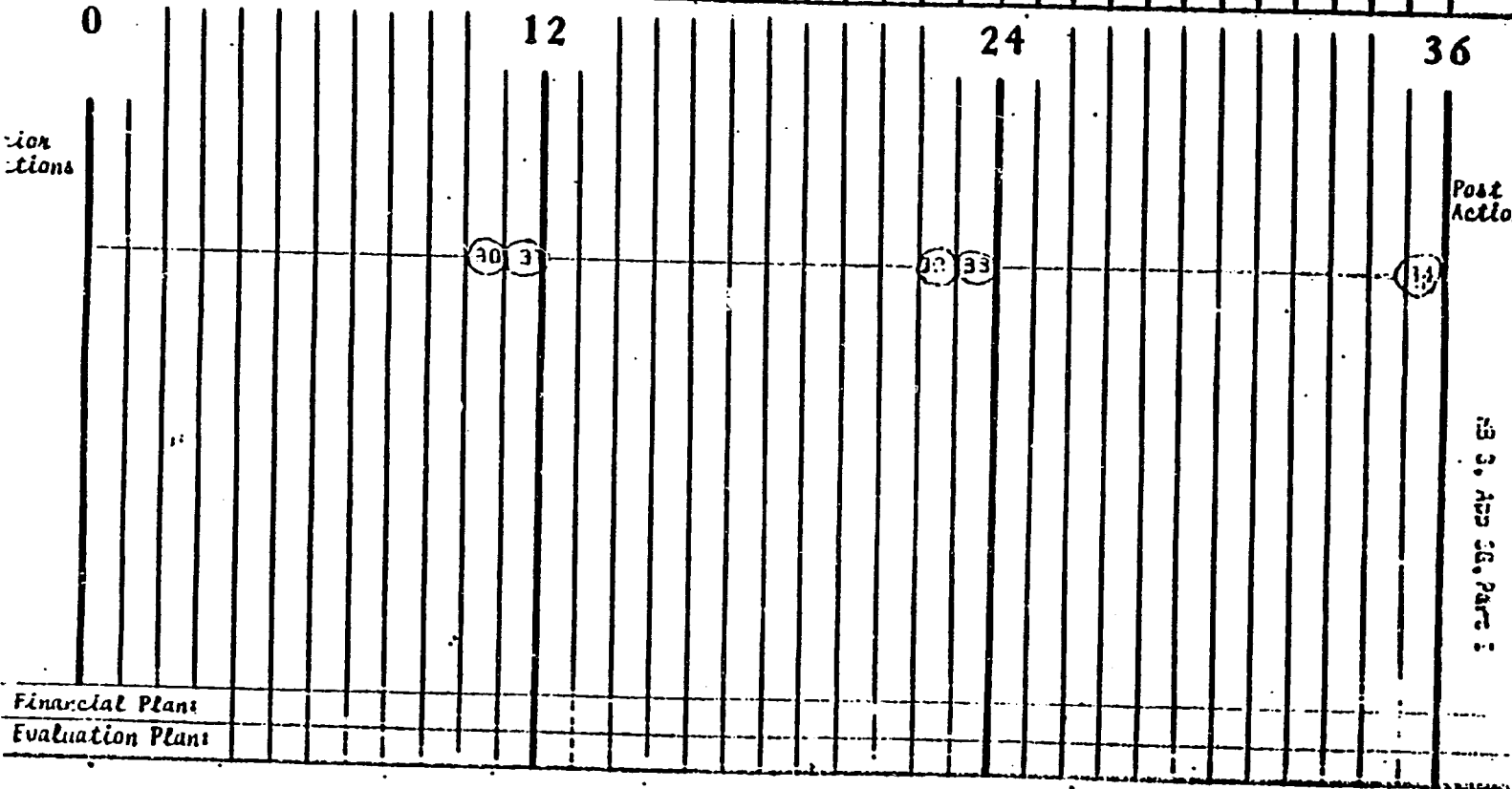


PROJECT PERFORMANCE NETWORK

PP: DRH
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Country:	Project No:	Project Title: PROJECT STARTUP	Date: / /	Original / Revision #	PPT appn
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or FY:
CY
Months



PROJECT PERFORMANCE NETWORK

IMPLEMENTATION SCHEDULE

Project Start-Up and Management

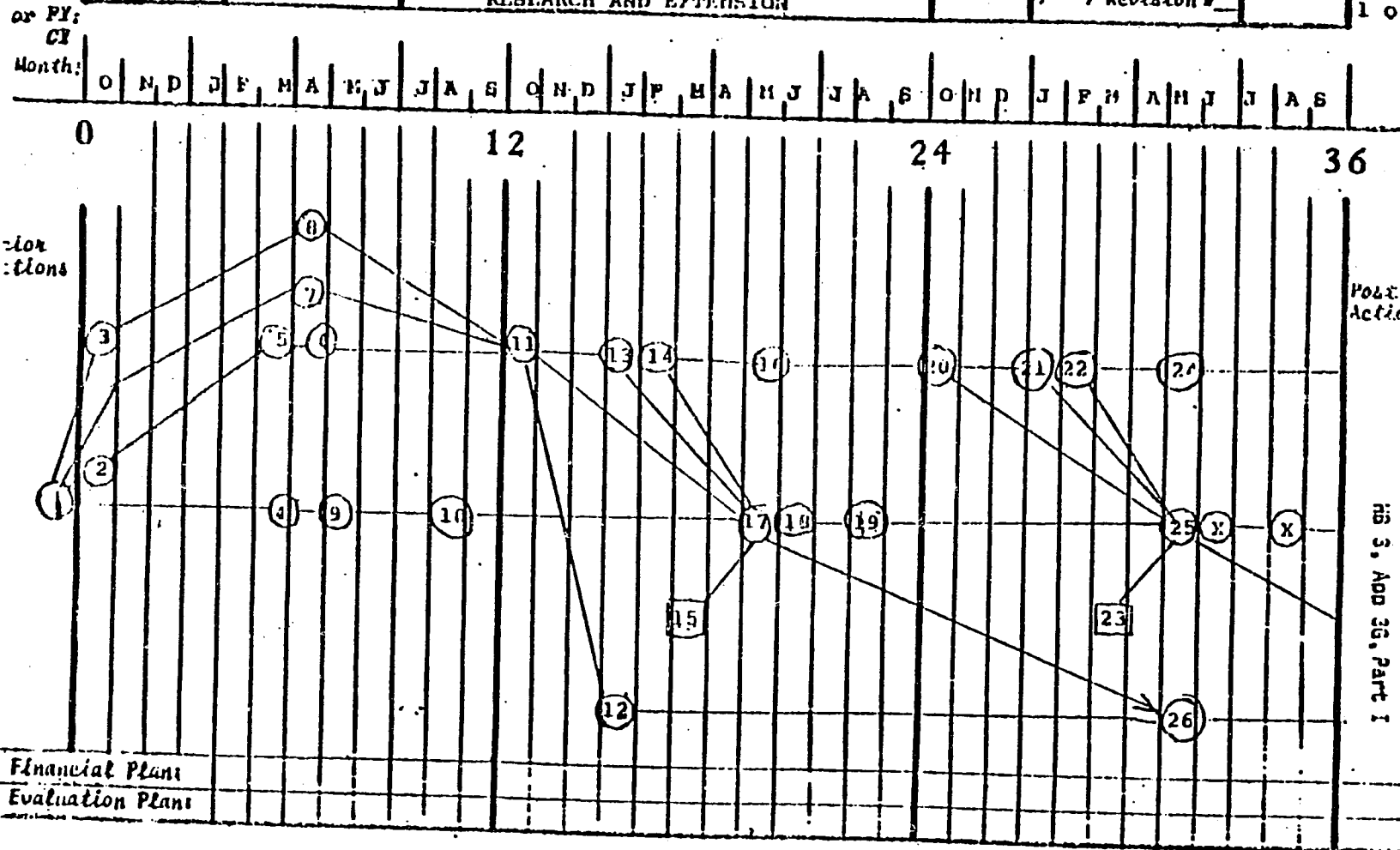
<u>#</u>	<u>Date</u>	<u>Event</u>	<u>Action Agent</u>
1.	15 Sep 76	Project Paper approved	AID/W
2.	25 Sep 76	Project Agreement signed	GOZ/USAID
3.	1 Oct 76	Start preparation of IFB	AID/W
4.		Start developing budget allocation procedures	GOZ/USAID
5.	15 Oct 76	Start recruiting USAID Project Manager (direct hire for Kinshasa station)	AID/W
6.		Start recruiting Project Director	GOZ
7.		Start recruiting Construction Management Specialist (personal services contract for pre-implementation)	AID/W
8.	1 Nov 76	IFB issued	AID/W
9.	1 Jan 77	Review contractor proposals	AID/W
10.	1 Feb 77	Contractor selected	AID/W
11.		Construction Management Specialist on site	AID/W
12.	1 Mar 77	Contract signed	Contr/AID/W
13.		USAID Project Manager on site	AID/W
14.	1 Apr 77	Deputy Project Director on site	Contr
15.		Agronomic Research/Extension Specialist on site (Two-week TDY Brussels prior arrival)	Contr
16.		Building/Bridge Construction Specialist on site	Contr
17.		Rural Development Specialist on site	Contr
18.		Project Director on site	GOZ
19.		Budget allocation procedures formalized	GOZ/USAID
20.		Start recruiting principal Zairois staff	Proj
21.		Start preparations FY78 Annual Work Plan	Proj

#	Date	Event	Action Agent
22.	1 Jul 77	Administration/Finance Specialist on site	Contr
23.		Principal Zairois staff on site	Proj
24.	1 Aug 77	Complete FY78 Annual Work Plan	Proj
25.	1 Sep 77	Annual Work Plan reviewed and approved	GOZ/USAID (incl. USAID Controller)
26.	1 Aug 78	Complete FY79 Annual Work Plan	Proj
27.	1 Sep 78	Annual Work Plan reviewed and approved	GOZ/USAID (incl. USAID Controller)
28.	1 Aug 79	Complete FY80 Annual Work Plan	Proj
29.	1 Sep 79	Annual Work Plan reviewed and approved	GOZ/USAID (incl. USAID Controller)
30.	1 Aug 80	Complete FY81 Annual Work Plan	Proj
31.	1 Sep 80	Annual Work Plan reviewed and approved	GOZ/USAID (incl. USAID Controller)
32.	1 Aug 81	Complete FY82 Annual Work Plan	Proj
33.	1 Sep 81	Annual Work Plan reviewed and approved	GOZ/USAID (incl. USAID Controller)
34.	30 Sep 82	End of project	

PP: JRH
 (May be Expanded as Appropriate)

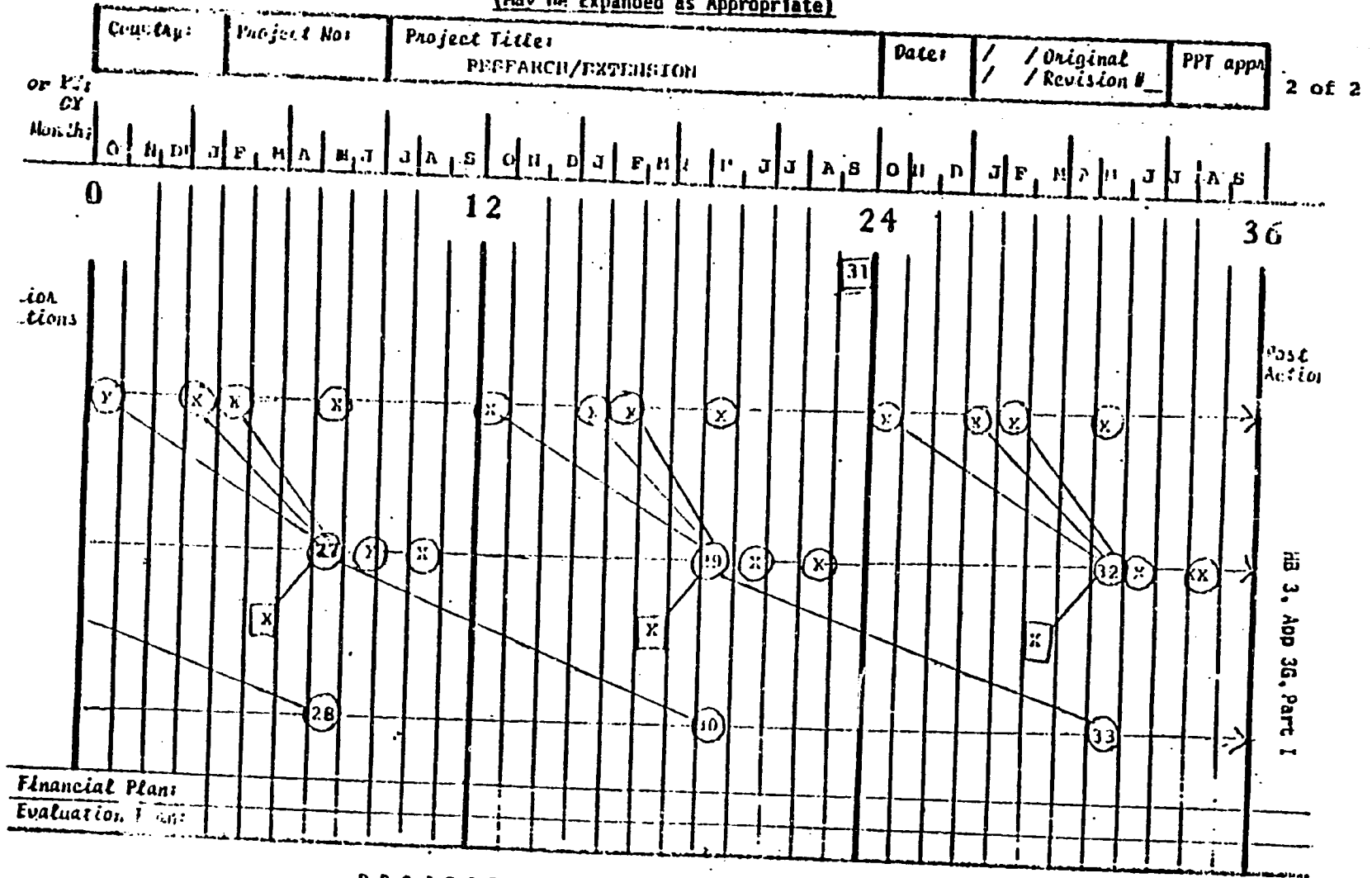
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1 of 2



PROJECT PERFORMANCE NETWORK

PP* DRH
(May be Expanded as Appropriate)



IMPLEMENTATION SCHEDULE

Research/Extension Subsystem

<u>#</u>	<u>Date</u>	<u>Event</u>	<u>Action Agent</u>
1.	Sep 76	PP approved; ProAg signed	AID/W;GOZ/ USAID
2.	Nov 76	Start recruiting Agronomic Research/ Extention Specialist	Contr
3.		Start recruiting PNM Agronomists (3)	GOZ/USAID
5	Mar 77	Contract signed Agronomic R/E Specialist two-week TDY Brussels researching soils, agronomic data for Zaire	Contr/AID/W Contr
6.a	Apr 77	Agronomic R/E Specialist on site	Contr
7.		Start INERA research (soil testing, agronomic) on site	GOZ/Proj Proj
6.b		Start field survey of farmer practices	Proj
6.c		Start preparation Mbulula Center for re- search and training activity	GOZ/Proj Proj
8.		PNM Agronomists (3) on site	Proj
6.d		Order research equipment	GOZ/Proj Proj
9.	Jun 77	Select extension agents for taining space (20 - 25)	Proj
10.	Aug 77	Start training agents	Proj
11a	Oct 77	Start Mbulula Center agronomic tests	Proj
11b		Equipment arrives	Proj
12a	Jan 78	Start training/seminars for Farmer Center leaders	Proj
13.		Complete series Mbulula Center agronomic tests; snalyze, report, and disseminata results	Proj
12b		Start in-service training of extension agents	Proj
14.	Feb 78	Start series Mbulula Center agronomic tests	Proj

#	Date	Event	Action Agent
15.	Mar 78	Identify Farmers' Centers for agent placement	Proj
16.	May 78	Complete series Mbulula Center agronomic tests; analyze, report, and disseminate results	Proj
17.		Agents complete training (20 to date); begin working in Farmers' Centers	Proj
18.	Jun 78	Select extension agents for training (20-25)	Proj
19.	Aug 78	Start training agents	Proj
20.	Oct 78	Start series Mbulula Center agronomic tests	Proj
21.	Jan 79	Complete series Mbulula Center agronomic tests; analyze, report, and disseminate results	Proj
22.	Feb 79	Start series Mbulula Center agronomic tests	Proj
23.	Mar 79	Identify Farmers' Centers for agent placement	Proj
24.	May 79	Complete series Mbulula Center agronomic tests; analyze, report, and disseminate results	Proj
25.		Agents complete training (40 to date), begin working in Farmers' Centers	Proj
26.		Small farmer participant adoption of technology (25 percent to date)	Proj
(INTERMEDIATE STEPS)			
27.	May 80	Agents complete training (60 to date); begin working in Farmers' Centers	Proj
28.		Small farmer participant adoption of technology (50 percent to date)	Proj
(INTERMEDIATE STEPS)			
29.	May 81	Agents complete training (80 to date); begin working in Farmers' Centers	Proj
30.		Small farmer participant adoption of technology (75 percent to date)	

<u>#</u>	<u>Date</u>	<u>Event</u>	<u>Action Agent</u>
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(INTERMEDIATE STEPS)

31.	Sep 81	Institutional transfer checkpoint	GOZ/Proj
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(INTERMEDIATE STEPS)

32.	May 82	Agents complete training (100 to date); begin working in Farmers' Centers	Proj
33.		Small farmer participant adoption of techno- logy (75 percent to date)	Proj

IMPLEMENTATION SCHEDULE

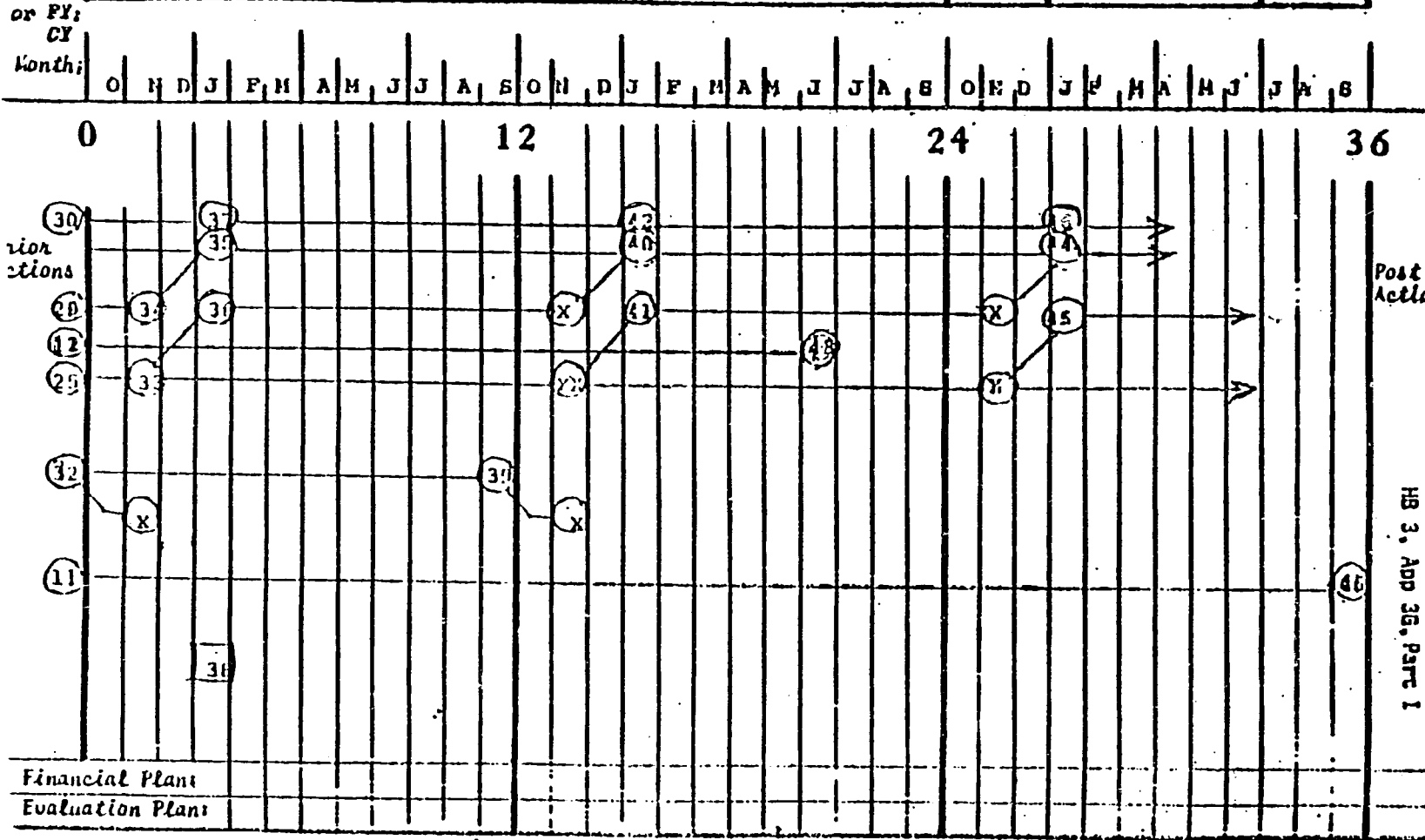
2. Farmer Group Development Subsystem

<u>#</u>	<u>Date</u>	<u>Event</u>	<u>Action Agent</u>
1.	Sep 76	PP approved; ProAg signed	AID/W; GOZ/USAID
2.	Nov 76	Start recruiting Rural Development Specialist	Contr
3.	Mar 77	Contract signed	Contr/AID/W
4.a	Apr 77	Rural Development Specialist on site	Contr
4.b		Start recruiting Zairois Rural Development Workers (3)	Proj
4.c		Start selecting Farmers' Centers	Proj
5.	May 77	Zairois RD Workers on site (3)	Proj
6.	Jul 77	Initial Farmers' Centers selected	Proj
7.		Start encouraging Farmer Group development	Proj
8.	Sept 77	Farmers' Centers established - Farmers' Councils formed (10 to date)	Proj
9.		Select RD Worker for Third Country training	Proj
10.	Nov 77	Start Third Country RD training (2 mos.)	Proj
11.	Sep 78	Farmers' Centers established - Farmers' Councils formed (25 to date)	Proj
12.		Select RD Worker for Third Country training	Proj
13.	Nov 78	Start Third Country RD training (2 mos.)	Proj
14.		Select Farmers' Center leaders for training/seminars	Proj
15.	Jan 79	Start Farmers' Center leader training/seminars	Proj
16.	Sep 79	Farmers' Centers established - Farmers' Councils formed (40 to date)	Proj
17.		Small Farmer Groups developed (30 to date)	Proj
18.		Select RD Worker for Third Country training	Proj

Date	Event	Action Agent
19. Nov 79	Start Third Country RD training (2 mos.)	Proj
20. Sep 80	Farmers' Centers established - Farmers' Councils formed (55 to date)	Proj
21.	Small Farmer Groups developed (75 to date)	Proj
22.	Institutional transfer checkpoint	Proj
23. Mar 81	Rural Development Specialist leaves	Proj
24. Sep 81	Farmers' Centers established - Farmers' Councils formed (75 to date)	Proj
25.	Small Farmer Groups developed (120 to date)	Proj
26. Sep 82	Farmers' Centers established - Farmers' Councils formed (75 to date)	Proj
27.	Small Farmer Groups developed (165 to date)	Proj

PP: JRM
(May be Expanded as Appropriate)

