

DRAFT

HDBBG 276

PROJECT PAPER

CENTRAL SHABA AGRICULTURAL DEVELOPMENT PROJECT

660-0105

USAID/Zaire
June 30, 1986

AGENCY FOR INTERNATIONAL DEVELOPMENT PROJECT DATA SHEET	1. TRANSACTION CODE <input type="checkbox"/> A = Add <input type="checkbox"/> C = Change <input type="checkbox"/> D = Delete <input checked="" type="checkbox"/> A	Amendment Number _____ DOCUMENT CODE 3
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2. COUNTRY/ENTITY ZAIRE	3. PROJECT NUMBER 660-0105
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4. BUREAU/OFFICE AFR	5. PROJECT TITLE (maximum 40 characters) Central Shaba Agricultural Development
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6. PROJECT ASSISTANCE COMPLETION DATE (PACD) MM DD YY 09 30 93	7. ESTIMATED DATE OF OBLIGATION <i>(Under "B" below, enter 1, 2, 3, or 4)</i> A. Initial FY <u>86</u> B. Quarter <u>4</u> C. Final FY <u>91</u>
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8. COSTS (\$000 OR EQUIVALENT \$1 =)						
A. FUNDING SOURCE	FIRST FY			LIFE OF PROJECT		
	B. FX	C. L/C	D. Total	E. FX	F. L/C	G. Total
AID Appropriated Total	10,170		10,170	33,907		33,907
(Grant)	(10,170)		(10,170)	(33,907)		(33,907)
(Loan)						
Other U.S.				800		
1. Peace Corps						
2.						
Host Country Counterpart Funds		200	200		13,363	16,363
Other Donor(s) Other Host Country					8,050	8,050
TOTALS	10,170	200	10,370	34,607	21,413	56,020

9. SCHEDULE OF AID FUNDING (\$000)									
A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH CODE		D. OBLIGATIONS TO DATE		E. AMOUNT APPROVED THIS ACTION		F. LIFE OF PROJECT	
		1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan
(1) ESF	100	200				9,570		32,507	
(2) FN	100	200				600		600	
(3) EHR	600	690						800	
(4)									
TOTALS						10,170		33,907	

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each) 051 061 062 012 013 821	11. SECONDARY PURPOSE CODE 210
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12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)							
A. Code	BR	BS	PVON				
B. Amount							

13. PROJECT PURPOSE (maximum 480 characters)

To increase the production of corn in Shaba, relying to the extent practicable on private sector interests mobilized to induce and support small cultivator productivity.

14. SCHEDULED EVALUATIONS Interim MM YY MM YY Final MM YY 03 88 03 89 04 93	15. SOURCE/ORIGIN OF GOODS AND SERVICES <input checked="" type="checkbox"/> 000 <input type="checkbox"/> 941 <input checked="" type="checkbox"/> Local <input type="checkbox"/> Other (Specify) _____
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16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a _____ page PP Amendment.)

17. APPROVED BY	Signature _____	18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION MM DD YY 07 15 86
	Title Richard Podol Director, USAID/Kinshasa	

INSTRUCTIONS

The approved Project Data Sheet summarizes basic data on the project and must provide reliable data for entry into the Country Program Data Bank (CPDB). As a general rule blocks 1 thru 16 are to be completed by the originating office or bureau. It is the responsibility of the reviewing bureau to assume that whenever the original Project Data Sheet is revised, the Project Data Sheet conforms to the revision.

Block 1 - Enter the appropriate letter code in the box, if a change, indicate the Amendment Number.

Block 2 - Enter the name of the Country, Regional or other Entity.

Block 3 - Enter the Project Number assigned by the field mission or an AID/W bureau.

Block 4 - Enter the sponsoring Bureau/Office Symbol and Code. *(See Handbook 3, Appendix 5A, Table 1, Page 1 for guidance.)*

Block 5 - Enter the Project Title *(stay within brackets; limit to 40 characters).*

Block 6 - Enter the Estimated Project Assistance Completion Date. *(See AIDTO Circular A-24 dated 1/26/78, paragraph C, Page 2.)*

Block 7A. - Enter the FY for the first obligation of AID funds for the project.