Country:	Project No:	Project Title: INTERMEDIATE TECHNOLOGY	Date: / /	Original / Revision #	PPT app: 2 of 2
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PROJECT PERFORMANCE NETWORK

IMPLEMENTATION SCHEDULE

3. Intermediate Technology Subsystem

<u>#</u>	<u>Date</u>	<u>Event</u>	<u>Action Agent</u>
1.	Sep 76	PP approved; ProAg signed	AID/W; GOZ/USAID
2.	Nov 76	Start recruiting Machine Shop Rehabilitation Specialist	
3.		Start recruiting IT Center Director	Contr Contr
4.	Mar 77	Contract signed	
5.		Order IT implements	Contr/AID/W
6.		Negotiate arrangements for 2 PCVs	Contr
7.		Start recruiting ONACER Crop Storage Specialist	PC/USAID GOZ/USAID
8.	Jun 77	IT implements on site; start distribution identified Farmers' Centers	Proj
9.	Jul 77	Machine Shop Rehabilitation Specialist on site	Contr
10.		IT Center Director on site	Contr
11.		Crop Storage Specialist on site	GOZ/Proj
12.		PCVs on site	PC/USAID
13.		Recruit Zairois rehabilitation staff	Proj
14.		Start machine shop rehabilitation	Proj
15.	Aug 77	Order any additional equipment/parts needed	Proj
16.	Sep 77	Short-term village/farm crop storage consultant on site (3 mon.)	Contr/Proj
17.	Nov 77	Select IT trainees (20-25)	Proj
18.		Select IT Specialist for Third Country training in IT development	Proj
19.	Jan 78	Complete machine shop rehabilitation	Proj
20.		Machine Shop Rehabilitation Specialist leaves	Proj
21.		Start training local IT Specialists	Proj
22.		Start Third Country training (5 mos.)	Proj
23.	Jul 78	Start local production of IT items	Proj

#	Date	Event	Action Agent
24.	Sep 78	Short-term village/farm crop storage consultant on site (3 mos.)	Contr/Proj
25.	Nov 78	Select IT trainees (20 - 25)	Proj
26.		Identify Farmers' Centers for Specialist placement	Proj
27.		Select IT Specialist for Third Country training in grain storage technology	Proj
28.	Jan 79	IT Specialists complete training (20 to date); begin working in Farmers' Centers	Proj
29		Start training local IT Specialists	Proj
30		Start village blacksmith short-courses (20/year)	Proj
31.		Start Third Country training (5 mos.)	Proj
32.	Sep 79	Short-term village/farm crop storage consultant on site (3 mos.)	Contr/Proj
33.	Nov 79	Select IT trainees (20 - 25)	Proj
34.		Identify Farmers' Centers for Specialist placement	Proj
35.	Jan 80	IT Specialists complete training (40 to date); begin working in Farmers' Centers	Proj
36.		Start training local IT Specialists	Proj
37.		Village blacksmiths trained (20 to date)	Proj
38.		Institutional transfer checkpoint	Proj
39.	Sep 80	Short-term village/farm crop storage consultant on site (3 mos.)	Contr/Proj
(INTERMEDIATE STEPS)			
40.	Jan 81	IT Specialists complete training (60 to date); begin working in Farmers' Centers	Proj
41.		Start training local IT Specialists	Proj
42.		Village blacksmiths trained (40 to date)	Proj
43.	Jun 81	PCVs leave	Proj

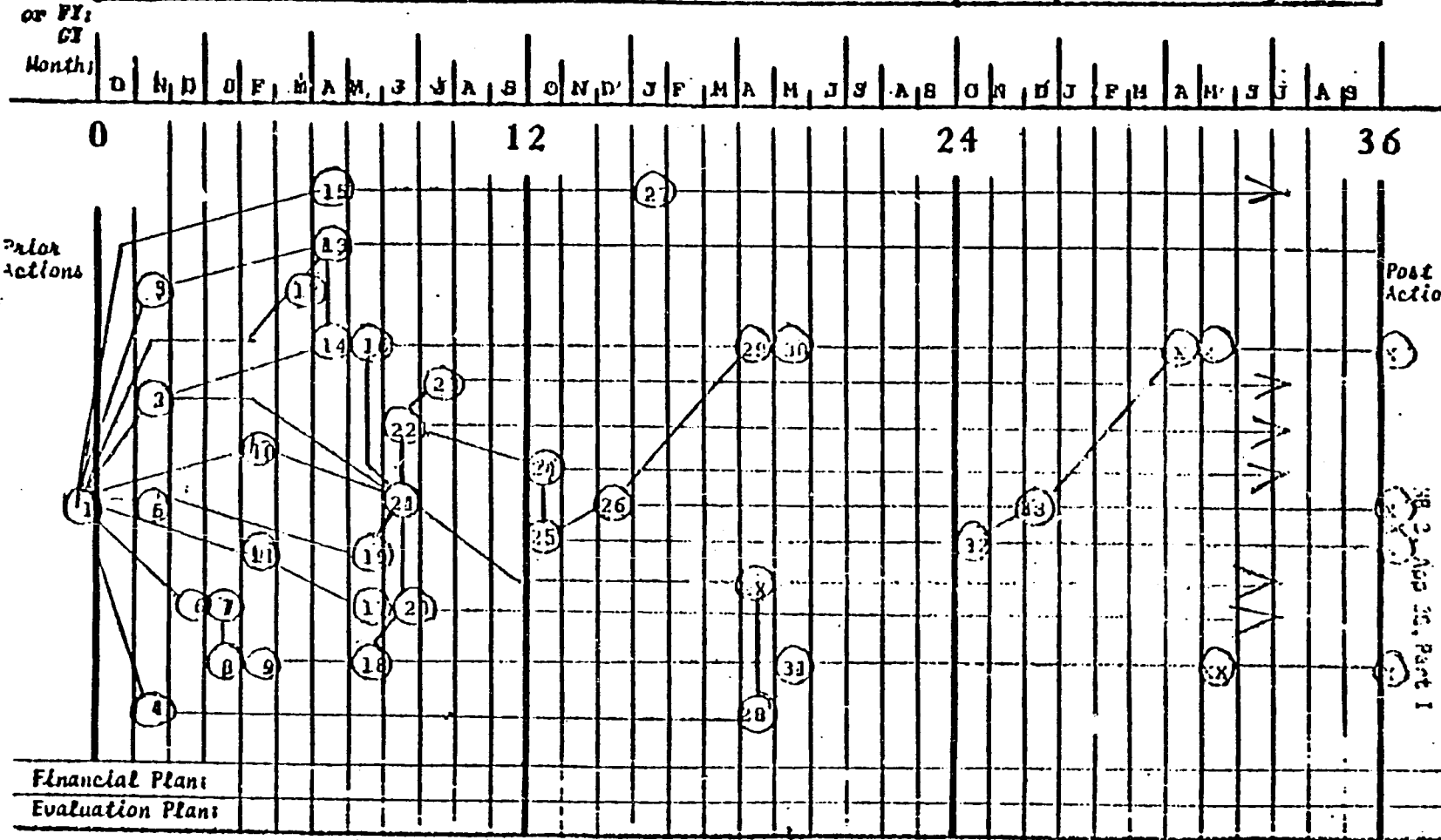
#	Date	Event	Action Agent
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(INTERMEDIATE STEPS)

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|-----|--------|--|------|
| 44. | Jan 82 | IT Specialists complete training (80 to date); begin working in Farmers' Centers | Proj |
| 45. | | Start training local IT Specialists | Proj |
| 46. | | Village blacksmiths trained (60 to date) | Proj |
| 47. | Sep 82 | ONACER Crop Storage Specialist leaves | Proj |

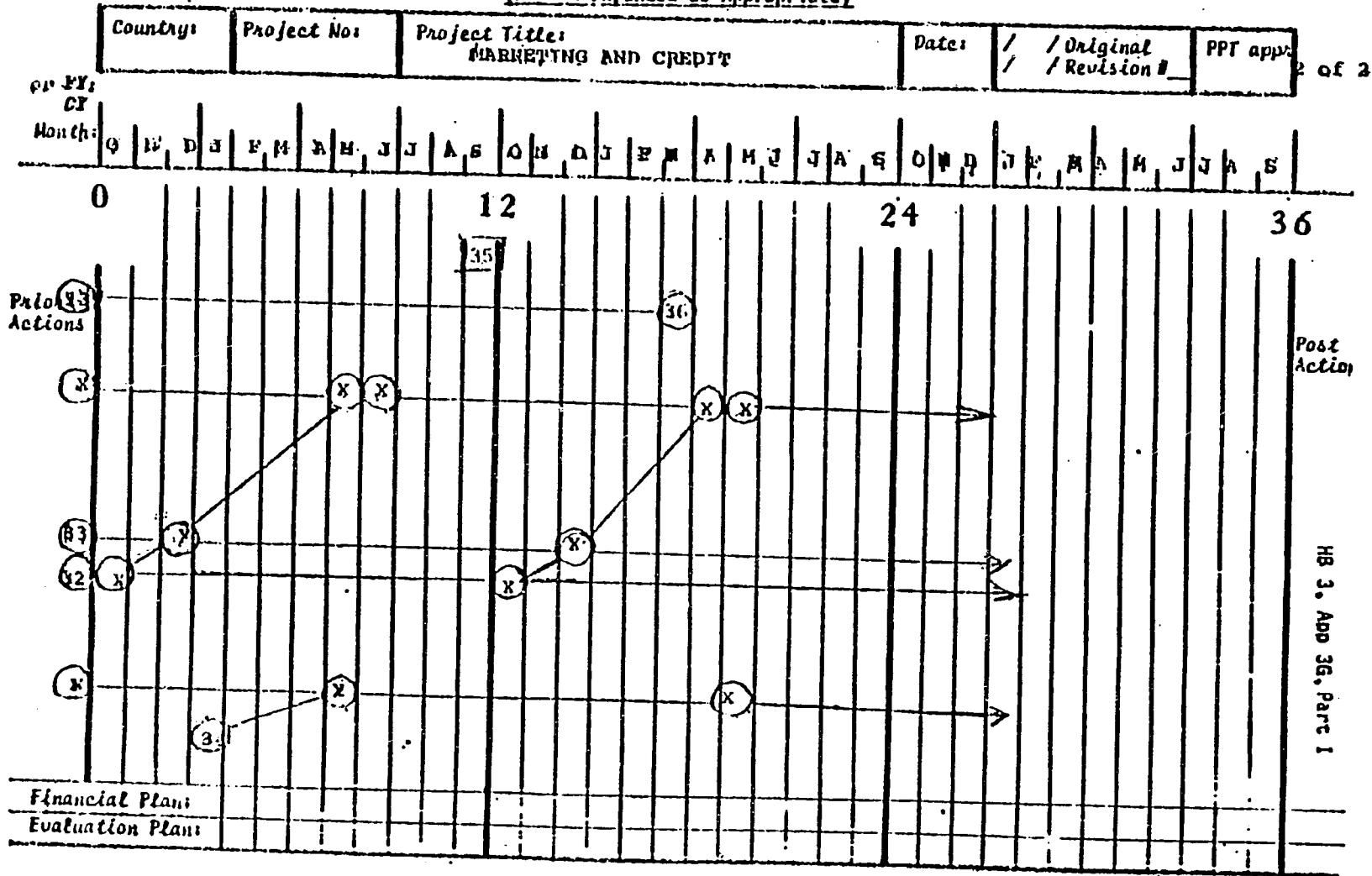
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Country:	Project No:	Project Title: MARKETING AND CREDIT	Date:	/ / Original / / Revision #	PPT app: 1 OF 2
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PROJECT PERFORMANCE NETWORK

PP: JRM
 (May be Expanded as Appropriate)



HB 3, App 36, Part 1

PROJECT PERFORMANCE NETWORK

#	Date	Event	Action Agent
24.	Oct 77	Analyze data collected on grain marketing in project area	Proj
25.		Evaluate Project/ONACER marketing operations	GOZ/Proj
26.	Dec. 77	Evaluate project market development strategy and redesign as required	Proj
27.	Jan 78	Start business management training program for small merchants	Proj
28.	Apr 78	AWD pick-ups on site	Proj/USAID
29.		Develop information for merchant licensing procedures	Proj
30.	May 78	Issue merchant licences	Proj
31.		Financial representative on site (periodic short-term financial operations)	Bank of Kinshasa
32.	Oct 78	Evaluate Project/ONACER marketing operations	GOZ/Proj
33.	Dec 78	Evaluate project market development strategy and re-design as required	Proj
34.	Jan 80	Short-term small farmer credit consultant on site (3 mos.)	Contr/Proj
35.	Sep 80	Institutional transfer checkpoint	Proj
36.	Mar 81	Rural Development Specialist leaves	Proj

IMPLEMENTATION SCHEDULE

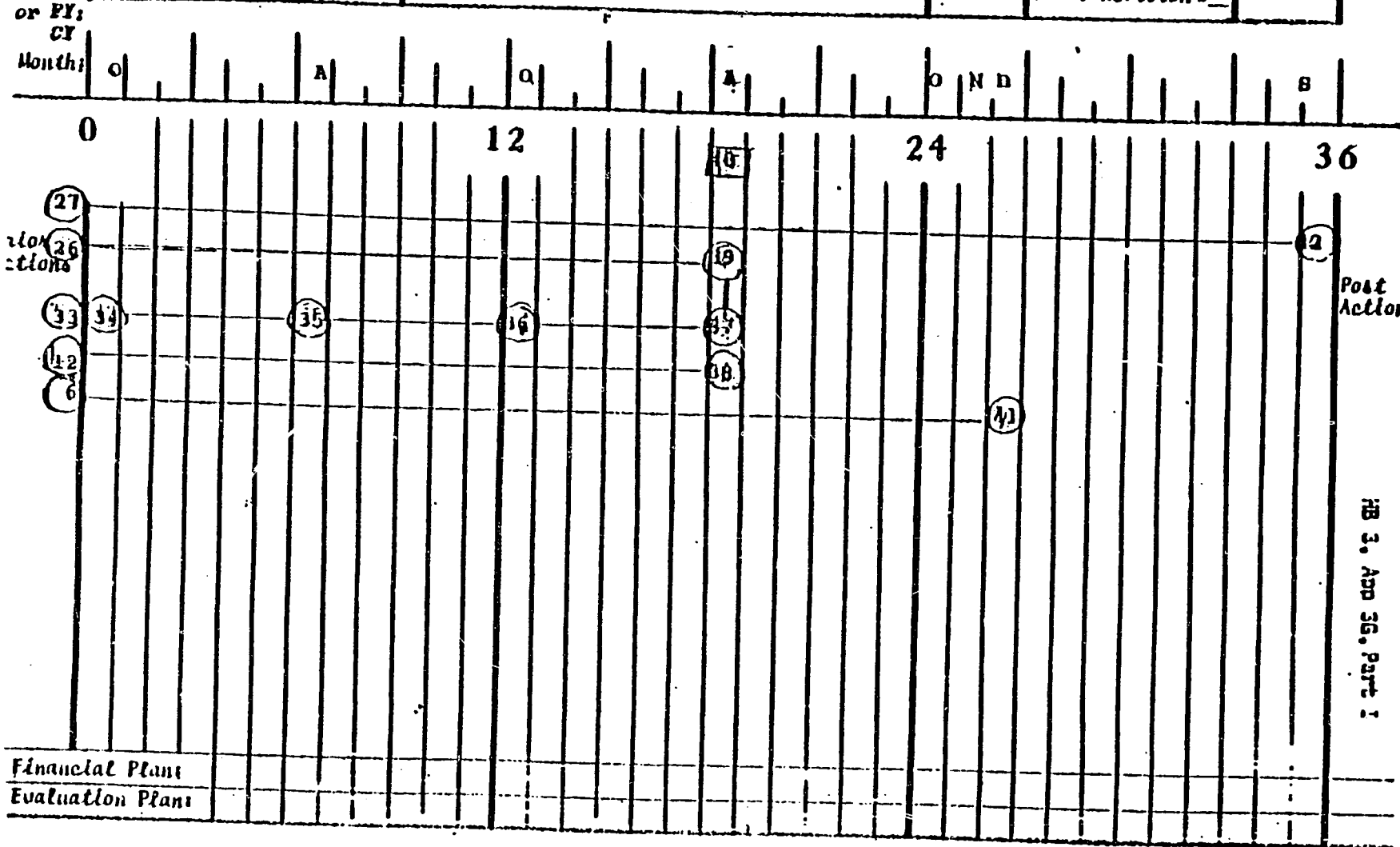
4. Marketing and Credit Subsystem

<u>#</u>	<u>Date</u>	<u>Event</u>	<u>Action Agent</u>
1.	Sep 76	PP approved; ProAg signed	AID/W; GOZ/USAID
2.	Nov 76	Short-term Agricultural Credit consultant on site (4 weeks)	AID/W
3.		Start recruiting Rural Development Specialist	Contr
4.		Order six AWD pick-ups from U.S.	USAID
5.		Arrange with SNCZ for railhead facility improvement	GOZ/USAID
6.	Dec 76	Negotiate operations agreement for financial services	USAID/Bank of Kinshasa
7.	Jan 77	Operations agreement signed	USAID/Bank of Kinshasa
8.		Negotiate counterpart loan to financial institution	GOZ/USAID
9.	Feb 77	Counterpart fund loan agreement signed	GOZ/USAID
10.		Designate Zairois Marketing Directors for Kongolo and Nyunzy	GOZ/USAID
11.		Order 13 trucks/spare parts from A.C.A. (Kinshasa)	USAID
12.	Mar 77	Project contract signed	Contr/AID/W
13.	Apr 77	Rural Development Specialist on site	Contr
14.		Develop information for merchant licensing procedures	Proj
15.		Designate Zairois Training Assistant for small merchant business management training	GOZ/Proj
16.	May 77	Issue merchant licences	Proj
17.		A.C.A. trucks on site	Proj/USAID
18.		Financial representative on site (periodic short-term financial operations)	Bank of Kinshasa
19.		Complete railhead facility improvement by SNCZ	GOZ/Proj
20.	Jun 77	Start truck and harvest credit program	Proj
21.		Start Project/ONACER marketing operations	GOZ/Proj
22.		Start systematic data collection on grain marketing in project area (with specific reference to problems of small merchants)	Proj
23.	Jul 77	Institute market operations information service for farmers and merchants	Proj

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 (May be Expanded as Appropriate)

Country:	Project No:	Project Title:	Date:	/ / Original / Revision #	PPT app
		INFRASTRUCTURE			

2 of 2



IMPLEMENTATION SCHEDULE

5. Infrastructure Subsystem

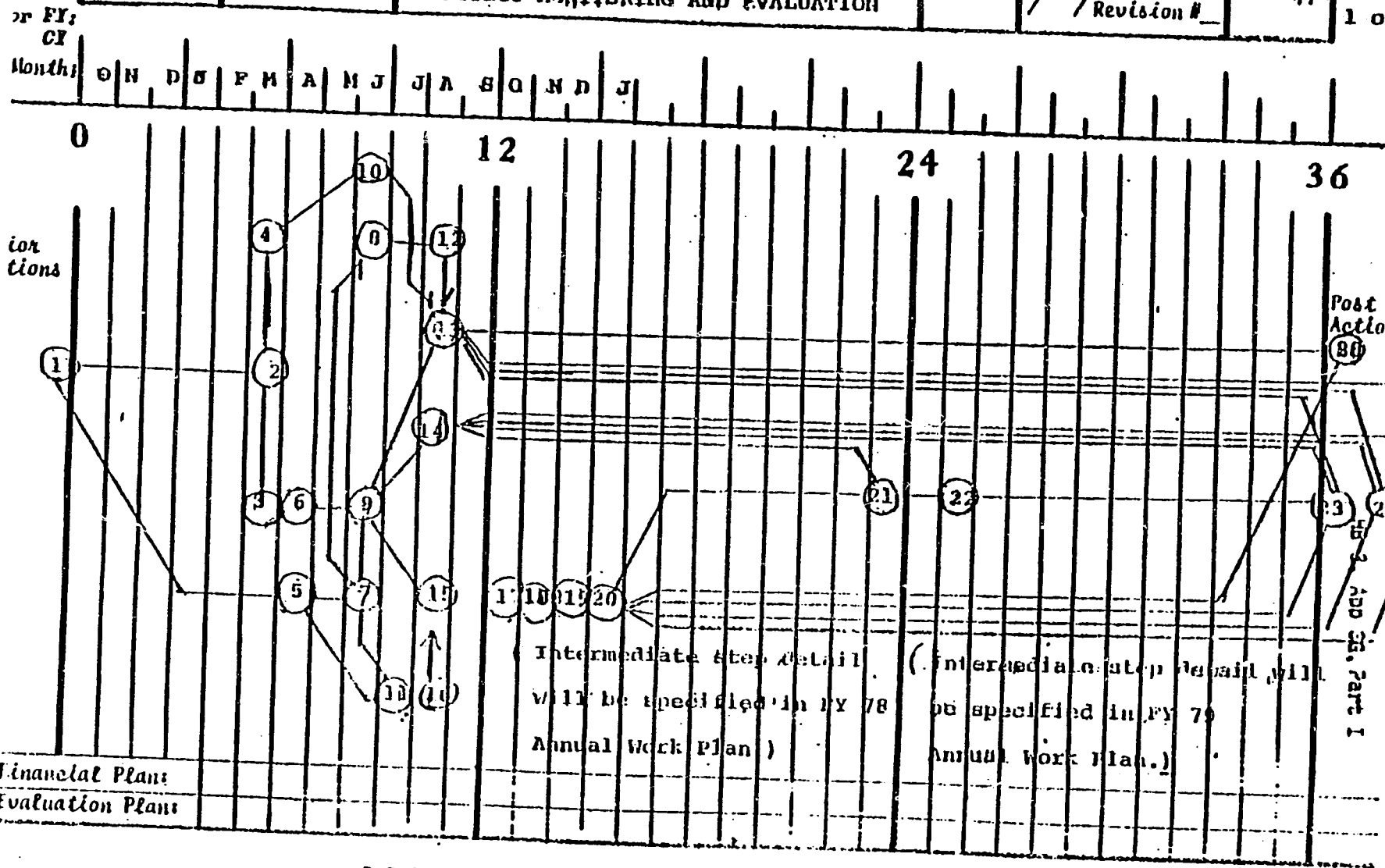
<u>#</u>	<u>Date</u>	<u>Event</u>	<u>Action Agent</u>
1.	Sep 76	PP approved; ProAg signed	GOZ/USAID/ AID/W
2.	Oct 76	Start recruiting Construction Management Specialist (personal services contract for pre-implementation)	AID/W
3.	Nov 76	Start recruiting Building/Bridge Construction Specialist	Contr
4.		Start recruiting Road Rehabilitation Specialist	Contr
5.		Start recruiting Equipment Maintenance Specialist	Contr
6.	Feb 77	Construction Management Specialist on site	AID/W
7.		Start equipment IFB preparation	GOZ/USAID
8.		Order local building materials and construction equipment	USAID
9.	Mar 77	Contract signed	Contr/AID/W
10.		Equipment IFBs issued	GOZ/USAID
11.		Order offshore GSA/local building materials	USAID
12.		Building/Bridge Construction Specialist on site	Contr
13.	Jul 77	Local building materials/equipment on site	Proj
14.		Start rehabilitation 2 buildings (Kongolo)	Proj
15.	Aug 77	Offshore building material on site	Proj
16.	Sep 77	Complete rehabilitation 2 buildings (Kongolo)	Proj
17.		Start rehabilitation 3 buildings (Kongolo)	Proj
18.		Start construction 2 buildings (Kongolo)	Proj
19.	Oct 77	Start OR training equipment operators, mechanics	GOZ/Proj
20.		Contract for sand, rock for 15 bridges	Proj

#	Date	Event	Action Agent
21.	Nov 77	Complete rehabilitation 3 buildings (Kongolo)	Proj
22.		Complete construction 1 building (Kongolo)	Proj
23.		Start all other Kongolo construction	Proj
24.		Start Mbulula, Nyunzu construction	Proj
25.		Re-order offshore building materials	Proj
26.	Dec 77	Road Rehabilitation Specialist on site	Proj
27.		Equipment Maintenance Specialist on site	Proj
28.	May 78	Complete all Mbulula construction	Proj
29.	Oct 78	Complete all Kongolo and Nyunzu construction	Proj
30.		Road construction equipment on site	Proj
31.		OR Equipment operators, mechanics on site	Proj
32.		Start construction of roads and bridges	Proj
33.	Apr. 79	Constr/rehabilitation phase completed (15 bridges, 150 km to date)	Proj
34.	Oct 79	Constr/rehab. phase completed (31 bridges, 350 km to date)	Proj
35.	Apr 80	Constr/rehab phase completed (48 bridges, 600 km to date)	Proj
36.	Oct 80	Constr/rehab phase completed (65 bridges, 724 km to date)	Proj
37.	Apr 81	Constr/rehab phase completed (72 bridges, 724 km to date)	Proj
38.		Building/Bridge Construction Specialist leaves	Proj
39.		Road Rehabilitation Specialist leaves	Proj
40.		Institutional transfer checkpoint	Proj/GOZ
41.	Dec 81	Construction Management Specialist leaves	Proj
42.	Sep 82	Equipment Maintenance Specialist leaves	Proj

PP JRM
(May be Expanded as Appropriate)

Country:	Project No:	Project Title: PROJECT MONITORING AND EVALUATION	Date: / / Original / Revision #	PPT appn
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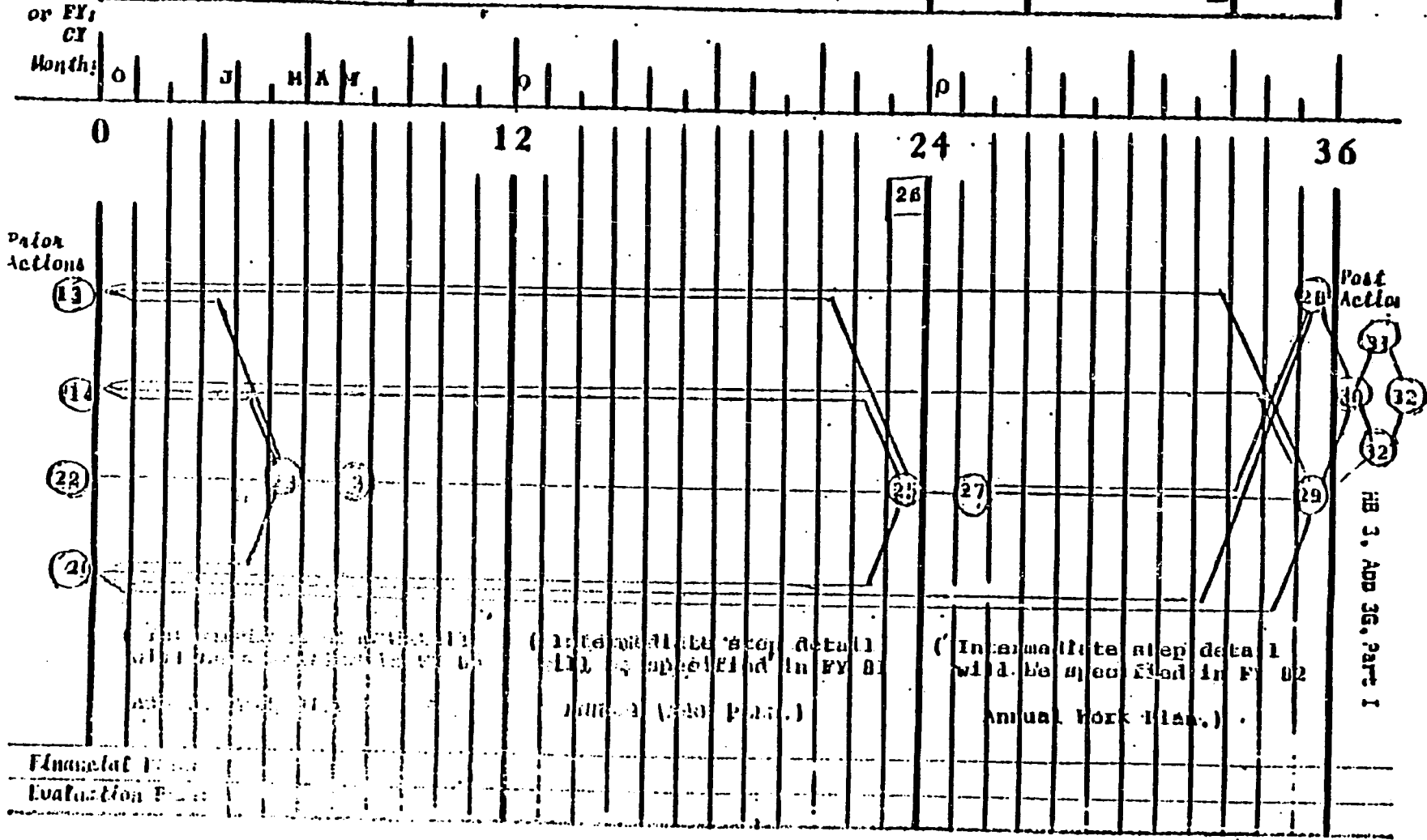
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PROJECT PERFORMANCE NETWORK

PP RM
(May be Expanded as Appropriate)

Country:	Project No:	Project Title: PROJECT MONITORING AND EVALUATION	Date: / /	Original / Revision #	PPT appn
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IMPLEMENTATION SCHEDULE

6. Project Monitoring and Evaluation Subsystem

<u>#</u>	<u>Date</u>	<u>Event</u>	<u>Action Agent</u>
1.	Sep 76	PP approved; ProAg signed	AIW/W; GOZ/USAID
2.	Mar 77	Contract signed	Contr/AID/W
3.		Start structuring information needs	Contr/Consult
4.		Order offshore equipment	Contr
5.		Recruit DCA Chiefs; staff	GOZ/Consult
6.	Apr 77	Start structuring analytical requirements	Proj/Consult
7.	Jun 77	DCA Center Chief on site	Proj
8.		Order local equipment/office supplies	Proj
9.		Start structuring data collection instruments; set up for Lubumbashi computer support	Proj/Consult
10.		Offshore equipment on site	Proj
11.	Jul 77	Remaining DCA staff on site	Proj
12.	Aug 77	Local equipment/office supplies on site	Proj
13.		Start development of project management information system	Proj/Consult
14.		Start <u>ad hoc</u> data collection and analysis as required	Proj/Consult
15.a		Select baseline survey sample	Proj/Consult
15.b		Develop and pretest survey instruments	Proj/Consult
16.		Train 20 agents/DCA staff for baseline field work/two-way communications	Proj/Consult
17.	Oct 77	Start baseline data collection (4-6 wks)	Proj/Consult
18.	Nov 77	Start baseline tabulation/analysis by CDA Center	Proj/Consult
19.	Dec 77	Start baseline report preparation	Proj/Consult
20.	Jan 78	Baseline Survey Report distributed	Proj/Consult
21.	Sep 78	Start preparations for joint evaluation	Proj/Consult

#	Date	Event	Action Agent
22.	Nov 78	Joint evaluation (2 mos.)	GOZ/Proj/ Consult/USAID
23.	Mar 80	Start preparations for joint evalu.	Proj/Consult
24.	May 80	Joint evaluation (2 mos.)	GOZ/Proj/ Consult/USAID
25.	Sep 81	Start preparations for joint evaluation	Proj/Consult
26.	.	Institutional transfer checkpoint	GOZ/Proj
27.	Nov 81	Joint evaluation (2 mos.)	GOZ/Proj/ Consult/USAID
28.	Sep 82	Start preparations for follow-up general survey	Proj/Consult
29.	.	Start preparations for final evaluation	Proj/Consult
30.	Oct 82	Start follow-up general survey field work	Proj/Consult
31.	Nov 82	Start follow-up survey tabulation/ analysis	Proj/Consult
32.	.	Joint evaluation (2 mos.)	GOZ/Proj/ Consult/USAID
33.	Dec 82	Prepare follow-up survey and final project evaluation reports	Proj/Consult

ANNEX F

STATUTORY CHECKLIST

COUNTRY CHECKLIST

Listed below are, first, statutory criteria applicable generally to FAA funds, and then criteria applicable to individual fund sources: Development Assistance and Security Supporting Assistance funds.

A. GENERAL CRITERIA FOR COUNTRY.

1. FAA Sec. 116. If assistance is to a government, has it engaged in consistent pattern of gross violations of internationally recognized human rights? If so, can it be demonstrated that such assistance will directly benefit the needy?
No. Moreover the assistance will directly benefit the needy people of the project area.
2. FAA Sec. 481. Has it been determined that the government of recipient country has failed to take adequate steps to prevent narcotics drugs and other controlled substances (as defined by the Comprehensive Drug Abuse Prevention and Control Act of 1970) produced or processed, in whole or in part, in such country, or transported through such country, from being sold illegally within the jurisdiction of such country to U.S. Government personnel or their dependents, or from entering the U.S. unlawfully?
No.
3. FAA Sec. 620(a). Does recipient country furnish assistance to Cuba or fail to take appropriate steps to prevent ships or aircraft under its flag from carrying cargoes to or from Cuba?
The Secretary of State has determined in accordance with Section 664 of the FAA, that waiver of the provisions of Section 620(a)(3) of the Act is in the national interest and therefore waived the provisions of that section. (See F.R. Doc. 75-24126 Sept. 10, 1975)
4. FAA Sec. 620(b). If assistance is to a government, has the Secretary of State determined that it is not controlled by the international Communist movement?
Yes.
5. FAA Sec. 620(c). If assistance is to government, is the government liable as debtor or unconditional guarantor on any debt to a U.S. citizen for goods or services furnished or ordered where (a) such citizen has exhausted available legal remedies and (b) debt is not denied or contested by such government?
We are not aware of any such case.

6. FAA Sec. 620(e)(1). If assistance is to a government, has it (including government agencies or subdivisions) taken any action which has the effect of nationalizing, expropriating, or otherwise seizing ownership or control of property of U.S. citizens or entities beneficially owned by them without taking steps to discharge its obligations toward such citizens or entities?
- Zaire did nationalize U.S. firms in the oil industry in 1974 and initiated moves in Sept. 1975 to nationalize the pharmaceutical industry as well. It has been determined under the provisions of Section 502 of the Trade Act of 1974 that Zaire is taking steps to adequately compensate the U.S. firms involved.
7. FAA Sec. 620(f). Is recipient country a Communist country?
- No.
8. FAA Sec. 620(i). Is recipient country in any way involved in (a) subversion of, or military aggression against, the United States or any country receiving U.S. assistance, or (b) the planning of such subversion or aggression?
- No.
9. FAA Sec. 620(j). Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction, by mob action, of U.S. property?
- No.
10. FAA Sec. 620(l). If the country has failed to institute the investment guaranty program for the specific risks of expropriation, inconvertibility or confiscation, has the A.I.D. Administrator within the past year considered denying assistance to such government for this reason?
- Zaire has an Investment Guarantee agreement with the U.S.
11. FAA Sec. 620(o); Fishermen's Protective Act, Sec. 5. If country has seized, or imposed any penalty or sanction against any U.S. fishing activities in international waters,
- NA
- a. has any deduction required by Fishermen's Protective Act been made?
- b. has complete denial of assistance been considered by A.I.D. Administrator?

12. FAA Sec. 620(q). Is the government of the recipient country in default on interest or principal of any A.I.D. loan to the country? Zaire is in default for more than six months on a number of loans made under the FAA. On May 24, 1976, the Administrator determined, in accordance with Section 620(q) of the FAA and delegation of authority issued thereunder, that it is in the national interest of the U.S. to provide assistance to Zaire notwithstanding Zaire's failure to pay principal and interest on A.I.D. loans for a period of more than six months.
13. FAA Sec. 620(s). What percentage of country budget is for military expenditures? How much of foreign exchange resources spent on military equipment? How much spent for the purchase of sophisticated weapons systems? (Consideration of these points is to be coordinated with the Bureau for Program and Policy Coordination, Regional Coordinators and Military Assistance Staff (PPC/RC). On the basis of the preliminary information available, it appears that Zaire's 1975 military expenditures will be significantly less than those of 1974. In FY 1976 Zaire concluded a \$19 million Foreign Military Sales Agreement with the U.S. No sophisticated weapons systems were purchased in 1975.
14. FAA Sec. 620(t). Has the country severed diplomatic relations with the United States? If so, have they have resumed and have new bilateral assistance agreements been negotiated and entered into since such resumption? No.
15. FAA Sec. 620(u). What is the payment status of the country's U.N. obligations? If the country is in arrears, were such arrearages taken into account by the A.I.D. Administrator in determining the current A.I.D. Operational Year Budget? Zaire's short-term arrearage is approximately \$60,000. It does not pose a problem with regard to provisions of Article 19 of the U.N. Charter.

16. FAA Sec. 666. Does the country object, on basis of race, religion, national origin or sex, to the presence of any officer or employee of the U.S. there to carry out economic development program under FAA?

No.

17. FAA Sec. 901: Has the country denied its citizens the right or opportunity to emigrate?

We are not aware of any case.

B. FUNDING CRITERIA FOR COUNTRY.

(a) Development Assistance Country Criteria

1. FAA Sec. 102(c), (d). Have criteria been established, and taken into account, to assess commitment and progress of country in effectively involving the poor in development, on such indexes as: (1) small-farm labor intensive agriculture, (2) reduced infant mortality, (3) population growth, (4) equality of income distribution, and (5) unemployment.

Yes.

2. FAA Sec. 201(b) (5), (7) & (8); Sec. 208; 211(a) (4), (7). Describe extent to which country is:

(a) Making appropriate effort to increase food production and improve means for food storage and distribution.

(b) Creating a favorable climate for foreign and domestic private enterprise and investment.

Agriculture production has been declared the priority of priorities by the Mobutu Government. The GOZ has taken importance aimed at steps increasing food production including raising the farmgate price of most locally grown foods, it has also made considerable investment in improving its transportation network and is developing programs to improve marketing. See FAA 620(e) (1) above.

(c) Increasing the public's role in the development process.

The GOZ is attempting to increase participation at the

local level through the development of cooperative groups ("Brigades Agricole") which would collaborate with local leaders in establishing production objectives and programs for meeting those objectives. Further, by increasing producers prices, the GOZ has demonstrated a commitment to increasing rural participation in the development process. In this context, the GOZ/DOA was fully supportive of the heavy emphasis on local level participation in decision making contained in this project.

(d) (i) Allocating available budgetary resources to development

More than 74% of the GOZ's capital investment budget is allocated to social and economic development. 7% of the budget goes to health and education, 7% to agriculture, 20% to mining, 15% to transportation and communications, 10% to commerce and industry and 31% to other projects under the Office of the Presidency covering all sectors.

(ii) Diverting such resources for unnecessary military expenditures

(See FAA Sec. 620(s) above)

- (e) Since independence the GOZ has aggressively encouraged the growth of a Zairian participation in the private industrial and commercial sectors. Recent decisions regarding pricing and marketing of agriculture commodities are designed to provide incentive for participation of small subsistence farmers in the modern sector through appeals to entrepreneurial propensities.
- (f) Otherwise responding to the vital economic, political, and social concerns of its people, and demonstrating a clear determination to take effective self-help measures, The GOZ has become increasingly aware of the need for self-help measures to achieve greater economic independence particularly in the agriculture sector. It is taking steps to increase agriculture production in both the long and the short run, including transportation improvement, marketing improvements, price incentives, etc.
3. FAA Secs. 201(b), 211(a). Is the country among the 20 countries in which development assistance loans may be made in this fiscal year, or among the 40 in which development assistance grants (other than for self-help projects) may be made? Yes.
4. FAA Sec. 115. Will country be furnished, in same fiscal year, either security supporting assistance, or Middle East peace funds? If so, is assistance for population programs, humanitarian aid through international organizations, or regional programs? No.

PROJECT CHECKLIST

Listed below are, first, statutory criteria applicable generally to projects with FAA funds, and then project criteria applicable to individual fund sources: Development Assistance (with a sub-category for criteria applicable only to loans); and Security Supporting Assistance funds.

CROSS REFERENCES: IS COUNTRY CHECKLIST UP TO DATE? IDENTIFY.
HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS PROJECT?

A. GENERAL CRITERIA FOR PROJECT.

1. App. Sec. 113. Describe how the Committees on Appropriations of the Senate and House have been or will be notified concerning the project. A letter of advise was sent to the Committees on Sept. 15, 1976. (See page 19 #73).
2. FAA Sec. 611(a)(1). Prior to obligation in excess of \$100,000, will there be (a) engineering, financial, and other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance? Yes.
3. FAA Sec. 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance? N.A.
4. FAA Sec. 611(b); App. Sec. 101. If for water or water-related land resource construction, is there a benefit-cost computation made, insofar as practicable, in accordance with the procedures set forth in the Memorandum of the President dated May 15, 1962? N.A.
5. FAA Sec. 611(e). If loan is for capital assistance, (e.g., construction) project, and all U.S. assistance for it will exceed \$1 million, has Mission Director certified the country's capability effectively to maintain and utilize the project? Yes

6. FAA Secs. 209, 619. Is project susceptible of execution as part of regional or multi-lateral project? If so why is project not so executed? Information and conclusion whether assistance will encourage regional development programs. If assistance is for newly independent country, is it furnished through multilateral organizations or plans to the maximum extent appropriate?
- No
7. FAA Sec. 601(a). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperative, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.
- The main focus of the marketing and production oriented components of the project are aimed at encouraging private initiative and competition. A special effort will also be made to develop cooperative. The research component is designed to improve technical efficiency in agriculture.
8. FAA Sec. 601(b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).
- The management contract and the most go the equipment under this project will be produced US.
9. FAA Sec. 612(b); Sec. 636(h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized to meet the cost of contractual and other services.
- The GOZ will make a substantial local currency contribution to this project.
10. FAA Sec. 612(d). Does the U.S. own excess foreign currency and, if so, what arrangements have been made for its release?
- No.
11. FAA Sec. 640C. Will grant be made to loan recipient to pay all or any portion of such differential as may exist between U.S. and foreign-flag vessel rates?
- No.

364

B. FUNDING CRITERIA FOR PROJECT.

(a) Development Assistance Project Criteria

1. FAA Sec. 102(c); Sec. 111. Extent to which activity will effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production, spreading investment out from cities to small towns and rural areas; extent to which it will help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life. The major focus of the project is to assist small farmers to increase production marketing and the income. Maximum feasible extent and consistent with project objectives, the road rehabilitation component of the project focuses on labor intensive production by small farmers.
2. FAA Secs. 103, 103A, 104, 105, 106, 107. Is assistance being made available:
 - a. for agriculture, rural development or nutrition; if so, extent to which activity is specifically designed to increase productivity and income of rural poor; if for agricultural research, is full account taken of needs of small farmers; This project is designed specifically to meet the needs of small farmers. Indeed they will participate heavily in the development and implementation of the project including its research aspects.
 - b. for population planning or health; if so, extent to which activity extends low-cost, integrated delivery systems to provide health and family planning services, especially to rural areas and poor; N.A.
 - c. for education, public administration, or human resources development; if so, extent to which activity strengthens non-formal education, makes formal education more relevant, especially for rural families and urban poor, or strengthens management capability of institutions enabling the poor to participate in development; N.A.
 - d. for technical assistance, energy, research, reconstruction, and selected development problems; if so, extent activity is: N.A.
- (1) technical cooperation and development, especially with U.S. private and voluntary, or regional and international development, organizations; N.A.

- (2) to help alleviate energy problem; N.A.
- (3) research into, and evaluation of, economic development processes and techniques; N.A.
- (4) reconstruction after natural or manmade disaster; N.A.
- (5) for special development problem, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance; N.A.
- (6) for programs of urban development, especially small labor-intensive enterprises, marketing systems, and financial or other institutions to help urban poor participate in economic and social development.
- e. by grants for coordinated private effort to develop and disseminate intermediate technologies appropriate for developing countries. N.A.
3. FAA Sec. 110(a); Sec. 208(e). Is the recipient country willing to contribute funds to the project, and in what manner has or will it provide assurances that it will provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or has the latter cost-sharing requirement been waived for a "relatively least-developed" country)? Yes. The project agreements will require a GOZ contribution for in excess of 25% of the cost of the project.
4. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing? N.A.
5. FAA Sec. 207; Sec. 113. Extent to which assistance reflects appropriate emphasis on; (a) encouraging development of democratic, economic, political, and social institutions; (b) self-help in meeting the country's food needs; (c) improving availability of trained manpower in the country; (d) programs designed to meet the country's health needs; (e) other important areas of economic, political, and social development, including industry; free labor unions, cooperatives, and Voluntary Agencies; transportation and communication; planning and public administration; urban development, and modernization of existing laws; or (f) integrating women into the recipient country's national economy. (a). The project has included specific mechanisms e.g. farmer groups and information systems which will facilitate broad participation by small farmers in decisions which affect them. (b) The primary objective is to increase food production. (c) The project includes a very heavy participant training component. (d) N.A. (e) Major efforts are

aimed at improving transportation and communication within the project area and improving planning capability at the local level. (f) Particular attention has been paid to insuring that the needs of women are appropriately met.

6. FAA Sec. 281(a). Extent to which the assistance will contribute to objective of assuring maximum participation in the task of economic development on the part of the people of the country, through the encouragement of democratic, private and local governmental institutions. The project places very heavy emphasis on local level participation in the implementation of the project as well as in sharing in its benefits.
7. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civic education and training in skills required for effective participation in governmental and political processes essential to self-government. The information system designed into the project will permit the project to address the specific needs of the small farmers in the project area.
8. FAA Sec. 201(b)(3); Sec. 211(a)(1). In what ways does the activity give reasonable promise of contributing to the development: of economic resources, or to the increase of productive capacities; or of educational or other institutions directed toward social progress? See Part III of FP.
9. FAA Sec. 201(b)(2); Sec. 201(e); Sec. 211(a)(3). Information and conclusion on an activity's economic and technical soundness. See Part FP 159-191 and FP 230-242 of FP
10. FAA Sec. 201(b)(4); Sec. 211(a)(2). Information and conclusion on activity's relationship to and consistency with, other development activities, and its contribution to realizable long-range objectives. The project is designed to address the GOZ's goal of achieving self-sufficiency in maize production in the shortest possible time.

11. FAA Sec. 201(b)(9); Sec. 211(a)(8). Information and conclusion on whether the activity will contribute to the achievement of self-sustaining growth. See pp. 64-65 of pp.
12. FAA Sec. 201(b)(6); Sec. 211(a)(5), (6). Information and conclusion on possible effects of the assistance on U.S. economy, with special reference to areas of substantial labor surplus, and extent to which U.S. commodities and assistance are furnished in a manner consistent with improving or safeguarding the U.S. balance of payments position. The project will have no discernable impact on the US economy.
13. FAA Sec. 653(b). Is assistance within country or international organization allocation for fiscal year reported to Congress (or not more than \$1 million over that figure plus 10%)? Yes.