Block 7B. - Enter the quarter of FY for the first AID funds obligation.

Block 7C. - Enter the FY for the last AID funds obligations.

Block 8 - Enter the amounts from the 'Summary Cost Estimates' and 'Financial Table' of the Project Data Sheet.

NOTE: The L/C column must show the estimated U.S. dollars to be used for the financing of local costs by AID on the lines corresponding to AID.

Block 9 - Enter the amounts and details from the Project Data Sheet section reflecting the estimated rate of use of AID funds.

Block 9A. - Use the Alpha Code. *(See Handbook 3, Appendix 5A, Table 2, Page 2 for guidance.)*

Blocks 9B., C1. & C2. - See Handbook 3, Appendix 5B for guidance. The total of columns 1 and 2 of F must equal the AID appropriated funds total of 8G.

Blocks 10 and 11 - See Handbook 3, Appendix 5B for guidance.

Block 12 - Enter the codes and amounts attributable to each concern for Life of Project. *(See Handbook 3, Appendix 5B, Attachment C for coding.)*

Block 13 - Enter the Project Purpose as it appears in the approved PID Facesheet, or as modified during the project development and reflected in the Project Data Sheet.

Block 14 - Enter the evaluation(s) scheduled in this section.

Block 15 - Enter the information related to the procurement taken from the appropriate section of the Project Data Sheet.

Block 16 - This block is to be used with requests for the amendment of a project.

Block 17 - This block is to be signed and dated by the Authorizing Official of the originating office. The Project Data Sheet will not be reviewed if this Data Sheet is not signed and dated. Do not initial.

Block 18 - This date is to be provided by the office or bureau responsible for the processing of the document covered by this Data Sheet.

P R E C I S

At the present time, perhaps as much as 160,000 metric tons of corn or corn flour are imported into Shaba each year. These imports are valued at up to \$24,800,000. This situation offers the opportunity to increase corn production within Shaba which in turn will have the effect of saving large sums of foreign exchange, raising farmer incomes, and stimulating economic growth in market towns and villages. Our experience with a project in north Shaba, similar to the one proposed in this PP for central Shaba, has shown that a limited number of interrelated activities can result in major increases in production and in stimulation of the rural economy.

In most of rural Zaire today, including central Shaba, the first obstacle to be overcome in augmenting agricultural production and marketing is a collapsed transportation system. Simply opening up village roads and rehabilitating linking regional roads or waterways results in a farmer response to the demands of the city for food. In addition, our experience in north Shaba has shown that by providing improved seed alone, corn yield can be increased by 40 percent per hectare. Since seed is the cheapest of all inputs, farmers will readily accept improved seed when they see its effects in their fields, the fields of their neighbors, or on seed farms. If the north Shaba experience can be taken as typical, it is only after increases in production from improved seed, with the ability to market that production at an acceptable price (resulting from improved roads and thus increased merchant competition), that farmers, now with rising income, are interested in adopting an improved package of cultural practices and investing money in grain storage. These latter two investments in time and money result in significant increases in production as well as in reduction in losses from spoilage or insects.

In sum, we have found that a simple core program of activities, when properly sequenced, can result in large increases in agricultural production and can stimulate the entire rural and market town economy.

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NOTE: The body of this project paper was amended to conform with the guidance emanating from the Executive Committee Project Review (ECPR). The annexes here have been similarly edited, but less thoroughly. Consequently, in the event of any discrepancies between the body of the PP and its annexes, the plan in the body will be governing.