(b) Development Assistance Project Criteria (Loans only)

1. FAA Sec. 201(b)(1). Information and conclusion on availability of financing from other free-world sources, including private sources within U.S. Financing is not considered to be available from other sources on terms comparable to this proposed loan.
2. FAA Sec. 201(b)(2). Information and conclusion on capacity of the country to repay the loan, including reasonableness of repayment prospects. (See special Attachment I hereto).
3. FAA Sec. 201(b). Information and conclusion on reasonableness and legality (under laws of country and U.S.) of lending and relending terms of the loan. The loan terms (2% annum during grace period and 3% thereafter) are considered reasonable and legal.
4. FAA Sec. 201(e). If loan is not made pursuant to a multilateral plan, and the amount of the loan exceeds \$100,000, has country submitted to A.I.D. an application for such funds together with assurances to indicate that funds will be used in an economically and technically sound manner? Yes. See annex II of pp.

5. FAA Sec. 201(f). Describe how project will promote the country's economic development taking into account the country's human and material resources requirements and relationship between ultimate objectives of the project and overall economic development.
- Zaire has the human and natural resource potential to become a major importer of agricultural commodities. This project is designed to assist the GO. in taking greater advantage of that potential.
6. FAA Sec. 201(f). What provisions have been made for appropriate participation by the recipient country's private enterprise?
- Major increases in maize production will occur through increased output by small private farmers under this project.
7. FAA Sec. 202(a). Total amount of money under loan which is going directly to private enterprise, is going to intermediate credit institutions or other borrowers for use by private enterprise, is being used to finance imports from private sources, or is otherwise being used to finance procurements from private sources.
- The total loan of \$3.5 million falls under this category.
8. FAA Sec. 620(d). If assistance is for any productive enterprise which will compete in the U.S. with U.S. enterprise, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan?
- N.A.

STANDARD ITEM CHECKLIST

Listed below are statutory items which normally will be covered routinely in those provisions of an assistance agreement dealing with its implementation, or covered in the agreement by exclusion (as where certain uses of funds are permitted, but other uses not).

These items are arranged under the general headings of (A) Procurement, (B) Construction, and (C) Other Restrictions.

(a) Procurement

1. FAA Sec. 602. Are there arrangements to permit U.S. small business to participate equitably in the furnishing of goods and services financed? Yes.

2. FAA Sec. 604(a). Will all commodity procurement financed be from the U.S. except as otherwise determined by the President or under delegation from him? Authorized source of procurement under the loan will be code 941 and Zaire.
Authorized source of procurement under the grant will be US and Zaire.

3. FAA Sec. 604(d). If the cooperating country discriminates against U.S. marine insurance companies, will agreement require that marine insurance be placed in the U.S. on commodities financed? The agreement will contain an appropriate provision.

4. FAA Sec. 604(d). If offshore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity? N.A.

5. FAA Sec. 608(a). Will U.S. Government excess personal property be utilized wherever practicable in lieu of the procurement of new items? Yes.

6. MMA Sec. 901(b). (a) Compliance will require-ment that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately owned U.S. flag commercial vessels to the extent that such vessels are available at fair and reasonable rates. The agreement will contain an appropriate provision.

5. Will arrangements preclude use of financing:

- (a) FAA Sec. 114: to pay for performance of abortions or to motivate or coerce persons to practice abortions? Yes.
- (b) FAA Sec. 620(g): to compensate owners for expropriated nationalized property? Yes.
- (c) FAA Sec. 660: to finance police training or other law enforcement assistance, except for narcotics programs? Yes.
- (d) FAA Sec. 662: for CIA activities? Yes.
- (e) App. Sec. 107: to pay pensions, etc. for military personnel? Yes.
- (f) App. Sec. 107: to pay U.N. assessments? Yes.
- (g) App. Sec. 110: to carry out provisions of FAA Secs. 209(d) and 251(h)? (transfer to multilateral organization for lending). Yes.
- (h) App. Sec. 501: to be used for publicity or propaganda purposes within U.S. not authorized by Congress? Yes.
- (i) App. Sec. 504: to furnish petroleum fuels produced in the continental U.S. to Southeast Asia for use by non-U.S. nationals?

7. FAA Sec. 621. If technical assistance is financed, will such assistance be furnished to the fullest extent practicable as goods and professional and other services from private enterprise on a contract basis? If the facilities of other Federal agencies will be utilized, are they particularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs?
- Yes. The use of other Federal agencies is not contemplated for this project.

(B) Construction

1. FAA Sec. 601(d). If a capital (e.g., construction) project, are engineering and professional services of U.S. firms and their affiliates to be used to the maximum extent consistent with the national interest?
- Yes.
2. FAA Sec. 611(c). If contracts for construction are to be financed, will they be let on a competitive basis to maximum extent practicable?
- Construction work will be performed by force account.
3. FAA Sec. 620(k). If for construction of productive enterprise, will aggregate value of assistance to be furnished by the U.S. not exceed \$100 million?
- No.

(C) Other Restrictions

1. FAA Sec. 201(d). If development loan, is interest rate at least 2% per annum during grace period and at least 3% per annum thereafter?
- Yes.
2. FAA Sec. 301(d). If fund is established solely by U.S. contributions and administered by an international organization, does Comptroller General have audit rights?
- There is no such fund in this project.
3. FAA Sec. 620(h). Do arrangements preclude promoting or assisting the foreign aid projects or activities of Communist-Bloc countries, contrary to the best interests of the U.S.?
- Yes.
4. FAA Sec. 636(i). Is financing not permitted to be used, without waiver, for purchase, long-term lease, or exchange of motor vehicle manufactured outside the U.S. or guaranty of such transaction?
- Yes

ATTACHMENT I TO STATUTORY CHECKLIST
Section 201(b)(2) Response

As described in Part II A of the PP, Zaire's current financial problems are critical. Faced with low prices for copper, Zaire's principal export, the country is projected to have a \$150 million deficit in its 1976 balance of payments. A stringent financial stabilization program is underway as quid pro quo for a first tranche of an IMF standby and, although there seems to be a need to strengthen performance under it, the GOZ has shown a desire to proceed with its implementation. Presently, a debt rescheduling exercise is underway and a short term solution to this financial bottleneck.

It should be clear that the Zaire economic system suffers, in addition to inefficient economic policy making from excessive dependence on one export product -- copper. This is a problem not so easy to solve in the short and medium term. Copper prices, export levels are linked to the level of economic activity in the developed world, the main consumer. A marked recovery in prices is expected in 1977 in response to improved economic performance in the Western World. Increased copper prices in combination with a successful completion of the multilateral rescheduling exercise and improved implementation of the stabilization program should considerably reduce Zaire's financial difficulties. In view of the 40 year life and concessional terms of the proposed loan, there are reasonable prospects for payment of the loan by the GOZ.

CERTIFICATION PURSUANT TO
Section 611(e) of the
FOREIGN ASSISTANCE ACT
As Amended

I, Fermino Spencer, the principal officer of the Agency for International Development in Zaire, do herewith certify that in my judgment, Zaire has both the financial capability and human resources to maintain and utilize effectively goods and services procured under the capital assistance project entitled North Shaba Maize Production.

This judgment is based upon the record of implementation of AID-financed projects in Zaire and the results of the consultations undertaken during intensive review of this new project.



Fermino Spencer
Director, USAID/Zaire



Date

ANNEX H

BORROWER'S APPLICATION



- M. M. S. -
 REPUBLIQUE DU ZAIRE
 CONSEIL EXECUTIF NATIONAL
 DEPARTEMENT DE L'AGRICULTURE
 CABINET DU COMMISSAIRE D'ETAT

Kinshasa, le 27 Mars 1975
 B.P. 3722 Tél. 31.144
 (1) 00289/CAB/AGRI/74

Annexe :
 V/RM :
 M/RM :

A Son Excellence Monsieur
 l'Ambassadeur des Etats-Unis
 à KINSHASA, /-

Objet : Coopération Agricole avec
 les Etats-Unis d'Amérique.

Monsieur l'Ambassadeur,

Comme suite à notre entretien de ce mercredi 28 mars, j'ai l'honneur de vous confirmer les points qui en ont fait l'objet.

Jusqu'à présent l'aide de l'AID, au Zaïre, a été à juste titre concentrée dans le secteur de transport : ports, ponts, bacs et matériel lourd pour l'aménagement des routes. Nous souhaitons vivement que cette aide continue étant donné que l'infrastructure routière conditionne le développement agricole, qui est une priorité absolue du développement économique du Zaïre.

Dans le domaine de l'Agriculture, l'AID nous a apporté une contribution importante par la participation au financement d'un certain nombre de projets, notamment le Programme National Mât, Laboratoires Vétérinaires, Statistiques Agricoles, Elevage au Kibali Ituri, Achat petit outillage agricole, Crédit Agricole, Centre de Mécanisation, etc...

Actuellement l'AID nous aide à financer depuis 1973 le fonctionnement du Bureau d'Etudes. Celui-ci s'occupe des études de base de l'économie agricole zaïroise, planification, identification, élaboration et évaluation des projets agricoles. Il est composé des experts zaïrois et de 5 experts étrangers dont un américain spécialiste en économie agricole. Deux autres experts américains sont attendus en juillet prochain. Nous souhaitons cependant que leur nombre puisse être porté à cinq.

Etant donné le rôle de l'agriculture dans le développement économique du pays nous souhaitons pouvoir bénéficier de l'appui financier et technique pour les projets suivants :

./...

(1) Répéter dans la réponse, la date et le numéro.

1. - Développement agricole de la Sous-Région de Tanganyika au Nord-Shaba :

Cette sous-région produit à présent 47.000 tonnes de maïs dont plus de 20.000 tonnes sont exportées vers d'autres régions. Or le potentiel de la sous-région est estimé à 130.000 tonnes de production dont 74.000 tonnes peuvent être commercialisées pour réduire le déficit national de maïs. Le projet est en cours d'élaboration par le Bureau d'Etudes et son étude doit être terminée d'ici deux mois.

2. - Développement agricole de la zone de Tshilongo au Kasaf-Oriental

Cette zone, la plus densément peuplée du Zaïre doit importer d'importantes quantités de maïs pour la consommation locale. Etant donné son potentiel productif, le Bureau d'Etudes est en train d'élaborer un projet de développement de la zone afin qu'elle puisse devenir autosuffisante en maïs et en d'autres produits agricoles et en même temps améliorer le revenu des paysans.

3. - Usine d'engrais

Le développement planifié de l'agriculture zairoise réclame à présent la modernisation du secteur, et surtout les intrants pour accroître la production. Parmi ces intrants le problème d'engrais devient le plus urgent. A la demande du Département de l'Agriculture, l'AID a invité une équipe des spécialistes américains de la TVA pour entreprendre une étude de faisabilité d'établissement d'une usine à grande et de granulation d'engrais au Zaïre qui ensuite deviendra une usine de production d'engrais.

4. - Institut National pour l'Étude et la Recherche Agronomiques (INERA) :

Pour améliorer l'organisation de l'Institut et la qualité de recherche pure et appliquée dans le domaine agricole du pays il nous paraît indispensable de faire appel à l'assistance des spécialistes américains aussi bien de l'Agriculture RESEARCH SERVICE (ARS) de l'US Department of Agriculture que des universités américaines spécialisées dans ce domaine.

5. - Commercialisation des céréales :

A la demande du Département de l'Agriculture, et liée aux projets nouveaux en cours d'élaboration de notre Bureau d'Etudes, l'AID a invité une équipe des spécialistes américains de Kansas State University pour entreprendre une étude approfondie de la commercialisation des céréales au Zaïre. Nous jugeons cette étude indispensable pour la planification rationnelle du développement de l'agriculture du pays et souhaitons la continuation de l'appui de l'AID.

6. - Commercialisation des produits du Nord Kivu :

Le Nord Kivu a un potentiel considérable pour la production des légumes, fruits, viande et poisson. Mais cette région connaît de grandes difficultés d'évacuation de ces produits vers les grands centres urbains et miniers du pays. Nous souhaitons un appui de l'AID pour une étude en vue d'établir une chaîne frigorifique (camions, bateaux et stations frigorifiques) du Nord Kivu vers Kisangani et Kinshasa et vers la région minière du Sud Shaba et les 2 Kasaf.

7. - Coopérative de Pêche dans le Lac Tanganika :

La situation actuelle des pêcheries du Lac Tanganika mérite une attention spéciale, au fait que plusieurs d'entre elles ont cessé leurs activités. Une mission de l'AID s'est rendue sur place pour étudier ce problème. Nous souhaitons qu'une étude complète soit faite et que l'appui de l'AID nous soit accordé pour apporter une solution à cette situation.

8. - Fonds de contrepartie :

Nous souhaitons vivement que soit poursuivie l'utilisation des fonds de contrepartie pour financer le développement agricole.

En vous remerciant par avance de la suite qu'il vous sera possible de réserver à tous ces points, je vous prie d'agréer, Monsieur l'Ambassadeur, les assurances de ma haute considération.

LE COMMISSAIRE D'ETAT A L'AGRICULTURE.

KAYINGA ONSI N'DAL

FREE TRANSLATION

March 28, 1975

TO: His Excellency the Ambassador of the United States

SUBJECT: Agricultural Cooperation with the United States

Mister Ambassador:

As a follow-up to our meeting of this Wednesday, March 26, I am pleased to confirm the points which were the subject of our discussion.

Up until the present time, USAID assistance in Zaire has been, with good reason concentrated on the transport sector: ports, bridges, fences and heavy equipment for road development. We naturally hope that this assistance continues, given that transport infrastructure conditions agricultural development, which latter is an absolute priority for the economic development of Zaire.

In the agricultural field AID has brought to us an important contribution by its participation in a number of projects, notably the National Corn Program, veterinary laboratories, agricultural statistics, livestock at Kibuli Ituri, small tool purchases, agricultural credit, machinery centers, etc.

Presently AID is helping us finance, since 1973, the operation of a planning office. This office is concerned with basic studies of Zaire agriculture; and planning, identification, elaboration of agricultural projects. It is composed of Zairian experts plus five expatriate experts including an American specialist in agricultural economics. Two additional American experts are expected this coming July. We hope that their number might be built up to a total of five.

5

4. National Institute Economic Research and Study (INERA):

To improve the organization of the Institute and the quality of pure and applied research in the agricultural field, it appears indispensable to us to request the assistance of American specialists both from the Agricultural Research Service (ARS) of the U. S. Department of Agriculture and from American universities specialized in this field.

5. Cereal Marketing:

At the request of the Department of Agriculture (Zaire) and first in with the new projects currently being developed by our Planning Office, AID has invited a team of American specialists from Kansas State University to undertake an in-depth study of cereal marketing in Zaire. We consider this study indispensable for the rational planning of agricultural development of the country and solicit the continuation of AID's assistance (in this area).

6. Marketing of Production in North Kivu:

North Kivu has a substantial potential for the production of vegetables, fruits, meat and fish. However, this region experiences great difficulty in moving these products toward the large urban and mining centers of the country. We request an assistance from AID for a study with a view to establish a refrigerated marketing system (trucks, boats and refrigerated warehouses) from North Kivu towards Kisangani and Kinshasa, and towards the mining region of South Shaba and the two Kasais.

7. Fishing Cooperative on Lake Tanganyika:

The present condition of the fisheries on Lake Tanganyika merits special attention from the fact that several of them have ceased their activities. An AID mission has studied this problem in the field. We request that a complete study be made and that AID assistance be accorded to us to resolve this problem.

21

Given the role of agriculture in the economic development of a country, we hope to be able to benefit from the financial and technical support for the following projects:

1. Agricultural Development of the Sub-Region of Tanganyika in North Shaba:

This sub-region produces AT PRESENT 47,000 tons of corn of which approximately 20,000 tons are exported to other regions. However, the potential production of the sub-region is estimated at 130,000 tons of which 74,000 tons can be marketed to reduce the national deficit in corn. The project is in the process of being developed by the Planning Office and its study should be completed in the next two months.

2. Agricultural Development of the Tshilenge Zone in Kasai Oriental:

This zone, the most densely populated in Zaire, must import large quantities of corn for local consumption. Given its productive potential, the Planning Office is in the process of working up a development project for the zone in order that it might become self-sufficient in corn and in other agricultural products while at the same time improving the income of its small farmers.

3. Fertilizer Plant:

The planned development of Zairian agriculture demands at this time the modernization of the sector and particularly the inputs for increasing production. Among these inputs the problem of fertilizer is becoming the most urgent. At the request of the Department of Agriculture, AID has invited a team of American specialists from the Tennessee Valley Authority to undertake a feasibility study of the establishment of a fertilizer mixing and granulation plant in Zaire which eventually would become a fertilizer production plant.

381

8. Counterpart Funds:

We urge that the use of counterpart funds to finance agricultural development be continued.

Thanking you in advance for any action it will be possible for you to bring to these requests, I offer you, Mr. Ambassador, the assurances of my high esteem.

The Commissioner of State for Agriculture
Kayinga Onsi N'Dal

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ANNEX I

MAIZE MARKETING

ANNEX I

MAIZE MARKETING

A. DESCRIPTION OF THE MAIZE MARKETING SITUATION

1. Participants:

Both the private sector and ONACER market grain in the project area, although ONACER is not operating the Kongolo Zone this year because of lack of funds. Licenses to participate in the marketing of agricultural produce (maize, groundnuts, manioc) are normally issued by ONACER, but the Department of Agriculture and the Commissioners of the Zones also issue these at no charge. In 1974, 38 traders were licensed but only 28 delivered grain. Of the latter, 8 provided 92% of the purchases delivered to MINOKA. In 1974, MINOKA purchased 16,246 tons from North Shaba.

In 1975, 27 traders were licensed (24 in Nyunzu and 3 in Kongolo) and delivered 10,057 tons of grain to MINOKA. As in the previous year the largest purchases were made by a small number of traders, 7 of whom delivered 86% of the tonnage to MINOKA.

In 1976, 38 traders have been licensed (21 in Nyunzu and 17 in Kongolo). Only 2 out of the 17 are operating in the Kongolo Zone. Lack of funds and vehicles is the main reason why traders who are licensed do not participate. At the end of July some 9,000 tons of maize had been delivered to MINOKA. The area is expected to market some 16,000 tons of maize this year.

The reason why the bulk of marketing lies in the hands of some 8 traders is because they have built up experience, a farming clientele, they have trucks, financing, contracts with MINOKA and local influence. Attempts by smaller traders to enter this market could well meet with rebuffs.

2. Market Operations:

A. Threshing:

Before grain can be sold it has to be carried from the field to the village, threshed, and then carried or transported to the nearest passable road. The maize cobs are head-carried in sacks (about 50 kgs.) to the village, either by members of the farmer's family or by hired labor, K60 per sack being a normal charge. No bicycles or animal transport is employed for this task, as is the case in other countries.

Threshing is carried out mainly by beating a sackful of maize cobs with a stout pole. The sacks are obtained from

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ANNEX I (cont'd)

the traders ostensibly to be filled with shelled grain, but in practice a large proportion of them are diverted for other purposes, including pole threshing. Evidently, sacks used for this purpose have a short life, and traders without exception complain of the losses incurred in furnishing sacks free to farmers. Usually one man can produce 2 sacks (200 kgs.) of shelled corn per day and will be paid Z1.50 or Z0.50 depending on whether he is a local man or a Pygmy.

General agreement has it amongst merchants that some form of mechanical shelling equipment is necessary for farmers. ONACER distributed five hand shellers last year in the Nyunzu Zone but no follow-up has been made on their acceptance or use.

The substantial increase in production previewed by the project will make the introduction of improved threshing methods obligatory, otherwise there will not be sufficient time to market the crop during the limited dry season (April - September).

B. Sack Distribution:

This is the first marketing operation of the merchant and takes place in March (Nyunzu) or April (Kongolo). A register is kept of the names of farmers to whom sacks have been distributed. Sacks are distributed free. Practically all the sacks used in North Shaba are provided by MINOKA who obtain them with their imports of Rhodesian, Zambian and South African maize. The sack is a jute twill of 90 kgs. standard capacity, but in practice the farmers are encouraged to fill it to 100 kgs. by ramming the grain into the sack with a pole. Throughout the rest of Zaire the sack used is a 70 kg. jute bag, either manufactured locally or imported.

Shortages of sacks and string for sewing are widely reported this year. MINOKA furnished sacks to traders at K30 each at the start of the season, but are now demanding K50 for first-quality bags. The cost of new sacks of 70 kg. capacity from the TISSAKIN factory in Kinshasa has risen this year from K45 to K70. String is unobtainable in quantities and the price of a 350-meter roll has gone up from Z2.50 to Z4.00. MINOKA sacks will hold up for three fillings if not diverted for other uses.

C. Weighing:

Frequently in the Nyunzu Zone where competition is keen no weighing is practiced, purchase being on the basis of a full sack estimated at 100 kgs. net. Last year it was reported that a number of traders lost on this method as

ANNEX I (cont'd)

Various makes of trucks are employed by varying capacity, such as Mercedes (5T), Magirus (6T), Bedford (6T), Chevrolet (6T), Toyota (7T), Leyland (8T), Saviem (8T), and Mercedes (8T). Traders' preference for make of truck is for the Toyota, the Leyland, and the Mercedes; Bedfords and Chevrolets are not looked upon with favor because of fuel consumption and unsuitability for rough roads.

In the Kongolo Zone, the average distance traveled to pick up grain is 100 kms. out, and the maximum around 130 kms. In Nyunzu most of the grain is located in a 60-km. radius from the railhead which explains the higher marketing activity in this area.

In the early part of the season traders market close in to their depot going further out as supplies dry up, although exceptions to this were found in some parts of Kongolo. A truck in the Kongolo area will normally carry 5 tons a day, whereas one in Nyunzu will transport 15 tons a day. Trucks are not loaded to their full carrying capacity because of the poor conditions of the roads and the fear of breaking parts which are virtually unobtainable. A 7-ton truck will not load more than 6 tons in Kongolo. Fuel consumption in this area can be as low as 1 liter/km.

Trucks are written off at 30,000 kms., but in view of their scarcity, many are still running at 100,000 kms. Second-hand truck prices are high, Z10,000 being a going price for a very used vehicle. New truck prices are reported by traders to be Z25,000 for a Leyland or Mercedes. Kinshasa prices for locally-produced Bedfords are Z16,000 after fitting the body.

Spare parts for trucks are almost unobtainable and no garages exist to effect major repairs. Tires (retreads) are expensive, costing around Z200 and may last only a few weeks.

The official price for diesel fuel is Z32 per 200-liter drum (K16/liter), but as this is also almost unobtainable, the current black market rate is between Z200 and Z300 per drum of 200 liters (Z1 - Z1.50 per liter). The shortage of fuel is a major factor this year in slowing down the buying. The cooperative APPA depends on truck rental to get its grain to the railhead, but as current rental charges are Z1 per sack (fuel supplied by the hirer), and few trucks are available for hire, it is difficult to see this organization breaking even this year. Last year truck rental cost K48/km.

ANNEX I (cont'd)

grain was scarce, creating a sellers' market, and farmers were not filling the bags full, some having only 80-90 kgs. instead of 100 kgs. The current price is Z7.50 for a full sack of 100 kgs; elsewhere in Zaire the price is K12/kg., or Z12/100 kgs.

Where grain is weighed, the swinging arm balance is used (bascule romaine), the balance being hooked onto the bough of a tree or onto a pole suspended between two uprights. The sack is suspended on a rope sling and the weight paid for is the gross weight less 1 kg. for the tare of the sack. Grain is always weighed in the KongoLo Zone, where competition is less fierce than Nyunzu. Platform scales are not used for weighing because of the risk of breakage during transport to the villages.

Weighing takes place about 2 weeks after the distribution of the sacks, the weigher often making his rounds of the village on a bicycle or in the case of ONACER by land rover. ONACER makes payment at the time of weighing and collects the grain with an accompanying truck. The commercant, however, does not pay at the pick-up point in KongoLo, but transports the grain first of all to his depot and pays on the basis of the weight delivered to his depot. The commercant or a member of his family then goes back by truck and pays the farmer a couple of days later. In the Nyunzu Zone ONACER weighs their trucks in and out over the ONAFITEX weighbridge to establish the gross weight to be entered on the SNCZ transport document and also to control the net weight of grain purchased against the buying fund. ONACER will purchase either through their commercial agent or a Kapita (or headman) engaged for the purpose. Kapitas notoriously cheat on the scales.

D. Road Transport:

Nine trucks are operating out of KongoLo this year and probably around 23 out of Nyunzu. The distribution by trader is as follows:

<u>KongoLo:</u>	Sakina	5	trucks (capac. 7 tons)
	Lualaba	2	" " " "
	Others	2	" - " 6-8 "
<u>Nyunzu:</u>	Ali Salim	7	" " 6-8 "
	Mwanza	4	" " 5-6 "
	Covapa	3	" " 5-6 "
	Salim B. Saleh	5	" " 6-8 "
	ONACER	4	" " 5-7 "

ANNEX I (cont'd)

E. Rail Transport:

Filled sacks are transported directly to the railway platforms, where storage space is very limited, or in the case of some traders, purchases are stored temporarily in warehouses. SAKINA at Kongolo has two warehouses of 100-ton capacity each, another of 200 tons, and plans to construct two more of 300 tons, assuming planning permission from the Commissaire of the Zone.

Grain is stored on the rail platforms or, in the case of ONACER purchases at Nyunzu, in the ONAFITEX concession. The stationmaster calls forward the railcars which may either be open or closed. Although there was a reported shortage of railcars for maize shipments last year, sufficient quantities are available this year and should be in the future due to increased copper traffic through Kalemie. SNCZ has placed a highly-qualified ex-patriate in charge of railcar routing for the Shaba Region.

It is to the advantage of SNCZ to fill the railcars with maize on their return trip to Lubumbashi after delivering copper to Kalemie. SNCZ reports that their cost for shipping food crops the Nyunzu-Lubumbashi distance would normally be 19-20 Z/MT, but for this specific route their real cost is less due to the empty cars passing on that line. The freight price had been Z4.23/MT for this distance which, on a nationwide scale, was creating heavy losses for SNCZ. The price was raised July 26, 1976, to Z14.8 which is still below the SNCZ cost. The North Shaba-Lubumbashi route was given a special 33% reduction to Z9.92 due to the current maize price structure (the freight price increase would have put the North Shaba merchants out of business), the heavy demand for maize in Lubumbashi, and the low marginal cost to SNCZ for maize shipments along this route.

There are few closed cars allotted to the maize merchants, who complain that the open cars subject them to heavy theft losses of the maize while enroute to the mills (they are paid only for what arrives at the mills except for a 65% advance on the tonnage they say is shipped -- occasionally the 65% will exceed the value of the maize that actually arrives at the mill). SNCZ reserves the closed cars for transporting goods of a higher value per kilo. SNCZ is experiencing serious theft problems and has yet to find a solution.

ANNEX I (cont'd)

Cars are apportioned to each trader according to the quantity awaiting shipment. Lots are not mixed. Delivery takes about two weeks to the mills.

Considerable controversy exists in the commercial milieu in respect of the weights they declare to the SNCZ on the shipping document (Lettre du Transport) and the weights received by MINOKA in South Shaba. Usually there is a substantial difference, the MINOKA weight being less than the declared weight. The mill maintains that traders overdeclare the weight in order to benefit from the 65% advance, and the traders accuse the mill of rounding off the weight to the mill's advantage, e.g. 34,940 kgs. = 34 tons.

In practice the wagons and their load are not weighed by the SNCZ in North Shaba. The first weighing takes place by SNCZ in Likasi or Lubumbashi, and the 2nd and 3rd by MINOKA during the processing operation after initial cleaning. As MINOKA apparently does not have the same problem with imported grain, it is highly probable that overdeclaration of purchase weight is common practice in the commercial sphere.

F. Mill Reception:

On reception at the mills at Likasi or Lubumbashi, the grain is inspected by the Office Zairoise de Controle (OZAC) for weight and quality control, following which payment of the 35% outstanding is made to the seller, less discounts for overdeclaration of weight, adulteration, provision for sacks, etc. Very rarely are deductions made for quality factors such as humidity, insect attack, fungal attack, etc. (Grain standards are determined by the Kinshasa contract.)

Prior to the MINOKA weighings, SNCZ also weighs the charged wagon and subtracts the tare weight of the wagon to establish the gross weight carried on which the freight rate is based. If the SNCZ weight is taken as the delivered weight of grain to the mill, errors may occur even if the tare of the sacks is subtracted. This is because the weight of a wagon changes continuously. With usage, the steel wheels wear away until such times as they require to be rebanded with new steel straps. Refitting new straps may add 200 kgs. to a wagon, and it is not known whether wagons are retared after such repairs.

G. Role of Flour Mills:

Apart from producing maize flour, MINOKA provides an important credit function in according advance payments for their grain purchases before delivery has taken place. A

ANNEX J (cont'd)

Balumbu Groupement has a larger permanent population and three distinct groupings to be served. MOKUMBO (54), a village of medium to large size by South Lukuga standards, can be used as a base for working with the farmers who live in the most southern part of Zone Nyunzu, close to Zone Manono. NGOY (50), the groupement capital, can be used for research/extension activities in western Balumbu. NGOY-LUBA (55) gives the project an excellent opportunity to work with Pygmy farmers living in large, separate villages. Some Pygmies still engage in a certain amount of wage labor. Many have their own farms and follow agricultural rotation and cash-cropping systems similar to their neighbors. They have their own sultani and would appear to be quite receptive to the kinds of inputs which the project will make throughout the area. (In addition of Ngoy-Luba and Kanunu, three more Farmers' Centers have been held in reserve for Pygmy farmers, pending more knowledge of local situations).

ANNEX K

Part I
NEGATIVE CONSTRAINTS ON INCREASED AGRICULTURAL PRODUCTION

Part II
DEMOGRAPHIC CONSIDERATIONS

Annex K
Part I

NEGATIVE CONSTRAINTS ON INCREASED
AGRICULTURAL PRODUCTION
(Summary of Field Interview Data)

A. INTRODUCTION:

This report of negative constraints articulated by project area farmers and businessmen summarizes field interview data collected by the PP team. In certain cases recommendations for alleviating these constraints are sketched out.

This material appears as an annex to the "Social Soundness Analysis" because of its paramount relevance to the social soundness of the project. A socially sound project is responsive to these farmers' and businessmen's expressed problems, to the situation as perceived by people operating in it.

This project has been designed based on substantial data gathered in the project area. Nevertheless, it should be recognized that project planners will continue to gain more in-depth insights and understandings which may call for adjustment of project design, as well as improving means to effective implementation.

B. FARMERS' ARTICULATED VIEWPOINTS:

1. Serious Disturbances in Agricultural Activities
(Kongolo Zone):

Farmers said that their required labor on public works seriously disrupts their agricultural activities. They explained that during the agriculturally crucial late August/September-December period, they are called away from their fields to work for days and weeks on road, bridge, and building construction gangs. Farmers described how fines and jail terms are frequently used to "motivate" them. Where road workers nominally

exist, farmers said that the workers have not been paid for a very long time and that they themselves have been made to shoulder the burden. Farmers made clear that other work imposed by the local administration also seriously interrupts farm work during peak planting, weeding, and harvest seasons.

Farmers made the following recommendations:

- Paid crews should do major public works projects.
- Farmers should maintain, voluntarily, their farm access roads and bridges (no policing). Their incentive: to open the route for buyers to come in.
- Any additional public works should be accomplished in June and July during the dry season, NOT during the farming months.
- Soldiers should not be used to direct public works projects (see point 11. below).

2. Slow Buying (Kongolo, North Lukuga):

Farmers reported inadequate and/or slow pick-up of harvested maize. They said that this leads to increased spoilage and insect and animal damage. Farmers also explained that this problem lowered their incentive to produce high yields. (Farmers in southern extremes of South Lukuga also reported the slow buying problem.) Lack of enough buyers was mentioned in Kongolo Zone. In areas with two maize crops, farmers said that the maize harvested in January sits even more months before pick-up.

3. Inaccurate Weighing (Kongolo Zone merchants):

That buyers cheated on weights was a major bone of contention. Farmers said that scales have been altered to show less than actual weights.

They complained that weighers work unreasonably fast and don't allow a second look or appeal. They explained that commercants required them to fill sacks more full after weighing, under threat of no-buy; they feel that they have no effective appeal process as government officials will back up the drivers. Farmers further reported that sometimes drivers require a "matabish" (bribe) of Z20 - Z50 or a goat, chicken, etc. to come at all.

--- Where Nyunzu merchants buy, one generally finds different complaints: Farmers say that the commercants' weighing is accurate, but the bags may be picked up without weighing; they are paid on what is estimated as 100 kilos per sack, by the commercants, but they said that the actual amount may average 120 kilos or more.

4. Inadequate Market for Other Crops
(Kongolo, North and South Kukuqa):

Farmers said that they wished that there were an organized truck-transport market for manioc, peanuts, rice, palm oil, bananas, beans, and other agricultural products. Farmers explain that they have to transport agricultural products by bicycle or head load. Most farmers said that they would grow these crops again in much greater quantities if there were a means to sell them.

5. Illness (Kongolo, North and South Lukuga):

Many farmers talked about lack of medicine and how much farm work time is lost due to illness. When asked what were the major illnesses, people reported foot infections (work-related); malaria and other fevers; schistosomiasis; and worms. Farmers pointed out that, with medicines, one can return to the fields the next day; without medicines one sits suffering for days, unable to farm.

6. Lack of Tools (Kongolo, North and South Lukuga):

Farmers frequently mentioned that certain tools are in short supply and prices are unreasonable:

machetes, scythes, or grass whips (coupe, in French); metal for hoes and axes (blacksmiths make these tools locally); shovels, picks and other tools for local road work and bridges. Women mentioned the above and also large pots (oil drums) for making palm oil, and large basins for carrying water. Farmers also recall that trucks were used, prior to 1960, to help carry sand for road work, tree trunks for bridges, etc.

7. Non-Availability of Motorized Machines
(Kongolo, North and South Lukuga)

Farmers expressed the need for motorized machines, particularly tractors, which were used in the Kongolo area in the fifties. When the PP team explained about intermediate technology possibilities, their ideas were enthusiastically received.

8. Bridges (Kongolo, some South Lukuga, potential North Lukuga):

Several key bridges are missing or very weak and irreparable by current local means. A few areas are completely cut off; in others, corn evacuation is hampered or key areas are in danger of being isolated, for example, Kalimba and much of southern Mambwe; Kibele, the river valley south of Mbulula, Mbulula, Makutano main road, Kongolo-Sola main road, Kongolo-Makutano direct route; Mbeya-Kongolo potential route, Nyunzu-Manono main road, Mokimbo-Ngoy. Farmers in these areas were quick to mention the poor state of bridges as a serious problem.

9. Price Inflation (Kongolo, North and South Lukuga):

Consistently, farmers, men and women alike, brought up that high and inflating prices of all store items (especially clothes/cloth, salt, soap, medicines, bicycles, tools) is a discouragement. Increased school fees were also mentioned.

10. Few Trucks for Hire (Kongolo, North and South Lukuga):

Farmers spoke of trucks not being available for rent (to ship agricultural products in 6-10 ton lots, or by bag or barrel for rice, palm oil, etc.) and of transport costs being much too high (e.g. 210 to send 200 liters of palm oil 60 kms. from Mbulula to Kongolo).

11. Soldiers Used as Policemen and Tax-Enforcers (Kongolo, northwest North Lukuga)

Local officials at the Collectivite level sometimes use soldiers (who are officially in the area for frontier security, normally stationed away from most farming areas) to perform administrative, census, tax collection, local policing, and public works supervision duties. PP team members observed soldiers performing such activities. It was widely reported in the farming areas that this use of soldiers is very disruptive.

12. Slow Payment (Kongolo merchants):

The PP team learned from farmers that formerly neither of the major Kongolo private buyers paid cash at the time of corn pick-up. ONACER paid cash last year and Lualaba has followed the example this year, though the other large firm continues to pay only after a one-month delay. Farmers said that this delay causes them financial hardship and that they prefer cash.

13. Unknowledgeable and Oppressive Agricultural Extension Service:

Farmers criticized extension agents for not knowing farming, local conditions, nor even the location of most farmers' fields. They also reported that extension agents don't respect farmers or the farmers' work. It was widely reported that extension agents perform mainly policing functions--levying fines and taxes--and are involved mostly with cotton - distribution (late) of seeds, enforcing quotas, measuring fields.

14. Lack of Available Credit (Kongolo)

Several large farmers and farmers' groups in Kongolo, Sola, Makutano, and Mbulula stated a need for credit to expand operations and to buy tools and machinery; the Mbulula farmers' organization wanted to buy trucks and tractors on a five-year repayment schedule. Others also expressed the desire to rent or buy trucks for small-scale, farm-to-railhead shipping operations organized by farmers and farmer-groups.

In larger centers, farmers noted that the Fonds d'Avance formerly made loans for house-building and other local improvements, including water systems.

15. No Insecticides or Pest Control (Kongolo, North and South Kukuqa):
(Farmers' response to PP team's suggestion)

There is a lack of insecticides, pesticides, and/or pest control measures. Suggestion of their introduction was enthusiastically received by farmers. Farmers reported that birds, rats, and monkeys eat seeds at planting time. (Some farmers knew that this can be largely stymied by earlier planting, that late planters lose a great deal.) There is also minor animal damage to young shoots. Monkeys and wild pigs eat young maize ears. Cut-worms or "termites" attack root systems, and the maize plants fall over. Corn worms damage maize ears in the fields and in storage, as does a small black borer. Maize in storage is vulnerable to house-rats and continued insect damage. A type of antelope (pongo in Kiswahili) eats leaves of all crops. Elephants destroy fields in Nyunzu, especially in the more remote areas. Hippopotamuses destroy some fields near the Lukuga River.

16. Storage Facilities (Kongolo, North and South Lukuga):
(Farmers' response to team's suggestion)

This suggestion was well received, but with qualifications. Farmers saw that some need exists

for improved storage facilities but reject the idea of centralized facilities for a several-village area until the field-to-central-facility transport problem can be solved. Farmers are open to improvements in-field (storage shed), in-village (shed or house), or at the extended-family weighing stations where the merchants buy the maize.

C. LOCAL BUSINESSMEN'S ARTICULATED VIEWPOINTS:

1. Bad Roads and Bridges (Kongolo, some North and South Lukuga):

Especially in Kongolo Zone, where the average one-way corn-buying trip exceeds 70 km., and where there are many road and bridge problems, this single negative factor slows the harvest season by greatly increasing travel time, prevents access to some producing areas, forces lengthy detours to other areas, destroys trucks and makes operations unprofitable on some long-distance runs, and reduces farmers' output because tens of thousands of farmer-days per year are spent on (largely ineffective) road and bridge repair. Nyunzu businessmen also pinpointed needed bridge and road repairs, but said this constraint is not so serious in Nyunzu. (Nyunzu businessmen mentioned poor Kongolo road and bridge quality as one reason for not buying there.) Newly cut farm roads in Nyunzu do pose a problem: unremoved stumps ruin maize truck tires.

2. Ineffective Agricultural Extension Service (Especially in Kongolo, North and South Lukuga):

The extension agents are seen as a negative policing force, working mostly with cotton, instead of a positive, teaching, facilitating element, helping to bring about conditions favorable to greater production throughout the agricultural system. A large Kongolo merchant stated that even a particular village which annually produces 250 tons of maize could at least quadruple its output here, not to mention other crops. In the 1958-59 season, 285,000MT

of manioc; 14,000MT of maize; 5,000MT of peanuts; and 4,600MT of rice were bought in eastern Kongolo Zone alone, versus approximately 2,000MT of maize and virtually nothing of the other crops in the 1974-75 season. Merchants, especially in Kongolo, call for increased production encouraged by an organized agriculture service, believing that even the difficult commercial problems are easier to solve, and saying that if the products are there in sufficient quantity that they will find a way to pick them up and send them out.

3. Inefficient or Disruptive Para-Statal Market Activities (especially South Lukuga) (North Lukuga, Kongolo):

ONACER is described by Nyunzu merchants as disrupting buyers' activities, buying corn already bought and brought to railhead by merchants, selling sacks, selling equipment, and wasting large amounts of money through inefficient and/or corrupt procedures and little actual legitimate buying activity. Nyunzu merchants see ONACER as a destructive element in their otherwise healthily competitive maize market system (15 buyers).

In Kongolo Zone, ONACER fares better in merchant reports, which vary from a reluctance to say much, to a statement that ONACER and the buyers have reached a working understanding, to saying that ONACER is not disruptive but not yet taken very seriously. It was suggested that the buying season was delayed 1-2 months this year because ONACER did not have money and prevented the private buyers from starting.

ONAFITEX trucks, operating in the rainy season instead of buying in the dry season (late June-early September) as they did formerly, contribute greatly to the poor road conditions in the Kongolo Zone. This is not a problem in Nyunzu on either side of the Lukuga River.

4. Shortage of Gas/Oil (South and North Lukuga, some Kongolo):

Nyunzu merchants underlined this shortage as did smaller Kongolo buyers. The two large Kongolo buyers view it as a problem, but not yet that difficult if one can pay the matabish. All were receptive to having large cisterns (Lualaba has two at Kongolo already) and 40,000-liter tank-car deliveries, seeing the arrangements with Petro Zaire as the crucial link.

5. Shortage of Trucks (South and North Lukuga, Kongolo):

Non-availability of trucks and high purchase prices were emphasized at Nywizu, and considered a stifling problem by the small shippers in Kongolo who rent trucks. The two big Kongolo merchants were less concerned as yet, but supported the idea of a program to make trucks available for purchase in the area. The Lualaba manager said that under existing road conditions a truck would last three or maybe four years, with 5 years as the very outside possibility. He claims a large Toyota truck still costs Z4,000 plus Z2,000 in taxes.

6. Spare-Parts Shortage (South and North Lukuga Kongolo):

Nyunzu merchants and the smaller Kongolo merchants reported great difficulty in obtaining spare parts to keep their trucks running. When something does become available, the price is extremely high: one retreaded truck tire in very poor condition costs Z200.

7. Railcar Shortage (Kongolo, North and South Lukuga):

Concern about the lack of railcars was articulated more strongly at Nyunzu than at Kongolo (because last year some maize was lost due to the long wait in the open) though the big Kongolo buyers did admit to a 2 1/2 - 3 months' storage time and that a large matabish payment was required for those wagons that did arrive. The problem at Nyunzu has been alleviated this year, since much copper now goes out through Kalemie.

8. Storage/Loading Problems (South Lukuga, Kongolo):

All merchants responded positively to possibilities of increased storage or loading facilities, though none mentioned it on his own. Maize sits outdoors at the Nyunzu loading dock, which is a problem when the rains come. In North Lukuga, Lengwe buildings are used by Nyunzu merchants for storage of maize, in transit to the Kabeya-Mayi crossing. In Mbulula, Kibwe Sakina has at least two large storage facilities and Lualaba has three, including the ONAFITEX barn. Lualaba reported two months' average storage time at Mbulula and 15-30 days in Kongolo before loading. Kibwe Sakina and Lualaba run 2 or 3 trucks a piece once or twice daily between Mbulula and Kongolo, with other trucks doing the buying rounds at the farms. (Note: Some intermediate storage takes place at Lengwe.) Kibwe Sakina at Kongolo currently has 400 tons' storage capabilities and would like to build 600 tons more, but has had problems obtaining permission from the Commissaire.

9. Buyers'/Mills' Weight Discrepancies (Kongolo and South Lukuga):

Nyunzu merchants report that 5 to 50 sacks of maize (out of an average of 300) are stolen en route to the Likasi mills or that the mills always round off the total too low. The merchants claim they send more tons than the mills credit to their account. Kongolo merchants also report a 5% discrepancy over what they send and what is credited at the mills.

The mill officials believe that merchants overreport the weight of shipments so they can get more immediate credit (65% - Gecamines to 85% - Tarika advance payment of shipment's value) and that very little discrepancy occurs with maize other than from North Shaba.

10. Problems of Harvest Season Credit
(South and North Lukuga, Kongolo):

All merchants either mentioned or agreed that lack of cash slowed or prevented some aspects of their maize-buying operations. One big Kongolo merchant noted that Z60,000 had been made available by banks for harvest season credit last year when the buying price was Z 40/MT at the farm, whereas only Z10,000 was available this year, though the price was now Z 75MT. He faulted national-level decision-making as this year's bottleneck and also noted that banks have very little money throughout Shaba. The large Kongolo merchants were quite favorable to having a bank branch office in Kongolo, though emphasizing that having money actually available at the bank would be the really major requirement.

Smaller merchants in Kongolo (and in a large cooperative in Nyunzu) have great difficulty borrowing money for basic equipment needs, as well as for the harvest season.

11. Low Quality and Low Availability of Sacks
(South and North Lukuga, Kongolo):

All merchants bemoan the sack situation, citing increased prices, low quality (used, often with holes). High percentage loss (30% out of 25,000 distributed to farmers - some because farmers sell them, others because some farmers shell maize by beating the seeds), short duration of useability (two-year maximum), and current non-availability of sacks as major problems. Shortage of sacks has caused one major Kongolo merchant to cut his daily buying from 30MT to 5 or 6MT. One Kongolo merchant did buy 10,000 sacks from ONACER. (He was in the process of re-selling these to a smaller Kongolo buyer.) ONACER also provided sacks to Nyunzu merchants. Shortage of cord for tying the sacks is also a problem.

12. Drivers and Weighers Cheating the Farmers
(Kongolo):

One large Kongolo merchant said he had just fired two drivers or weighers whom he had caught deliberately mis-weighing. He said the problem was widespread and that he was trying to stop it in his organization. The other large Kongolo merchant avoided answering several questions on this issue and a big Nyunzu merchant said the farmers were too knowledgeable to be cheated by the weighers. However, some Nyunzu merchants said that their weighers cheat (and said those of ONACER do, too) though they are difficult to catch red-handed. (Note: In Nyunzu, a "kapota" is a weigher, a merchant's employee; in Kongolo, a "kapota" is a village-level official - the statal link into the local patrilineal organization. The latter do not have the opportunity to cheat on weighing.

13. Insect Damage (North and South Lukuga,
Kongolo)

Buying maize too late, after the rains, poses a problem for Kongolo buyers: not the moisture content, since Kongolo Zone farmers have storage facilities, but rather insect damage.

14. Need for Management and Accounting Training
(North and South Lukuga, Kongolo):

Smaller merchants as well as members of nascent production cooperatives and buying cooperatives stated a need for management/accounting training. Some personnel formerly had some training and now need retraining; others have had no prior experience or training.

403

ANNEX J (cont'd)

reasons for the choice of one village over another. The issue of patriline balance may help decide the case.

The farmers of MAKUTANO (25), the capital of Mambwe, have demonstrated a high interest in project proposals while apparently not posing the same encumbrances and ensarements as do some other collectivite capitals in Zone Kongolo. Several patriline are strong here, the farming population is sizeable, and the convening power is effective. An alternative choice would be the combination of Kibuti (southwest of Makutano) and another village to the northeast. The area in question includes Mbonga, Katanda, Bulumbwa, Mahamba, Kabenga, Kinona, Kasange, Kumbwi, Moba, Tubundi, Boyovu, Lwangali, and Kafiyi.

BUGANAMWEHU (26) is situated in a fertile maize- and rice-production area which is currently cut off from truck transport because of road and bridge problems. Major self-help efforts are already underway to attack this constraint. The project will rehabilitate this essential part of the pre-Independence road network, providing easy access to the villages of Kayenge, Kalambo, Kobozya, Bitanda, Konona, Kalima, and Nseba. The Farmers' Center at SENGE (27) would serve the area southwest of Makutano not in proximity to other Mambwe centers.