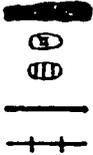
SUMMARY

The purpose of this project is to increase the production of corn in Shaba, relying to the extent practicable on private sector interests mobilized to induce and support small cultivator productivity. The target area is central and northern Shaba (see map overleaf). The principal means of achieving this purpose will be road improvement and extension of improved varieties of corn seed. The project will finance the rehabilitation of 1,000 kilometers of link road, and at least 1,000 (and perhaps 2,000) kilometers of agricultural feeder roads, which will connect villages to railheads and to the link road. The project will assist a local private company to initiate a profitable seed enterprise to serve farmers in the target area. The project also will finance farmer extension services to be provided through rural PVOs in the project area (and assisted by Peace Corps Volunteers). Extension services will demonstrate to the farmers improved cultivation practices, and will assist villages to construct improved grain storage facilities.

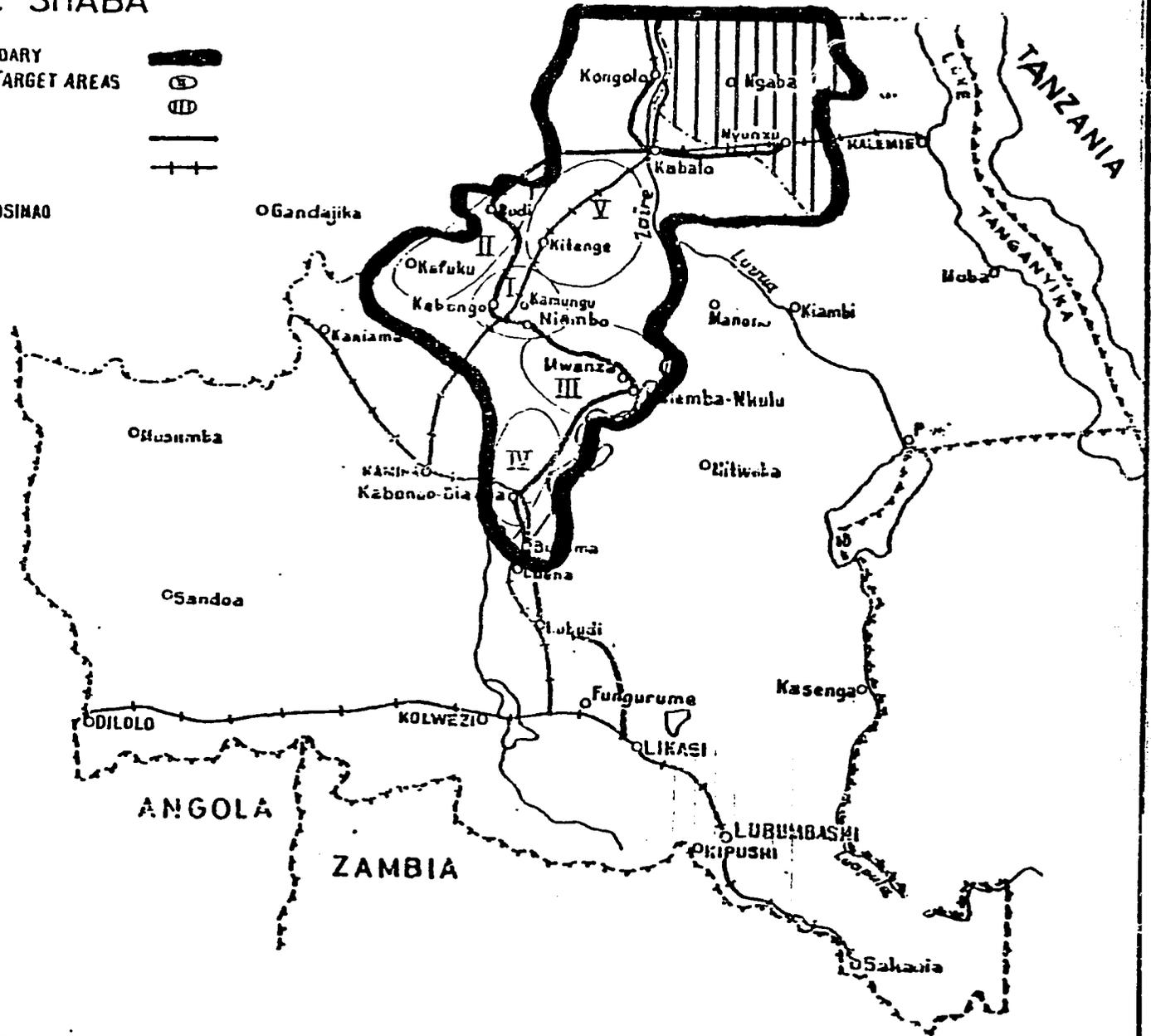
2. The project is in full conformance with A.I.D. and GOZ national and regional strategies for development. All of these base sustained economic development in Zaire on increasing agricultural production through the small cultivator and on minimizing the burden on government resources by maximizing private sector involvement.
3. This project is sustainable. Two-thirds of the roads to be reconstructed under the project are the responsibility of the National Roads Bureau which has the technical and financial resources to ensure post-project maintenance. It is expected that post-project financing also will be assured for the other 1,000 kilometers by the time their rehabilitation is ready to begin. If maintenance is not assured, the project will not rehabilitate them; in this case the project's economic rate of return would be lowered, but would remain acceptable. The private company producing improved seed will be making an adequate profit by PACD to continue without further USAID assistance. The extension services will continue in the second phase of the project to address second-generation constraints to increases in agricultural production; local support for these services will be developed from the beginning.
4. The project is planned for 15 years. This PP covers the first phase of seven years. The project (first phase) will cost \$59,020,000, of which A.I.D. will finance \$33,807,000, Peace Corps \$800,000, and the GOZ the local currency equivalent of \$24,413,000 (cash and in-kind contribution, including counterpart funds).