Collectivite Muhona (28-29):

Muhona is the second smallest collectivite in population and land area. Though active in agriculture, it is relatively poor in relation to Munono, N'kuvu, Nyembo, and Mambwe, but it has the distinct advantage of shorter logistics to the railhead at Kongolo. Muhona has fewer palm trees, more limited forest lands, and many hills. Nevertheless, an intensive colonial agricultural survey in 1954 found year-in, year-out cultivation using local practices to produce the following, per hectare: 3,100+ kg. maize (two crops); 18,000 kg. manioc; 650 kg. peanuts; or 750 kg. rice. The several small rivers provide potential for wetland cultivation. Land at the foot of steep hills is exceptionally fertile, and sufficient forest and savannah lands exist for the local farming population (though the survey did not find sufficient extra land to support colonization, i.e., Belgian farmers).

ANNEX J (cont'd)

KAHENGA (28) is the site of very high agricultural production and a medium-large population. It is well situated at a crossroads in the secondary road network, is central to eastern Muhona villages, and remains a sufficient distance from the collectivite capital (Nonge) to avoid governmental intrigue and entanglement. SOGO (29) has a reputation for being a major crop production center in western Muhona, and appears very receptive to the project. Kibeya is equally desirable, though the higher production at Sogo has determined the choice to this point. It may be advisable to place a Farmers' Center to serve northern Muhona also.

Collectivite Yambula (31-32):

Fully half of the total Yambula population resides in the capital at Keba, a commercial center and suburb of Kongolo. As in Muhona, the forest land in Yambula is limited. There are even fewer palm trees and the soils differ from those to the north and east. The short distance to the railhead does give Yambula an advantage in commercialization, though small-bridge problems make a main secondary road from northeast Keba unusable.

The active farming village of MWANAKASONGO (30), close to Keba, provides an appropriate Farmers' Center for populous southeastern Yambula. At YAYI (31) one finds the highest maize producers in the collectivite. Located only 6 km. from the Lualaba River, Yayi produces a wide variety of crops: peanuts, rice, sugar cane, manioc, maize, bananas, beans, pineapples and is known for its energetic and industrious farmers. At the nearby larger village of Mukoko, the people do not appear as receptive to agricultural development ideas and the organizational problems look more difficult. KULULA (32) is a large population center in central Yambula which retains its zest for farming, though there are a dispensary, schools, and a Catholic church there also. Ten male farmers formed a farmers' society two years ago (in close association with the Catholic mission at Sola), elected a President, Vice-President, and Secretary and have purchased a peanut decorticator, maize sheller, donkey and wagon. A second group now plans to form a similar society.

ANNEX J (cont'd)

Collectivite Baluba (33-34):

Baluba lies in the most southernly portion of Zone Kongolo, both east and west of the Lualaba River, with the capital at Kaseya on the west side (and, therefore, not in the project area). Much of this sector is thinly populated, though it still averages higher than Zone Nyunzu. In most of Baluba, farmers especially concentrate on manioc, peanuts and other dry-land crops. The two suggested Farmers' Centers would be located near some of the richest maize-producing lands.

Seven km. from Yambula's Kulula, NGULUBE (33) has virtually the same farming conditions, but has a village-level matrilineal sultani succession and a strong competitiveness with its close neighbor. Administratively, Ngulube is in Baluba, though the schools, dispensary, etc. are in Kulula and the village is on the important secondary road which leads from Kongolo directly to Mambwe, via Yambula, Muhona, and Nyembo. Antagonism to Kulula is such that Ngulube farmers could not use the Farmers' Center there; besides, the number of villages surrounding Ngulube plus the level of current and potential agricultural production justify a separate Farmers Center.

KIBELE (34) is located in the Lufutuka River valley southwest of Mbulula where farmers attain a very high output of maize, though leading merchants think Kibele could produce four times as much with the support of an effective agricultural research/extension service. The big maize buyers nevertheless compete actively for the 200 MT which are currently available in this village. A number of smaller surrounding villages look to Kibele, and its matrilineally-chosen sultani for agricultural as well as political/economic leadership. Currently, maize trucks must go 60 km. out of the way to arrive at Kibele, a problem which will be solved when the project rehabilitates 8 km. of road and small bridges (which also opens up a more efficient route to the whole Kigumba area in southern Nyembo).

ANNEX J (cont'd)

Collectivite North Lukuga (Zone Nyunzu)(35-44):

In the northwest, near the Kongolo border, lies a transition area where Farmers' Center placement can mostly follow the Zone Kongolo pattern of decentralization. The rest of North Lukuga has matrilineal village sultani's who have some voice in traditional agricultural decision-making. Groupement-level sultani's also are chosen by a matrilineal succession. So, there appear fewer legitimacy disputes than where a matrilineal sultani is chosen to rule an area of acephalous patrines. Also, the sparse population is concentrated in a few villages, especially those of the groupement sultani. These factors can help justify the tentatively placement of Farmers' Centers in the larger sultani's villages here.

North Lukuga has several distinguishing features. Commercialization of agricultural products is a difficult task, characterized by isolation and, at best, late buying by merchants. As a result, large numbers of people have resettled in South Lukuga in the last 15 years. Yet apparently North Lukuga farmers formerly produced more than their southern neighbors, furnishing Nyunzu town with a wide range of harvest products. Local farmers and Nyunzu merchants predict a large back-migration and increased commercial activities starting in mid-1977 with the completion of the Kabeya-Mayi bridge. Thus, five as-yet-undesignated Farmers' Centers have been reserved for North Lukuga, pending further knowledge of resettlement patterns and special new-migrant needs.

Bena Kahela Groupement (35-36):

Bena Kahela Groupement lies in the northwest transition area in North Lukuga in terms of commercial activities and cropping systems (oil palms, rice, two maize crops per year, use of fallow land, savannah maize, etc.) as well as in terms of social organization for agricultural decision-making. At the groupement level the sultaniship has a matrilineal succession. However, patrines are strong, especially related to land use and other important agricultural decisions. The population can be expected to grow after the completion of the Kabeya-Mayi bridge. Many Bena Kahela residents have settled in South Lukuga during the period when

J-15

ANNEX J (cont'd)

commercialization of agricultural production has been most difficult. The actual population, nevertheless, remains more dense than is indicated by the 1970 census, probably intermediate between Zone Nyunzu average and the Collectivite Nyumbo (Kongolo) average.

Initially, Farmers' Centers have been placed in a decentralized manner consistent with the patrilineal social sub-strata. The groupement capital at Lengwe has also been eschewed because of the large military camp there. Specifically, KABANGO NYAMA (35) has been chosen because of its medium-sized population and because of its convenient location in the more southern half of the groupement. TAMBWE (36) is in a known agricultural production area; the population is sufficiently high; and it is ideally placed to serve the northern part of the groupement.

Baseba Groupement (37-41):

To date, the socio-cultural and agronomic information on much of Zone Nyunzu is less complete than Zone Kongolo and northwest transition area data. The choices have been made on the best available knowledge, and additional checking in the field will undoubtedly be required.

Baseba Groupement is the most populous collectivite in North Lukuga and extends over a wide area. Presumably, Baseba will absorb the initial waves of the expected back-migration after the Kabeya-Mayi bridge opens in mid-1977. Undoubtedly, more Farmers' Centers will be needed as the configurations of this population shift become more evident.

KABEYA-MAYI (37) apparently serves a fairly large farming hinterland fanning out from the bridge area. The population is moderately high and can be expected to grow. One potentially detracting factor could be its role as gateway to the North Lukuga area. It is possible that there will be too many other non-agricultural activities in the next few years for any effective agricultural extension progress to be made. This is a cautionary note, but does not seem enough of a problem to disqualify the village at this time. The possibilities for wetland cultivation seem abundant along the shores of the Lukuga River, though hippopotamuses this year destroyed the wetland rice planted near Kabeya-Mayi.

ANNEX J (cont'd)

PENDE (38) is a major administrative center with both a local sultani and the "Chef de Secteur" (now collectivite) for North Lukuga. This latter is a potential liability, but the former is important for the surrounding villages and the associated farms. Another factor (plus or minus): several shops are located here. Between Pende and Kabeya-Mayi farmers follow the two-residence South Lukuga farming settlement pattern. Thus, for six months out of the year they will be most effectively contacted at the "less permanent" farm villages near the maize fields in the forest. Northwest of Pende, farmers tend to live more in the roadside villages year round, so the approach of the research/extension program must be flexible.

KITENGETENGE (39) is the capital of the Baseba Groupement. Farmers look to Kitengetenge within a large radius. It is known as not only an administrative center but also as an area of high agricultural production for truck-transported commerce: maize, manioc, and cotton. It is situated at a key fork in the road heading southwest from the Kongolo-Nyunzu primary road. The right fork leads toward Mbeya; the other toward Muguya and Kanunu, making Kitengetenge a transportation and information crossroads.

KABEYA MULUNGA (40) is strategically placed on the road heading northeast from Kabeya-Mayi. Thus, it can effectively serve the surrounding area, certain to absorb many of the back-migrants when the Kabeya-Mayi bridge is finished. The population of Kabeya Mulunga is moderately large.

KAHINDA (41), located in the northwest transition area, has an efficient cropping system, much like those found in Zone Kongolo. It is a large maize producer at the current time, with potential for expanded production and apparently great receptivity to the introduction of improved techniques. This area could also be a source of agricultural insights into the most efficacious local cropping practices. Kahinda is so well known for its agricultural output that both large Kongolo merchants come 110 km. to start their buying season here. The village sultaniship is matrilineal; careful attention should be given to patrilineal affiliations also.

ANNEX J (cont'd)

Mbeya Groupement (42):

Mbeya is a small groupement on the fringe of the northwest transition area, which is currently plagued with commercialization problems. The logistics are long, but the potential is good and the farmers are eager for help. The only logical choice for a Farmers' Center appears to be the capital itself, MBEYA (42). The population in Mbeya village is large enough to support a Farmers' Center but this is probably not true of any other village in the groupement. Bananas exist in abundant supply, but there is no efficient means for sending them to far-away markets.

Kanunu Groupement (43-44):

Kanunu is extremely isolated from truck transport with the exception of the ONAFITEX trucks which come to buy cotton. Kanunu farmers generally take their foodstuffs across the Lukuga River to the train stop called "475." There is a sizeable Pygmy population in Kanunu. Apparently, the most effective agricultural research/extension approach would be to designate one Farmers' Center to work with the Baluba population (KANUNU-44) and another Farmers' Center to work with the Pygmy farmers (KANUNU, PYGMIES-43) in the area. (N.B.: additional, and sensitive, research should be done to determine if in fact the Pygmy farmer situation warrants this level of assistance at this time).

Collectivite South Lukuga (Zone Nyunzu)(45-56):

Care has been taken to adequately distribute Farmers' Centers at key locations throughout South Lukuga. It is important at this time to use restraint because of the prediction that a large migration back to North Lukuga will occur as soon as the Kabeya-Mayi bridge is opened. Thus, a part of the Bayoro population which has been inflating during the last 15 years of North Lukuga difficulties may be greatly reduced in the next few years. The project should carefully and sensitively monitor this situation.

The Bayoro Groupement Farmers' Centers are all located at year-round "official" villages, as are all of the current South Lukuga choices. Certainly, a great

ANNEX J (cont'd)

deal must be done at the less permanent farm villages throughout South Lukuga, but at this time it is difficult to know where to place facilities because the farm villages move in a relatively short time. Perhaps "less permanent" villages could have "less permanent" facilities.

KATANGA (51) and MULEYA (52) serve the Luizi area (60 km. west of Nyunzu town) which currently produces manioc and peanuts, but which has lowland river valley farming potential also. They are conveniently located near the Luizi rail stop and thus have an excellent crop transport situation. (It is possible that one center will suffice).

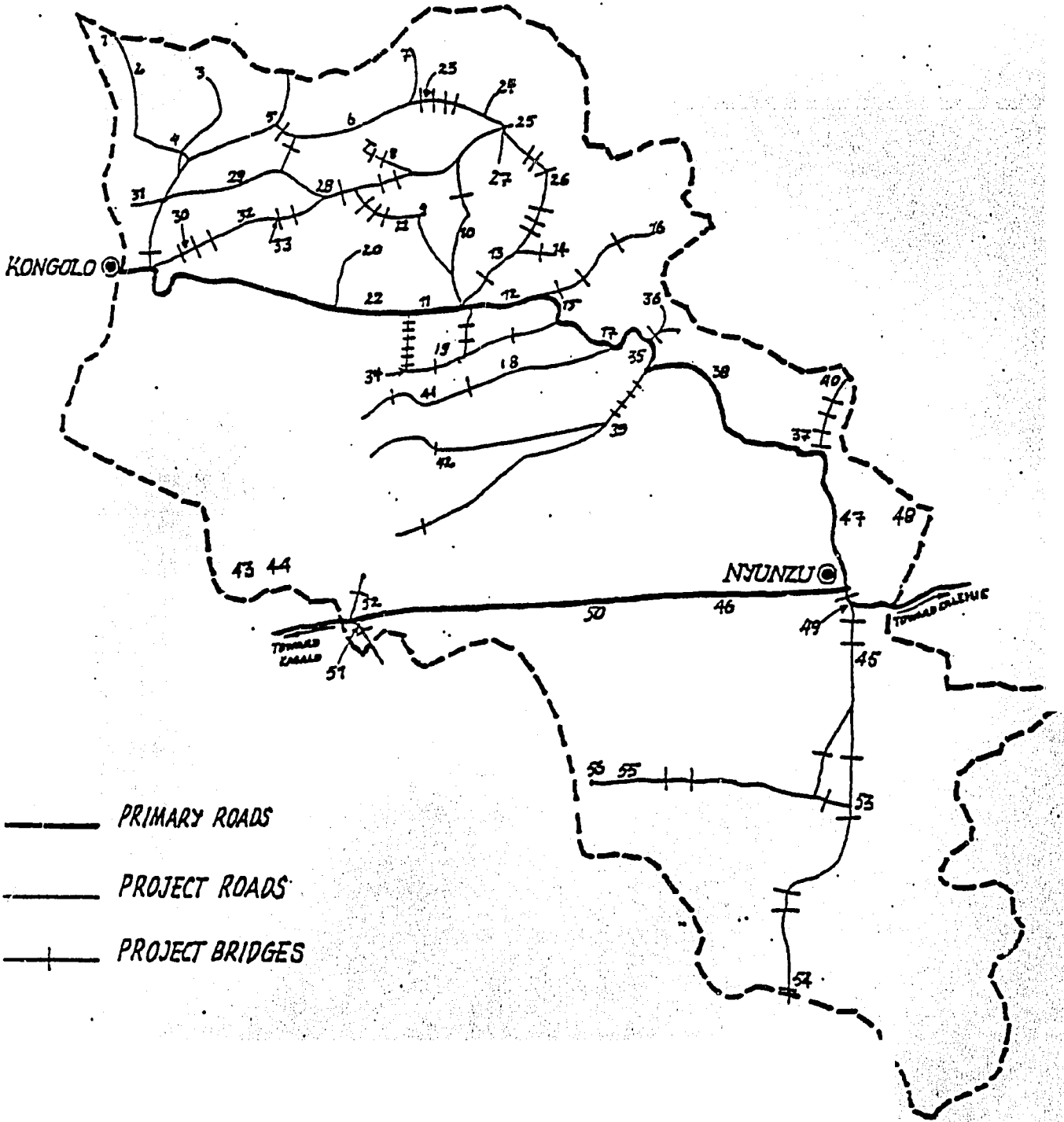
LUELA (46) and MULONGO (50) are situated in a fertile maize belt which follows the Nyunzu-Kabalo primary road and, simultaneously, the railroad. Mulongo is the Bayoro Groupement capital. Near Luela are the large farms of the Commissaire de Zone. Southwest of Nyunzu town, farmers range far into Zone Kalemie, following the forest in their maize cash-cropping activities. They return to MUKENZA (49) for the six months when people live in their official roadside villages. Thus, extension efforts can be directed most efficiently to this population during the October-April period, with resulting widespread effects in the high production maize area in Zone Kalemie. However, these activities need not, therefore, involve the cumbersome administrative arrangements in a third zone. MUHEMPA (48) is ideally placed in an area northeast of Nyunzu town which is densely settled during the maize growing season, and thus can be used as one key research/extension base of operations. Its population is moderately large year round. KALUNDU (47), north of Nyunzu on the primary road to Kabeya-Mayi houses a moderately large number of farmers and would complement Muhempa in this fairly densely settled area.

In the southern part of South Lukuga, MOKIMBO (53) and MUHUYA (45) are centrally placed capitals of groupements by the same names. Low population density does not justify more than one Farmers' Center in each groupement at this time, but for reasons of effective research/extension activities and spread effect it is important to have a Center in each place. Currently, Muhuya lies within the range of effective commercial activities while Mokimbo has much slower maize crop pick-up.

J-5

ROAD AND BRIDGE NETWORK

WITH FARMERS' CENTERS INDICATED



4/1

ANNEX J (cont'd)

21-man patrilineal unit where some of the discussions were held, currently weigh and sell maize in one place and make middle-range agricultural decisions together. In other words, natural organizational units below the Farmers' Center level are identifiable and ready to participate fully in extension/research/animation efforts. Mugizha influence apparently extends west to the Munono border and as far east as northern Collectivite Nyembo.

SOLA (4) is well known as an experimental center in agriculture. The Catholic Mission takes a leading role in demonstrating new practices of growing the full range of usual crops, in addition to planting large fields of soybeans and irrigated rice. The local area is very densely populated. Farmers utilize the full range of practices in the Kongolo Zone cropping systems repertoire, including especially efficient use of fallow land, whether in savannah or among trimmed oil palms. Sola is definitely preferable to Kilubi, where governmental interference would be a problem. Sola was an alternate possibility in the choice of Primary Research and Training Center, and is a possible site for a larger-area Farmers' Center in later phases of the project.

KATEBA (5) would serve eastern N'kuvu villages, including those south of the road to Makutano. The area has been responsive to the early animation efforts, grows a wide range of crops, and currently produces much maize.

The high population density in Collectivite N'kuvu warrants the eventual establishment of more than three Farmers' Centers there. Kankunde, between Sola and Mugizha, historically has been an important place and continues so today, with schools, Protestant and Catholic churches, and a large population. The extent of involvement in farming activities is not well known at this time. Other possibilities can be examined as the project continues.

Collectivite Nyembo (6-22):

Nyembo has a higher total population than any other collectivite in the project area, including North Lukuga and South Lukuga, both of which have a much larger land surface. Nyembo itself is the second most extensive collectivite in Zone Kongolo behind the Collectivite Baluba in terms of square kilometers. The average population density is lower than N'kuvu and Munono, but certain areas have an extremely dense population. Nyembo farmers became acquainted with tractor

WFB

ANNEX J (cont'd)

farming in the 1950's under the Paysannat system. At that time they could hire the assistance of a tractor for their savannah fields from Mbulula, which was the Paysannat headquarters for a wide region, and they learned cultivation techniques to complement the machine's work. Farmers use the full range of Zone Kongolo cropping systems, producing much maize, palm oil, and rice. Farmers' Centers have been recommended for all major actual and potential production areas. Farmers' Center locations take account of the important political groupings, with an eye toward wise choices in terms of patriline and (in the south) the ruling matriline. The choice of specific villages is also based on locational centrality, agricultural leadership reputation, and apparent readiness for the project at this time.

A Farmers' Center located at MUGILA (6) would be intended to serve the large, fertile area in north central Nyembo between the Zolwa and Gelwe Rivers. Mugila is on the main road between Sola and Makutano, so people have to walk a few kilometers to their newer forest fields. It is possible that a village farther in, off the main road, would be more appropriate. Mugila farmers gave the PP field team a warm reception, and were very open to both discussion and project possibilities. KILENGE (8) is an important center for middle-north Nyembo (between the Luvilu and Zolwa Rivers) complementary to Mugila; two centers are needed for this large region.

KILUZI (7) would serve from its central location the highly-productive north Nyembo area (north of the Sola - Makutano road between the Gelwe and Luika Rivers). There remains some question on actual village choice; more than one Farmers' Center may be appropriate for north Nyembo. Kiluzi, Buyovu, and Zinga (in that order) all produce much maize. Ndubula, close to Kiluzi, provides another alternative. North Nyembo forms a politically distinct agricultural area with high actual and potential production, though currently constrained by evacuation problems for maize, rice and palm oil. There was an enthusiastic response to PP team animation, and self-help efforts are already evident.

A large farm population lives in KAYANZA (9) (and in nearby Kalwamba, Lwenye and Kyenge). Though the governmental center was placed in Mbulula, Kayanza historically has competed in the political sphere, even providing collectivite-level Sultani's in the era of stataal administrative activities. A Farmers' Center in Kayanza would help balance (politically speaking) the Mbulula Research and Training Center choice. The church, school, and commercial interests in Kayanza do not have a reputation for obstruction of farmers' activities. Kayanza has an effective convening power for farmers in a wide radius. It has demonstrated vigorous self-help efforts recent-

T-8

ANNEX J (cont'd)

ly in the truly voluntary construction of public buildings, and can be expected to respond quite positively to the project. Sensitivity must be used to obtain the most effectively representative balance on the Farmers' Council and in research/extension participation: several strong patrilineal groupings reside here, while the overall sultaniship has a matrilineal succession.

KANGUNGA (10), on the Makutano - Mbulula main road, has a medium-large population base. With four or five major patrilineal organizations in an acephalous manner, the choice of Farmers' Center site must be done carefully, perhaps following the pattern for school-building: all come to work on the structure, which stands on neutral ground. Later, no one can say it is their private Farmers' Center. (This is mentioned as an example of the sensitivity which must be used throughout the project area.) Kangunga is recognized as a central meeting place for the surrounding villages, such as Kahutu, Kahingwe, Ilunga Mwenge/Munangananga, Buzila Koni and Lubovia, which, in aggregate, have a high agricultural production.

KAYUNGU (11) is one of the Farmers' Centers ringing Mbulula, placed in a decentralized manner in this area of high farming-population density. Nearby are the villages of Maloba, Kamanzi, Mombwe, Kateba, Ngole, and Kiyamba. Kayungu itself has a year-round local population, as well as many farmers coming from Mbulula for several days or several weeks at their farms. School children attend school in Mbulula. The Collectivite Nyembo Twite (assistant Sultani) traditionally is chosen from this village. It is on the main road to Kongolo, 5 kms. west of Mbulula. Five kms. east of Mbulula on the road to Nyunzu, NDUBI (12) is centrally located in a densely-populated farming area. Minanga, Kichoga, Muhaba, Kavungu, Muzhyunda-Chemena are the closer villages. In the choice of this particular village, care has been taken to maintain patriline balance, to avoid potential governmental entanglements, and to serve the large farming population while not overlapping with Kabenga-Sayi (5 kms. further east).

KIBAMBI (13) would serve a large population in an agricultural area which has high palm oil and maize production. It is located on the more-eastern Mbulula-Makutano road which leads through the rich actual and potential maize- and rice-production areas that a small amount of bridge building is scheduled to reopen. Kibambi would be the meeting place for farmers from Kundu, Lugoma, Kisompa, Kaponya, Pangamulambo, Muli, Luhonga, and Kanyono. Local farmers sometimes call KAHESHA (14) the "maize capital" as a recognition of the high production of its hard-working farmers who live at the

J 1

ANNEX J (cont'd)

head of a long fertile river valley plain. Kahesha is well placed to serve other similarly-productive surrounding villages, such as Kiboba and Musahu-Gubi.