CENTRAL SHABA

- PROPOSED PROJECT BOUNDARY
- PROPOSED AGRICULTURAL TARGET AREAS
- FORMER PNS AREA
- LINK ROAD
- RAILROAD



DESIGNED BY: TUMBA NDOUSIMAO
DRAWING N° 004



7

Project Rationale and Description

A. Background

A major development objective of the Government of Zaïre is to attain self-sufficiency in basic food production. Since 1982, the GOZ has encouraged a market economy in which private initiative plays the major role in production, processing, and marketing. In 1982, farm commodity prices were decontrolled to stimulate agricultural production. To support agricultural development, the GOZ has placed greater emphasis on the rehabilitation of its basic infrastructure. Moreover, the five-year national economic development plan of January 1, 1986 places considerable emphasis on private sector development. An important part of the plan is to encourage agricultural and commercial development in Shaba.

The Shaba Regional Economic Development Plan sets forth the objective of eliminating the region's dependency upon imports of basic foodstuffs, in particular corn. The Shaba Plan identifies agriculture as the major growth sector of the regional economy and the major provider of employment opportunities for the expanding work force. As a corollary to agricultural development, the Shaba Regional Plan proposes major investments to improve the regional transportation system and the basic infrastructure of agricultural market towns. Within the region, investments in agricultural development are targeted on central and northern Shaba.

The Central Shaba Agricultural Development Project is designed to assist the GOZ to meet its agricultural sector objectives for Shaba. Within Shaba, the project will focus on five new areas identified in the regional plan and confirmed by design research to be critical to agricultural development: Kabongo - Kamungu (Kabongo Zone); Budi (Kabongo Zone); Malemba-Nkulu Zone; Bukama Zone; and Kabalo Zone; as well as continue activities in the zones formerly covered by the North Shaba Rural Development Project (PNS, 660-0059). The project will support the Regional Plan's objective of increased agricultural production through sustainable interventions: rehabilitation of major link and feeder roads, establishment of a private sector seed production and distribution enterprise (i.e., a seed company), provision of farmer extension services, and construction of village storage facilities. Interested local institutions (such as private agri-businesses and religious missions engaged in rural development or agricultural activities) will be provided with technical assistance to strengthen their capability for extension work. The project is the first phase of a long-term commitment by USAID to create an on-going, self-sustaining program of agricultural development in Shaba.

At the regional level, technical assistance and support will be given to the National Roads Bureau (Office des Routes, O.R.) to expand its road maintenance capacity within the region from 5,000 kilometers to 7,000 kilometers, and to improve training for its personnel, as called for in the Regional Plan. In addition, an Information Office to be established under the project will provide training and technical assistance to professional staff

members seconded to it from those regional agencies (e.g. Plan and Agriculture) having development responsibilities. B. A.I.D. Strategy

This project plays an important role in the CDSS for 1987-1991 (updated in May 1985). The CDSS envisages a two-pronged effort to improve living standards in Zaïre through agricultural production/marketing and rural health programs on the one hand, and through long-term institution-building activities on the other. For regionally-targeted agricultural development, this includes the rehabilitation of infrastructure, especially transport, and improvements in managerial and technical skills. USAID is participating in the GOZ's economic stabilization program by providing balance of payments support through PL480 and the Commodity Import Programs (CIPs). The proposed project will contribute to this endeavor by increasing corn production and marketing in the short to medium term, thereby reducing food import requirements. Shaba has a high potential for significant increases in production of staple crops, and the region figures prominently in USAID's strategy. The project will concentrate on interventions (such as feeder road improvements, the introduction of improved seeds, and the development of village-based extension services) which will produce benefits rapidly. Over the course of the project, imports of U.S. commodities via the ongoing CIPs, particularly agricultural processing equipment such as grain mills, will strengthen and expand project-area market center services. Additionally, the AEP RP will provide foreign exchange for imports and make available local currency credit to local agribusinesses.

The project permits a maximum role for the private sector, and will rely as much as possible on private sector organizations, including PVOs, to manage and execute the various project elements. The effects the project envisions include not only an improved transportation infrastructure and increased agricultural production, but also increased activities in agricultural transport, storage, and processing through private concerns. Strengthening agricultural services will provide direct support to small farmers and will also develop the overall level of economic activity necessary for expanded food production.

Over the long run, the project's outputs will be enhanced by the results of the USAID-assisted agricultural research activities, also provided for in the CDSS. Specific interventions to be introduced to increase the small cultivators' productivity in the Shaba project area flow from knowledge and experience acquired in other donor and other USAID projects (particularly the Applied Agricultural Research and Outreach Project, 660-0091) through the project-supported extension services. In addition, the project will be coordinated with activities of other donor agencies, particularly the IBRD (which at present is involved in a major seed program, ongoing projects in support of rail and river transport facilities, and a program to develop a financially sound and technically capable approach to the maintenance of feeder roads).

C. Project Rationale

The internecine strife that characterized the early years of Zairian independence severely damaged the physical infrastructure of Shaba and the productivity of its agricultural sector. The flight of trained expatriate managers and technicians, coupled with the lack of trained Zairian nationals, exacerbated the situation and constrained reconstruction possibilities. Due to insufficient funds, inadequate maintenance facilities, and a shortage of capable managers and administrators, Shaba has failed to recover. As a consequence, Shaba is a major net importer of basic foodstuffs, in particular corn.

Important shifts have occurred in both the intra- and inter-regional corn trade patterns. The Kasai regions, which formerly exported corn to Shaba, now import significant and increasing amounts of Shaba corn. Southern Shaba, where corn production was forbidden during the colonial epoch in order to conserve labor resources for the mining industry, now produces a considerable amount of corn. The overall decline in regional agriculture, however, has had important negative effects upon the national economy. Currently, Shaba produces about 150,000 metric tons of corn annually. In order to meet the needs of its population, plus current export levels to the Kasais, the GOZ Ministry of Plan estimates that the region presently requires an additional 140,000 tons. At an estimated \$155 per ton, this represents an annual cost of some \$21 million to the country. If all this corn could be produced in Shaba, a major drain on the country's foreign exchange would be stopped.

D. Project Goal and Purpose

The goal of this project is self-sufficiency in staple food crops, particularly corn, for the Shaba and Kasai-Oriental regions, and the principal beneficiaries of the project are the small cultivators of central Shaba. Increased production will enable small farmers to market greater quantities of corn and increase their incomes. Moreover, increased consumption of corn is expected to produce nutritional benefits for the rural population of Shaba. The corn consumers of the Kasai regions will benefit as well.