In eastern Nyembo, other appropriate Farmers' Center locations can be distinguished. KABENGA-SAYI (15) lies at the junction of an important secondary road and the Kongolo-Nyunzu primary road. This is the heart of a major agricultural population concentration, including such other villages as Kibeya, Kabulimbu, Kabyonga, Finini, and Kasenga-Luhazi. MUTOMBO (16), at the other end of the road leading north from Kabenga-Sayi and situated in a fertile valley, is intended to serve villages such as Mpala, Mbuli, Katambwe, Muligi, Kahenye, and Kabula. SONGA (17) rests in an important farming area and is more known for its agriculture than is the nearby Protestant Church center (with dispensary) at Bigobo. Farmers in other villages close by, including Kaupila, Luhazi, Pemba, Katakiki, and Kanunu, would also make use of this Farmers' Center. MAHUNDU (18), with a matrilineal sultani succession and strong patrilineal lines also is situated in a very rich farming region. Farmers in the villages of Keno, Biyombo, Lubenga, Bungu, Kayamba and Lumbusimuguba would readily convene in Mahundu.

KIGUMBA (19) is located in a fertile farming valley 4 kms. south of the buildings to be renovated for the Primary Research and Training Center near Mbulula. Farmers till forest (including fallow oil-palm forest), river bottom and savannah lands, utilizing the full range of known local agricultural technologies. Kigumba is well placed to involve the active, energetic farming population of Nyanga, Luhanga, Sibeya, Kohongo, Lubundi, Kilumba, and Lunga, as well as the many Mbulula residents who have some of their farms nearby. The area's high actual and potential production is matched by the enthusiasm and receptiveness of the farmers to the means to increase production envisaged by the project. Several of the Mbulula farmers' organization leaders cultivate land here. Most farmers have had experience with mechanization, agronomic experimentation, introduction of new crops and varieties, insecticides, and the development of improved practices. Farmers in a very wide radius, including much of the project area, look to this general locality for agricultural innovation and leadership.

The Honga sous-collectivite (with capital at ILUNGA (20) close to Luhembwe, Buzilanzovu, and Lusambilo) is a separate political unit historically, though now incorporated into Nyembo. Local historians recite the praises of their unconquerability, exemplified by their definitive defeat of the

4/6

ANNEX J (cont'd)

Arabs in 1877. Two centers, one on each side of a difficultly-traversed set of rivers, can adequately serve the farm communities, some of which are more known for fishing than for farming. North of the rivers, KIOMBO (21) lies in the major cropping region of Honga. Farmers here display great energy and enthusiasm, and are characterized for it throughout Nyembo. Farmers from Zimba, Mazyombo, Kihonga, and Kiyungwe could congregate at the Farmers' Center in Kiombo.

MUGOMBA (22), at the junction of a secondary road and the Mbulula - Kongolo primary road, is well placed to serve the agricultural production areas of Mwanangoi, Kungulu, and the villages associated with Kasanga.

Collectivite Mambwe (23-27):

Mambwe produces large amounts of rice and maize, as well as peanuts, palm oil, bananas and other crops. Currently, this area suffers from poor access. Project road and bridge work will again open up this well-known agricultural area for adequately competitive commercial activities. The Sultani's patriline (Bazilakoni) has many members who have been appointed kapita of Mambwe villages, as well as other governmental positions. This patriline is indeed the largest in Mambwe and continues its preeminence since the sultaniship succession is patrilineal (the Sultani is always from the Bazilakoni). However, other patrilineal groups also have strength in the Mambwe farming population (Bazilanyoka, Baganakitungwa, and Baganakilonda, for example). With proper sensitivity and respect for these local subtleties, such patrilineal groupings will work with the project. In fact, they provide organizational strengths which will be a decided asset in achieving agricultural development goals. To achieve an even better overall patrilineal balance in Mambwe Farmers' Centers choices, additional investigation should be done to aid the careful selection of one or two more potential Centers.

BUGANALWAMBA (23) is on the main road from N'kuvu to Makutano and is central to the large farming population in Yenga, Luhundu, Zola, Kashenga and more northern villages near Kiya (an alternative choice) such as Kisiki, Milengo, Mulilo, Kambanga and Katanda ka Mulenda Ngombe. The fertile soils would sustain much increased production if transport problems could be solved. BUGANAPIANA (24) or Kasawa could support a Farmers' Center for a large number of villages such as Kitende, Kibumbu, Kimbazi, Kavuma, Kahenga, Milenge, Kisiki. It is important to have a Center in this area. Though Buganapiana appears to be better located, there are currently no compelling

ANNEX I (cont'd)

The Marketing Division is being reorganized with respect to the introduction of stock control and the costing of market operations. Non-profitable market operations are being eliminated and certain agencies in the Kivu Region have been placed on a care-and-maintenance basis. A Transport Division will shortly be set up to control the deployment and maintenance of the office's transport fleet with a book value in excess of Z 0.50 million.

In 1975, ONACER marketed 7,200 tons of maize and 1,500 tons of other agricultural products, including rice, paddy, manioc, beans, groundnuts and vegetables. Of the maize marketed, 876 tons were purchased in Nyunzu and 529 tons in Kongolo.

ONACER's 1976 buying provisions were for 15,000 tons of maize (of which 5,000 tons were from North Shaba), and 9,000 tons of paddy. These provisions cannot, however, be met for the reasons mentioned below, and it is anticipated that at the end of the year only some 5,000 tons of maize and paddy will have been marketed, of which 1,000 tons from Nyunzu. (As of 7/23/76 ONACER had purchased 400 tons of maize in Nyunzu.)

Buying is down this year due to the fact that the commercial banks which supply short-term credit either do not have the finances (Banque of Kinshasa) or refuse to accord further credit (Banque Commerciale Zairoise) to the office. The office owes the former approximately Z120,000 and the latter Z500,000. This situation of indebtedness is due to the immobilization of bank loan funds in 1974 and 1975 in trucks, offices, equipment, non-repayment of loans from milling companies, and bad debts with traders. The original bank loans contracted with ONACER were guaranteed by the Minister of Finance, but the latter will not repay the outstanding amounts.

The buying funds request for the 1976 provisions totaling Z2 million was guaranteed by the Ministry of Finance, but the banks now refuse to accept this guarantee as collateral.

In review, therefore, ONACER's brief marketing history went wrong through inexperience of financial and marketing management and wrong decision-making. In the past it had financing but no trucks or sacks; now it has trucks and sacks but no financing. In creating a marketing organization overnight with no capital, no warehouses, no trucks, no sacks, no scales, no experience and no policy, too much was expected by the government and little has been accomplished in assisting with the establishment of a permanent marketing infrastructure.

ANNEX I (cont'd)

ONACER, however, is now a fait accompli with a certain experience in marketing and possessing more trucks, sacks, and potential than any other single organization or private merchant in Zaire. The North Shaba project can benefit from association with the office's overall goals of establishing and participating in orderly marketing, and developing workable price policies.

C. ADEQUACY OF MARKETING MARGINS

On March 12, the zaire was readjusted to the value of Special Drawing Rights. Subsequently the cost of imported materials or finished goods soared and still continues upward. The cost of trucks, fuel, imported jute, all essential items necessary to market grain, are still rising.

Adjustments in the price mechanism to compensate for increased marketing costs or diminishing producer returns have created an avaricious and unstable market, especially as these changes have been made in the midst of a buying campaign.

Demand is greater than supply, and parallel market costings, rather than official prices, have to be taken into account when calculating some of the elements making up market margins. This is particularly the case with diesel fuel, selling at Z1/liter as against the official price of K16/liter.

Margins vary from one merchant to another in the same zone, between merchants in different zones, and between the private sector and ONACER. Costs increase during the buying season as merchants go further out to purchase. Grain is, therefore, cheaper at the start of the season than it is towards the end. This is more so in the present inflationist climate. Supplementary activities, such as trading and milling, also substantially affect the profitability of a merchant's grain buying. Traders in Nyunzu are seasonal and go back to Kalemie at the end of the buying season. In Kongolo the two traders are present all year round, one of them operating a thriving milling concern. Merchants in Nyunzu furnished cost estimates for buying and delivering grain to MINOKA. A composite of these estimates would give the following approximate breakdown: (as of August, 1976)

<u>ITEM</u>	<u>Zaires/MT</u>
Purchase 1,000 kg. maize	Z 75.0
Trucking Costs (Z 7,000 depreciation	

ANNEX I (cont'd)

(Z 3,000 maintenance Z 5,280 fuel 150 sacks, 120 kms/day, 120 days, Z 15,280/truck, 18,000 sacks, K21/MT/km.)	8.50
Truck Labor	.50
Kapita	1.00
Railyard Loading	.20
Empty Sacks (including loss)	8.00
Maize loss enroute to mill	5.00
Transit Cost	<u>9.92</u>
<u>TOTAL:</u>	Z 108.12
<u>Sale Price:</u>	115.00
<u>Profit:</u>	6.88

The merchants may well be exaggerating some of their costs and in some cases may be paying the farmers less than the official price. From observations and intensive interviews with merchants and farmers, it can be estimated that actual profit lies somewhere between 10 and 15Z/MT for the month of August. The official price structure was disfavorable to the merchants during the month of June, but favorable during July. The August level should be indicative of the average for the 1976 maize marketing campaign.

As far as capital investment requirements are concerned, the rising costs of inputs is likely to restrain the smaller merchant to the advantage of the larger operator.

Transport is the most important and most expensive item in budgeting a marketing campaign. A new Bedford truck (6T) from the G.M. distributor in Kinshasa now costs Z 16,000 after the bodywork has been added and a Mercedes (8T) costs Z 24,000. Tires cost between Z 160-180 if they can be found and they are of poor quality. ONACER reports that new Bedford trucks with Firestone tires from the G.M. factory are immobilized after 2 months' service in Bandundu as the tires are shredded.

I-11

ANNEX I (cont'd)

Spare parts are in scarce supply and parts prices have jumped 500-1000% in the project area over the last two years. Many of the trucks currently in operation are running with makeshift parts and few of these trucks will be in working order next year as parts too difficult to produce locally break down. Several of the merchants said they have cash ready to buy new trucks, but they have not been able to find any for sale after looking in many parts of the country. The larger merchants should be able to obtain some spare parts and some new trucks before the next marketing campaign but will probably be operating at a capacity below the 1976 level (which is lower than the 1975 level due to the current scarcity of trucks and spare parts).

The transport cost for collecting grain is the principal variable factor in the marketing margin and the limiting factor which determines how far the trader will go to buy grain. A national producer price for maize is counterproductive to maximizing collection, favoring nearby producers to the disadvantage of those in remote areas.

Based on a transport cost of K16/Ton/km., a variable producer price could be calculated as follows for 50 km. steps:

<u>Distance for Collection</u>	<u>Producer Price</u>
0 - 50 km.	Z 120
51 - 100 "	112
101 - 150 "	104
over 150 "	88

This type of price structure was in operation prior to 1973 and allegedly was abused by the private traders who always paid the lowest price possible. The existence of ONACER's producer-price stabilization policy should, however, now take care of such an objection.

Sacks for grain are rising steadily in price and MINOKA's start-of-season price of K30 has now risen to K50. MINOKA's current Rhodesian imports are costing Z1 for the sack as opposed to K60 earlier this year, and sack prices will certainly rise next year.

TISSAKIN, the Kinshasa sack manufacturer, has raised prices of 70-kg. jute sacks from K45 to K70 in 10 months and expects to raise them still further to Z1 or Z1.20 before the end of the year.

Yell

ANNEX I (cont'd).

During 1976 a merchant's likely minimum capital requirement in Nyunzu for marketing 5,000 tons of maize would probably be between Z 160,000 and Z 180,000, supposing that existing trucks would be used.

The present profit on this at Z12.50/ton would be Z62.50, or a return of 35-39% on capital outlay. This may be too low to compete with other investment opportunities. The high inflation rate and unusual market conditions existent now in Zaire make investments in markets not dominated by official price restrictions more lucrative than the maize market. A comparable profit for ONACER on a similar capital outlay would have been Z32.50 or 18% return on capital.

A glance at the following table will show the hectic price movements in the local maize market in the last year. The mill prices and flour prices apply to MINOKA only as mills and producers in other Regions are obliged to follow official prices:

<u>Year</u>	<u>Producer Price</u>	<u>Mill Price</u>	<u>% Difference</u>	<u>Flour Price</u>	<u>% Differ.</u>
1975	K 40	K 63	57.5%	K80.80	28.2%
1976	K 75 <u>1/</u>	105 <u>2/</u>	40.0	93.33	-11.0
1976	75	115 <u>3/</u>	53.3	93.33	-18.8
1976	75	115	53.3	150.00 <u>4/</u>	30.40

- 1/ July 31st
 2/ January 1st
 3/ July 7th
 4/ July 27th

D. ADEQUACY OF STORAGE FACILITIES

Storage capacity in the project area is non-existent or very limited. No SNCZ storage facilities exist at the rail-heads. At Nyunzu and Kongolo ONAFITEX has storage capacity in the order of 4,000 tons at each location. These facilities are presently at the disposition of ONACER, but as ONAFITEX has an expansionist program for cotton in North Shaba, their future use for the cereals office is largely discounted.

As previously stated, the only substantial private trader storage is in Kongolo, where one of the two licensed traders has capacity of 400 tons built and is previewing the construction of another 200 tons.

ANNEX I (cont'd)

The mill storage capacity in South Shaba totals some 40,000 tons according to the following distribution:

	<u>Mill</u>	<u>Capacity</u>
Lubumbashi	MINOKA	13,000
	CEROTEX	2,000
	TARICA	6,000
	MINDILOLO	1,000
Likasi	MINOKA	13,000
Kolwezi	MINOKA	5,000
		<u>40,000 tons</u>

MINOKA's milling forecasts for 1980 preview 190,000 tons of maize as opposed to the 1975 figure of 131,000 tons, and they have indicated that additional storage capacity will probably be put up to accommodate a reserve of some 2 months' milling capacity (25-30,000 tons).

E. AVAILABILITY OF CREDIT FOR MARKETING INPUTS

The present economic situation in Zaire has significantly reduced the banks' capabilities for lending money for investment or short-term credit. The Bank of Kinshasa in Lubumbashi is presently unable to lend. If they could, however, they would only lend to the larger grain merchants with MINOKA contracts. The interest rate would be between 6-12% depending on the risk involved and the repayment time of 10 months.

ONACER is presently unable to obtain short-term credit for buying funds in Kinshasa, even though repayment has been guaranteed by the Minister of Finance.

Even if credit is available, it is certain that small merchants would have little chance of access to this, so the larger merchants would always profit if the economic situation changes, which is highly unlikely for some years to come.

GECAMINES facilitates the payment of grain purchases by advancing 65% of the mill price at the point of embarkment on SNCZ wagons. This is equivalent to the maize producer price, and means that the commercants actual expenditure after the first delivery is equal to his operating costs. GECAMINES is not prepared to advance more than this.

I 15

ANNEX I (cont'd)

ONACER gave credit to the principal milling companies in Kananga in 1974 and have regretted it since, as the recovery rate has been very low. ONACER now extends no credit to the commercial market.

The creation of SOFIDAG may enable credit facilities to be extended to merchants, but as this organization is relatively new, its scope of activity in this sphere has still to be implemented.

Lack of credit is a distinct drawback to marketing maize in Zaire, but the creation of such facilities in the project design requires very careful examination if severe losses are to be avoided.

It should be noted also that no banking facilities exist in Nyunzu and Kongolo, and that traders must either fly or take the train to Kalemie to renew their funds. The establishment of local banking facilities must be guaranteed by the GOZ.

F. POTENTIAL AND TIMING FOR MAIZE MARKETING COOPERATIVES

The producer and marketing cooperative APPA (located to the east of Nyunzu) and COVAPA, a marketing cooperative in Nyunzu, are the first voluntary beginnings of this type of installation in the project area. APPA has 14 farmer members, a bank account in Kalemie (BCZ), a Secretary/Accountant, and has been in existence for 3 years. Last year farmer members marketed 211 tons of maize to MINOKA. This year they hope to increase this, and 88 tons has already been shipped to MINOKA. One of their main problems is in renting trucks, the cooperative not owning any of its own.

COVAPA is a marketing cooperative founded in 1973 by 10 members taking out a Z50 share. The marketing figures quoted by COVAPA are as follows:

1973	70 tons
1974	4,000 tons
1975	855 tons
1976	3,000 - 4,000 tons (estimate)

I 13

ANNEX I (cont'd)

One of the main problems encountered by this cooperative is the financing of purchases. In the first year of activity members had to provide contributions to keep purchases going, and in the second year farmers' grain was bought on credit with payment being made (with interest) when COVAPA had been paid by MINOKA. At the start of the season, COVAPA had Z 18,000 in the bank for maize, manioc and groundnut purchases. They own three trucks and one of the members owns a maize mill.

Both of these cooperatives are functioning and are obviously self-motivated, and not created by government decree.

The project would do well to encourage the cooperative ideal, so long as it is voluntary, as the spread of benefits to the farming community is greatest.

425

ANNEX J

FARMER CENTERS

ANNEX J

FARMER CENTERS

BACKGROUND INFORMATION ON SELECTION OF FARMERS' CENTERS

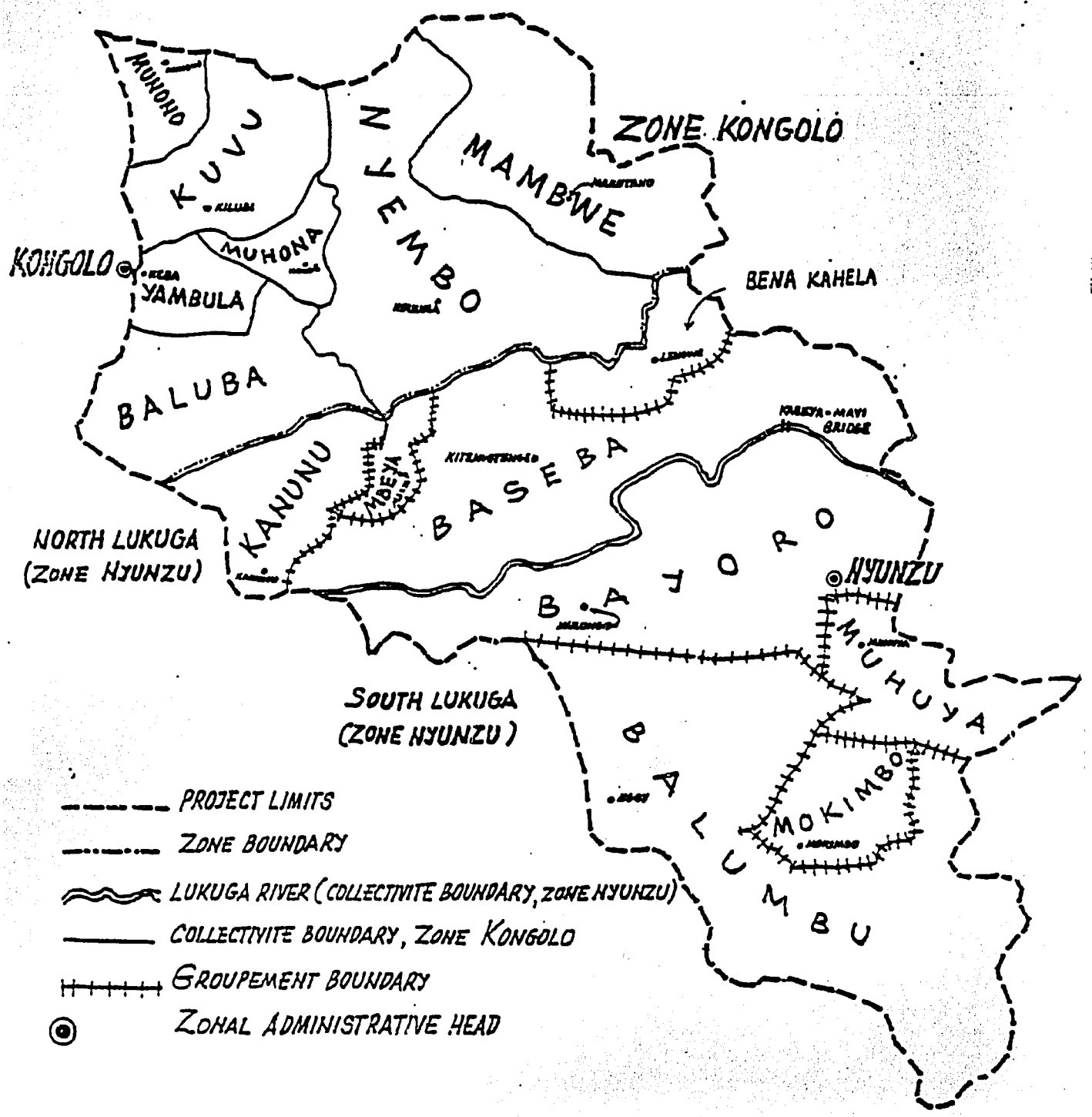
The estimated 75 Farmers' Centers will be located in areas which make sense in terms of existent local socio-political groupings and their principles of organization. Other important criteria in selecting the Farmers' Centers include: current agricultural production, potential agricultural production of the surrounding area; centrality or accessibility for the local population; relationship to the central road network; equity for minority group farmers; existing self-help efforts and farmers' pre-cooperative groups; local reputation for leadership and innovation in agriculture; lack of potentially-conflicting institutions (certain educational, commercial, religious or governmental activities); evidence of responsiveness to and readiness for the project; geographical distribution.

Using the knowledge of two American anthropologists who have worked in the project area for two years, interviews with local officials, merchants, church mission staff, and discussions with farmers in over 100 villages throughout the project area, 56 of the Farmers' Centers have been provisionally identified. Of the remaining 19 centers, at least three (3) will be established in Pygmy farming villages in Nyunzu and at least five (5) centers will be needed in North Lukuga, with the immigration from South Lukuga expected upon the completion of the Kabeya-Mayi bridge. The remaining 11 centers are unspecified. Project planners anticipate that some additional centers will be created as other appropriate places become known. Also, some center designations will be changed if appropriate initiative from the villages selected (and the surrounding area) is not shown. However, the centers are allocated according to the socio-political, as well as agricultural, terrain and in most cases will be effectively implemented in the designated villages.

ZONE KONGOLO:

Zone Kongolo Farmers' Center placement takes particular account of the area's acephalous patrilineal organization, as well as the interface between social/cultural groupings and stata administrative/political structure (see Project Area Description, Part II D. 8 & 9). Thus, special care has been given to decentralizing the Farmers' Center distribution whenever feasible. This draws on the non-centralized strengths of local agricultural decision-making and minimizes potential entanglements from the governmental, commercial, and institutionalized religious sectors.

ADMINISTRATION



----- PROJECT LIMITS

----- ZONE BOUNDARY

~~~~~ LUKUGA RIVER (COLLECTIVITE BOUNDARY, ZONE HYUNZU)

----- COLLECTIVITE BOUNDARY, ZONE KONGOLO

+++++ GROUPEMENT BOUNDARY

⊙ ZONAL ADMINISTRATIVE HEAD



7 3  
ANNEX J (cont'd)

-- Collectivite Munono:

Two centers are needed to serve the socio-political groupings in Munono. These should be sufficient for the very densely settled 5,000 people in the area, with no need for a third center at this time. A broad range of crops are grown in savannah, forest, and lowland river areas, with possibilities for wetland rice production. A spread effect for new information could follow marriage and trade patterns into Kivu. The collectivite administration, schools, and dispensary are in Munono village, which could be ensnaring to any Farmers' Center placed there. Also, the Sultani currently has limited convening power over the two historically and politically separate farming groups. Secondary road improvements are crucial to revitalizing the whole area.

(NOTE: The provisionally identified Farmers' Centers which appear below will be initially in solid caps with a number which corresponds to their location on the map of proposed centers.)

KABALA (1) has convening power for all Bena Muhona wa Seya and Wagenia (the latter mostly fish for a living). A big meeting was called quickly, and the PP team encountered the enthusiastic response which is typical for this group. TIMPA (2) has convening power for the other part of Munono (Bena Kayungu), and is the former site of the collectivite capital. Timpa appears eager to work with the project. There is a large current maize production, and they have demonstrated receptiveness to agricultural experimentation (from Sola Mission).

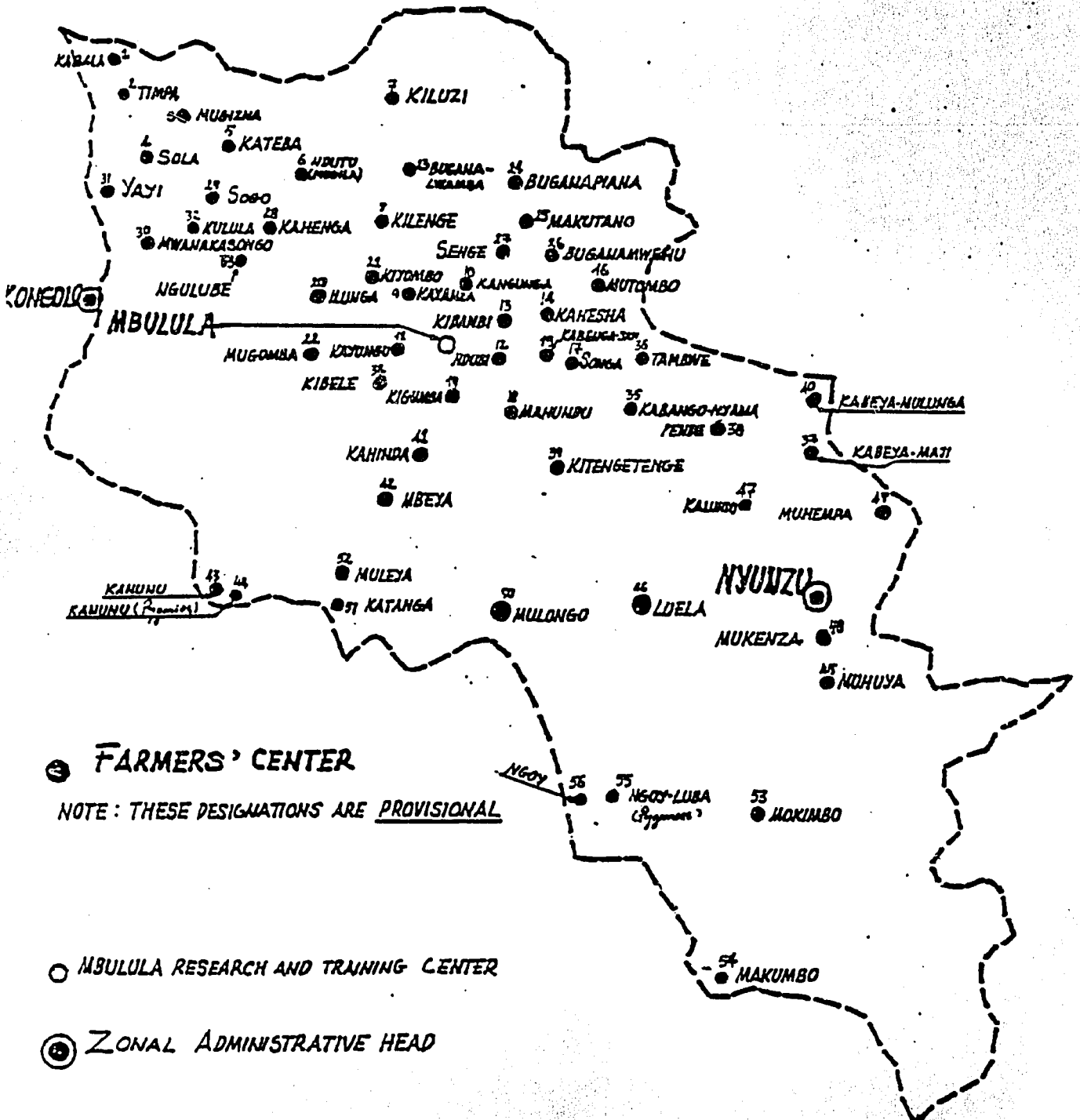
-- Collectivite N'kuvu (3-5):

N'kuvu has some of the most densely settled locales in the project area, with rich land in a large valley running through most of the collectivite north to the Luika River.

At MUGIZHA (3) there is some savannah and much forest land. In the bottom lands near the Luika River, three maize crops are planted in some places. If N'kuvu were to be divided into two parts, Mugizha would be the capital of the northern half, from a politico-socio-cultural point of view. Mugizha itself is a large farming village, away from commercial, religious, educational, and administrative centers, but still served by a good road which was part of the pre-Independence road network. Mugizha-area farmers appear to be very open and ready for the project. Groupings of farmers, such as a

J-4

# FARMERS' CENTERS



● FARMERS' CENTER

NOTE: THESE DESIGNATIONS ARE PROVISIONAL

○ MBULULA RESEARCH AND TRAINING CENTER

⊙ ZONAL ADMINISTRATIVE HEAD

470

## ANNEX I (cont'd)

Experience has now shown the practical impossibility of such a mandate, and the Commissioner for Agriculture is presently studying ONACER proposals for changing its statute. The new statute would abandon the principle of monopoly control but give ONACER responsibility for organizing marketing to the advantage of traders, millers and producers. The new statute would preview the establishment of a special committee to advise the GOZ on matters pertaining to cereal pricing and processing. The responsibility for convening and reporting to the GOZ would be vested in ONACER. These changes would, thus, tend to move ONACER more towards the structure of a Marketing Board where all cereal interests are represented but without the monopoly function.

Part of ONACER's present market policy is to insure that farmers receive official prices for grain by competing with the private sector. At the present moment, for example, in the Bandundu Region, the Office is inundated with offers of maize from farmers because the Office is paying the official price of K12/kg. as opposed to the trader price of K4/kg.

One of the misconceptions concerning ONACER policy is that the office will seek out grain at long distances where farmers are not serviced by traders. This is the certain path to financial bankruptcy as long as the GOZ maintains national producer prices in all areas, regardless of transport costs, or are unable to subsidize the office's non-profitable operations. ONACER also operates in consumer markets, particularly in rice and maize flour, and the office owns milling installations in Shaba, Bas Zaire, Bandundu, and Kasai Oriental. Consumer price stabilization is a necessary part of ONACER's national activity, as millers are very guilty of hoarding stocks to artificially raise prices; and secondly, the supply-and-demand patterns for grain, as opposed to milled products, are different.

With respect to price fixing, ONACER is the only competent government organization capable of coordinating the various organizations or interests representative of the cereal trade. The fact that (unlike the other state commodity offices) ONACER participates in markets and is required to guard its financial solvency guarantees the eventual development of a sound pricing mechanism. The recent upheavals in the pricing mechanism belie this statement, but the chaos that has resulted this year from uninformed interference with producer prices will result in grain shortages in the interior, particularly in the Kasais, and will require serious rethinking by the state on the role they attach to their own office.

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ANNEX I (cont'd)

merchant with a GECAMINES contract can obtain 65% of the delivered bulk grain price to the mill after loading his grain onto SNCZ wagons and receiving the "Lettre du Transport". Further buying can take place with these new funds once the "LT" has been presented for cashing at the Kalemie bank. (The Kalemie bank does not always have sufficient cash to make payment.) MINOKA also provides, at less than cost, a large supply of once-used sacks to the trader from its maize imports. Without this source of supply of sacks, marketing would be difficult in Shaba as local sack manufacturing capacity would be unable to supply the country's needs.

The operations of MINOKA, however, effectively close down the activities of the other millers. MINOKA flour price is subsidized by GECAMINES who until recently were contributing Z800,000 per month in subsidies to keep the flour price down. Other mills cannot operate under conditions where the flour price is politically controlled and financially supported, and is lower than their production cost. The CEROTEX and TARICA mills, therefore, have had little incentive to mill the last two years.

The artificially-low retail price of Z9/60 kgs. in Shaba, with the parallel market price at about Z12/60 kgs., encourages fraudulent movements of maize flour from Shaba to the Kasais, where the parallel market price is much higher due to a shortage of maize flour in that area. (The official price paid for maize delivered to the mills is lower than the official farmgate price for all regions except Shaba.)

Because of the overwhelming influence of GECAMINES in the pricing policies of Shaba Region, maize producers in Shaba do not receive the official current price of K12/kg. being paid in other Regions and applicable since June 7, 1976. They receive K7.5/kg., a price fixed by the GOZ on the 31st of July 1975.

Marketing activities in the project area are, therefore, largely dependent on the GECAMINES/MINOKA complex which is more or less independent of other Regions or of national pricing policies.

#### B. ONACER'S POLICY PLANNING AND CAPABILITY

The Office National des Cereals was created in January 1974 and was endowed with monopoly control of cereal markets in Zaire.

Annex K  
Part II

DEMOGRAPHIC CONSIDERATIONS

Census Data, with a Critique:

According to the 1970 census analysis by UNAZA Professor Leon de St. Moulin, the project area in Kongolo Zone has a population density ranging from 3-49 per sq. km., while Nyunzu Zone has 1-2 per sq. km. (See population density map, p. \_\_\_\_\_.)

Kongolo Zone east of the Lualaba River had a total population of 85,987 (excluding 23,121 in Kongolo town and 29,046 in western Kongolo Zone), whereas North Lukuga (Nyunzu Zone north of the Lukuga River) had 18,810 (excluding 6,633 in northern/eastern North Lukuga), and South Lukuga had 26,680, as recorded in the 1972, 1974, and 1975 census figures obtained in the respective zone administrative headquarters.

The breakdown for Collectivite and groupement (see Administration map, p. \_\_\_\_\_) is as follows:

Population

## (1) Kongolo Zone

(east of the Lualaba River; excludes western Kongolo Zone, 29,046 population; excludes Kongolo town, 23,121 population)

| <u>Collectivites</u> | <u>Men</u>    | <u>Women</u>  | <u>Boys</u>   | <u>Girls</u>  | <u>Totals</u> |
|----------------------|---------------|---------------|---------------|---------------|---------------|
| 1. Nyembo            | 5,624         | 7,297         | 9,537         | 9,848         | 32,306        |
| 2. N'Kuvu            | 2,577         | 3,012         | 3,656         | 3,623         | 12,868        |
| 3. Mambwe            | 2,320         | 2,706         | 3,243         | 3,143         | 11,412        |
| 4. Yambula           | 1,768         | 2,476         | 3,034         | 2,956         | 10,234        |
| 5. Muhona            | 1,307         | 1,646         | 2,046         | 1,932         | 6,931         |
| 6. Munono            | 1,036         | 1,343         | 1,400         | 1,366         | 5,148         |
| 7. Baluba            | <u>1,219</u>  | <u>1,585</u>  | <u>2,234</u>  | <u>2,050</u>  | <u>7,088</u>  |
| <b>Totals</b>        | <b>15,851</b> | <b>20,068</b> | <b>25,150</b> | <b>24,918</b> | <b>85,987</b> |

## (2) Nyunzu Zone:

(excluding 6,683 censused population northern and eastern North Lukuga)

## (a) North Lukuga

(1972 data: most recent available (Bangobango and Bakalanga groupements not included)

| <u>Groupement</u> | <u>Men</u>   | <u>Women</u> | <u>Boys</u>  | <u>Girls</u> | <u>Totals</u> |
|-------------------|--------------|--------------|--------------|--------------|---------------|
| 1. Baseba         | 2,422        | 2,761        | 2,700        | 2,442        | 10,325        |
| 2. Bena Kahela    | 1,099        | 1,256        | 1,486        | 1,488        | 5,329         |
| 3. Kanunu         | 447          | 478          | 457          | 393          | 1,775         |
| 4. Mbeya          | <u>336</u>   | <u>353</u>   | <u>338</u>   | <u>354</u>   | <u>1,381</u>  |
| <b>Totals</b>     | <b>4,304</b> | <b>4,848</b> | <b>4,981</b> | <b>4,677</b> | <b>18,810</b> |

## (b) South Lukuga. (1974 data)

| <u>Groupement</u>                 | <u>Men</u> | <u>Women</u> | <u>Boys</u> | <u>Girls</u> | <u>Totals</u> |
|-----------------------------------|------------|--------------|-------------|--------------|---------------|
| 1. Bayoro                         | 2,400      | 2,600        | 2,789       | 2,442        | 10,483        |
| 2. Agglomeration<br>(Nyunzu town) | 1,787      | 2,343        | 2,625       | 2,568        | 9,323         |
| 3. Balumbu                        | 901        | 1,006        | 983         | 866          | 3,756         |
| 4. Babinga<br>(Muhuya)            | 403        | 521          | 557         | 402          | 1,883         |
| 5. Kamanya                        | <u>261</u> | <u>313</u>   | <u>323</u>  | <u>338</u>   | <u>1,235</u>  |
| Totals                            | 5,752      | 6,783        | 7,277       | 6,868        | 26,680        |

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|                        |        |        |        |        |         |
|------------------------|--------|--------|--------|--------|---------|
| Project Area<br>Totals | 25,907 | 31,699 | 37,408 | 36,463 | 131,477 |
|------------------------|--------|--------|--------|--------|---------|

(excluding 58,850 total population in Kongolo town,  
western Kongolo Zone, and northern/eastern North Lukuga)

Census figures are also available for each village for the above person-categories. These tables are too long to include here. Available longitudinal data also shows that the Kongolo Zone population is growing at a higher annual rate than that of Nyunzu Zone.

Something should be said about moving from this data to the counting of "farmer families", which sometimes are used as a basis for planning extension efforts, information systems, available self-help labor, or whatever. Of the men in the proposed project area, only the "valid adult men" can be called to do public works labor by the state -- partial cripples and "retirees" are not included. These latter do, however, maintain farms, and they have families, though their contribution to agricultural production appears to be less than normal. On the other hand, young men 18 years old may be counted for public works, labor and for taxes, but the ones not yet married sometimes do not farm.

In many families, married women also have their own farms, both for cash cropping and for family food, in addition to working on those of their husbands. In an example from a Mbulula family farming forest land at Kigumba: the husband and his four wives worked two hectares of corn together, while each wife has a half hectare of corn for herself, for a total of four hectares, plus other manioc, peanut, and rice fields, palm forests, etc. Widows cultivate their own fields, as do unmarried women, some of whom are old enough to pay taxes and to be counted as "women", and some of whom are still officially "girls". A Mazyombo 12-year-old girl last year sold enough cotton to buy herself some cloth and to pay someone to sew her a libaya (tailored blouse); she had enough left over for a full woman's outfit. In her case, the corn she planted was eaten by her family, thus freeing more of her mother's and father's corn for sale. Furthermore, young women marry at an age of 14 years in some villages, and it is not at all clear that the census takers are consistent in using the 18-year-old mark as the sole criterion for adulthood, though that claim is made at the zonal level.

The "farm family" may not be the most useful conceptual entity for extension work, etc. In the first place, in North Shaba the husband-wife information transfer is not high enough for project success without separate work with men and women. Secondly, there are other natural groupings which are more appropriate for information transfer than the "farm family". Women are much more likely to respond to a positive request from a village women's leader. Where virilocality is a constant throughout the area (with individual exceptions: a mukwe, son-in-law, can live in his wife's village; perhaps 2 percent of the home site choices are of this type), women in any village come from many different villages and from the whole range of matrilineal and patrilineal. They will group in friendship and village-level circles since no dominant patrilineal or matrilineal ties are there to follow. In each group, the women can point to a leader or leaders, not at all necessarily the wife or daughter of the Kapita or Sultani.

The men will group according to patrilocal extended family (father-son) and larger patriline relationships in the Kengolo ("Bahemba") area, while patrilocal family (father-son) as well as village matrilineal sultani leadership is found in most of Nyunzu ("Baluba") area, with a Kengolo-Nyunzu transition area (southern extremes of Nyembo collectivite, the Bena Kahela groupement, and northwestern Basena groupement) where patriline,



matriline, and matrilineal sultani factors are all present.

Clearly, a farmer census should take account of the actual farming units and agricultural decision-making groups in the project area. Relevant categories could be discovered/ formulated using qualitative ethnographic research, thus providing a valid frame for local censusing and subsequent quantitative evaluation. (N.B. The acquisition, collection, analysis, storage, transfer and retrieval of project area data should be carried out only with appropriate safeguards to protect human rights at the extended family, individual, and even village levels. See further discussion in above Social Soundness Analysis - sub-section 10, and in the sub-system for Project Monitoring and Evaluation.)

#### Farm Population Distribution:

In Nyunzu Zone the major commercial operations take place in a 35 km. radius from Nyunzu town, with relatively heavy population concentrations in all directions, though slightly less dense in the south. East, west, and north of Nyunzu town the population has been inflated by an influx of immigrants from North Lukuga and even from Kongolo Zone. (See below, "Major Population Shifts".) Here the existing road system and the efficiently competitive market situation serves the populations well.

There is a fairly high density of maize farmers as far west as 52 kilometers from Nyunzu town and a large number of seasonal farmers far east into Kalemie Zone who return to Nyunzu Zone towns from October through early April. In the southernmost reaches of Nyunzu Zone, the overall population is more sparse, though especially concentrated near Ngoy, Mokimbo, and in southern Balumbu groupement north of Mokumbo. The people are officially grouped in roadside villages, while in fact cash-cropping maize over a large area as they follow the dwindling forests--setting up farm villages near their maize for at least six months a year.

This farm village residential pattern is widely found in South Lukuga. Although everyone maintains a house on a main road in an official, taxed, censused village from which the road and bridge labor force is drawn, nearly everyone also maintains a "less permanent" house near the maize farms. The two houses will be from 3 to 8 kilometers apart in most situations (though the extreme can be much higher, especially for those who farm in Kalemie Zone). Many people actually live in these "less permanent" villages year round, coming to the official villages only when required for statal reasons. Near Nyunzu town the farm village areas are densely populated.

Pygmy workers often have houses beside those of their employers, or they live in villages next to their employers' villages, where they also do some food farming and cash-cropping. Some Pygmy farmers also live apart in their own villages. (Note: Since 1974 Pygmies have not been listed separately in the census reports.)

Close to the Luizi railroad stop near the Kabalo-Nyunzu border are several villages with a total population near 2,000. The farmers concentrate mostly on manioc, peanuts, and other dry savannah crops. Though some are now starting forest land maize cropping, little attempt has been made to exploit the fertile (potential rice-growing) lowland area just southeast of the confluence of the Luizi and Lukuga Rivers. A maize-growing population which could be indirectly served by expanded commercialization and shipping facilities at Luizi can be found near Maloba in Kabalo Zone, 30 kms. southeast of Luizi. Currently, the inhabitants of villages just north of the Lukuga River bring their produce to Luizi and would benefit from an increased commercialization there, also.

In Kongolo Zone, the distribution of the farming population in the project area in relation to the railhead at Kongolo town is considerably different than the basic 35 km. radius pattern in Nyunzu Zone. A major buyer in Kongolo Zone has estimated the average maize truck's trip to be 70 km. in Kongolo Zone. Northeast from Kongolo on the Kabambari road, the major maize areas are not reached for 35 km. (near the Sola area). On the main road east toward Nyunzu, the high density farming population, fertile lands, and high agricultural output begin 40-50 kms. from Kongolo toward Mbulula. Other than production areas north 20 kms. at Yayi (near the Lualaba River), and northeast from Kongolo 20-25 kms. near Kulula/Ngulube, and high figures for groupings near Kongolo are misleading since they reflect a basically urban population, not a farm-export producing population, e.g. in Keba, where 6,000 people live in what can be called a suburb of Kongolo.

In contrast to most of Nyunzu Zone, where populations distant from the railhead may be concentrated though far apart, there are many areas in Kongolo Zone (and northwest North Lukuga) which are 70, 90, 110 kms. from the railhead but which are currently large producers and potentially much larger producing areas. To help organize the long-distance logistics in Kongolo Zone and northwest North Lukuga, buyers have large storage centers at Mbulula and smaller ones at Lengwe. However, the condition of roads and bridges remains an enormous constraint to crop buying activities.

The situation in Kongolo Zone shows obvious significant differences from most of Nyunzu Zone: the population distribution alone, in relation to the railhead, has great implica-

tions for current commercial practice, as well as for future agricultural development efforts.

### Major Population Shifts:

For perhaps three decades, ever since before Independence, there has been a population in-migration toward Nyunzu Zone from the more densely populated areas in Kongolo Zone. There has also been a more temporary in-migration into South Lukuga from North Lukuga since Independence. These two types of in-migration have different implications for agricultural development.

The long-term, slow migration into Nyunzu Zone was apparently encouraged during pre-Independence times in order to staff positions in Nyunzu town and throughout Nyunzu Zone. Thus, today over 2,000 Bahemba reportedly live in Nyunzu town alone, out of a population of 9,000+. Many of these people also have farms in the surrounding area. Other former Kongolo Zone residents have come (following kinship relationships) just to farm in the South Lukuga area, often bringing with them a knowledge of agricultural techniques used farther to the northwest. Thus, one sees localities where the agricultural cycle includes some palm trees and a different cropping system than in other areas of South Lukuga where the long-term residents live. This slow in-migration of Kongolo Zone people to South Lukuga can be expected to continue, and the residents who have come on this basis can be expected to stay.

On the other hand, many former North Lukuga residents now live south of the Lukuga River in Bayoro Groupement. They arrived throughout the 1960's and early 1970's as a result of two factors: the greatly decreased buying of agricultural products since the Kabeya-Mayi bridge was cut in 1961; the troubles in northern North Lukuga in the late 1960's and early 1970's.

Many farmers both north and south of the Lukuga River, as well as Nyunzu businessmen, predict that a large back-migration will occur as soon as the bridge is finished in May or June of 1977. South Lukuga will then start to experience a drastic net population loss and North Lukuga a net population gain. Also Nyunzu merchants report that there are only two more years of good forest left in many parts of South Lukuga. Since maize is

a cash crop there, farmed in the forest lands and not in the savannah, many farmers will return to North Lukuga, where abundant forests are still available.

Before Independence, North Lukuga supplied the bulk of the food products to Nyunzu town itself, whereas South Lukuga was relatively poor except for cash cropping in cotton, manioc, peanuts, and some maize. Many residents have voiced a desire to return to their ancestral land, which they consider to be richer and able to provide a more satisfactory life. Their relatives who have remained in North Lukuga are apparently quite eager for their relations to return, there being no particular land pressure, and the population back-migration obviously bringing with it increased political weight at the zonal level in Nyunzu, as well as increased social, agricultural, and commercial activity in the whole area, to the benefit of all.

Undoubtedly, the full effects of this population back-migration to the North Lukuga area will not be known for several years. It is certain, however, that the magnitude of the population displacement will be such that any agricultural development project in the area should seriously plan to provide the services and facilities to aid and take full advantage of the influx of farmers, many of whom may be quite receptive to the introduction of improved practices. On the one hand, a certain high level of resources must be planned for and committed to the North Lukuga area and, on the other, enough flexibility must be left in the planning to adjust to the currently unpredictable details of the population redistribution in the next few years.

Whereas, from all indications at present, the population situation in Kongolo can be expected to remain one of relatively stable growth, the population shifts in South Lukuga and North Lukuga should be specially monitored via the project's information-gathering capabilities to provide guidance on resource commitment. As mentioned previously, throughout the project area a different kind of farm census data using revised categories should be developed and utilized by project field workers (in accordance with necessary safeguards protecting human rights), as a necessary supplement to the general figures currently available.

1110