The purpose of the project is to increase the production of corn in Shaba relying to the extent practicable on private sector interests mobilized to induce and support small cultivator productivity. Dilapidated or non-existent marketing infrastructure is an important disincentive to production. The project addresses this and other production constraints, such as degenerated seed and ineffective extension services. Improvements in the marketing infrastructure also will stimulate increased production of other basic foodstuffs. Increased production in the prevailing climate of a market economy, along with an increased competitiveness amongst the shippers, processors, and operators of storage facilities, will increase the incomes of the small cultivators who grow the corn and other food crops.

The purpose of the project will be attained by:

- Providing farmers with the means and incentives (improved extension services, storage facilities, feeder roads, higher-yielding seeds) needed to increase the production of corn and other food crops;
- Providing the physical and institutional infrastructures needed to support the private sector in the storage, processing, and marketing of the agricultural production of central Shaba;
- Creating opportunities for greater numbers of local private organizations (particularly entrepreneurs and non-profit agencies) to provide reliably the services and materials needed to stimulate and sustain food-crop production.

In summary, the basic objectives of the Central Shaba Agricultural Development Project are to help re-establish the pre-conditions for sustainable development in Shaba by restoring the basic infrastructure of the agricultural sector, and to move the region towards food self-sufficiency by increasing the production, processing, and marketing of basic food crops.

The key constraints to increased agricultural production identified in the GOZ's Shaba Regional Economic Development Plan are:

- Inadequate maintenance and repair of both the regional and the feeder road systems; this disrepair severely hampers the marketing of food crops;
- Insufficient and/or degenerated seed and stem cutting stocks which produce low yields (especially for corn, cassava, beans, cowpeas, and peanuts);
- Lack of effective agricultural extension services;
- Lack of adequate crop storage facilities, resulting in considerable spoilage and pest losses;
- Lack of adequate market center infrastructure, such as milling facilities, to support agricultural development;
- Lack of sufficient credit;
- Lack of farm inputs (fertilizers, herbicides, pesticides),
- Lack of adequate, reliable, and reasonably-priced sources of diesel fuel;
- Lack of sufficient revenue sources reserved for road maintenance activities.

The project focuses on those constraints which will have the most direct and immediate effect on small farmer production.

E. Project Strategy

USAID's support for agricultural development in central Shaba is envisioned as a fifteen-year effort with the major financial expenditures

occurring in the initial years. The budget proposed in this PP covers the first phase of seven years. The project's interventions will be in Kabongo-Kamungu (Kabongo Zone), Budi (Kabongo Zone), Malemba-Nkulu Zone, Bukama Zone, and Kabalo Zone; as well as continuing in the Kongolo and Nyunzu Zones encompassed by PNS. Within this area, approximately 630,000 people are spread over some 36,000 square miles. The Shaba region is about the same size as France; the project area itself is about the size of Liberia or the state of Ohio.

Implementation of the project will begin as the successful North Shaba Rural Development Project (PNS) ends. The central Shaba project incorporates the essential elements of PNS -- roads, seeds, and extension. The northern portion of the project area embraces the PNS zones, and road improvements under this project will link into the road network reconstructed by PNS. Zairian government officials at the highest levels have emphasized repeatedly that the success of PNS must not be allowed to wither once direct USAID participation ends in 1986; incorporating the PNS zones in this project ensures that this will not happen. While PNS has clearly resulted in significant generation of increased real wealth in the project area, an effective means of generating continued funding for seed multiplication and extension has so far not been found. Therefore, USAID will continue to support the PNS seed and extension system until the new project's seed enterprise is in production and can supply project area needs. On the other hand, road maintenance of the PNS road network is now assured, as the financially sound and technically able Roads Bureau has agreed to add the 730 kilometers rehabilitated under that project to its mandate. O.R. Shaba has the financial resources to assume this burden, and will attempt to negotiate a contract with Estagrigo, the local cotton company, to perform the maintenance work (replacing the defunct Estagrigo-Ministry of Agriculture contract for this work).

The lessons learned from PNS have figured prominently in the design of this project. In this regard, the project will not require a heavily staffed project management and implementation unit; this will help avoid the sustainability problems encountered at the closing stage of PNS. Instead, the project's management structure will rely on indigenous private sector entities wherever possible, and will split the implementation of the roads and agricultural components, thereby taking advantage of the host country's own implementing capabilities where they exist.

The project will address the problem of sustainability of seed availability for project area farmers by working through a private seed company, and that of the extension services by ensuring that the technologies they promote (improved seeds and farming practices) be simple enough to continue in the absence of extension agents should financing for their activities not be available after the project, although means of financing the locally-hired agents after PACD will continue to be explored. Where possible in the project area, the extension agents will be associated with local institutions, particularly

religious missions, some of which will be able to assure financial and managerial responsibility for the agents by the completion of the project.

The issue of road sustainability is more complex. O.R. is responsible for maintenance of the link road (1,000 kilometers) and approximately half of the 2,000 kilometers of agricultural feeder roads proposed to be rehabilitated under the project. The Ministry of Agriculture has the official mandate for the remaining feeder roads but has neither the technical capacity nor the financing to carry it out. The IBRD and UNDP are presently preparing a project which should result by 1990 in: a national organization, connected to and overseen by Office des Routes, with responsibility for maintenance and rehabilitation of agricultural feeder roads; and an additional fuel tax to finance the new operation. USAID will continue to work closely with the IBRD and UNDP on this project to ensure that any roads rehabilitated by the central Shaba project are included in their program. Within the framework of the project USAID also will continue to explore with Shaba officials potential sources for generating revenues (e.g. local taxes) for road maintenance.

It is possible that none of the efforts of USAID and other donors will lead to an effective institutional framework or additional revenues for local-interest road maintenance. In the unlikely event that no additional financing is found, the second 1,000 kilometers of local interest roads will not be rehabilitated during the first phase of this project.

In pursuit of the longer-range issue of sustainability the project will participate in an associated operational research and development program. This program, being developed by AID's Science and Technology Bureau is expected to be launched in FY 1987. This project budgets \$750,000 for the cost of research assistance on the question of financial, technical, and organizational sustainability of rural road maintenance. Research findings and recommendations, where suitable, will be presented for implementation consideration to concerned Zairian agencies (public and private sector as appropriate).

The initial seven years of the project will concentrate on removing "first-generation" constraints to agricultural production and marketing. This type of constraint is easily identifiable and relatively simple to eliminate. Among the most important first generation constraints are inadequate roads, low quality seeds, and a lack of information on improved farming techniques. Experience in PNS, as well as elsewhere in Zaïre, has shown that the availability of high-yielding seed, coupled with an effective extension system and an adequate and maintained road system, will result in significant increases in agricultural production. These activities are included in the major first phase of project work.

Once such fundamental constraints have been overcome, attention will shift to "second-generation" constraints. Usually second-generation constraints are more complex and their elimination requires more analysis, time, effort, and imagination. Among the important second-

generation constraints in Shaba are: lack of credit; scarcity and high cost of diesel fuel; lack of milling capacity; inadequate food crop storage facilities; lack of alternatives to human muscle-power; and, in general, few agribusiness, processing, and marketing services associated with market towns. During the initial phase of the project, some of these second-generation constraints, in particular inadequate village storage facilities and the lack of small milling facilities, will be addressed. Some credit may be made available to local merchants for mills and cleaning facilities through the USAID's planned AEPRP and existing CIPs. Other second-generation constraints will be analyzed in detail during the initial project phase in order to develop appropriate interventions to address them in subsequent phases of the overall central Shaba program.

In central Shaba, five areas have been identified as targets for intensive agricultural interventions under the project, which will be phased in the following order (see map page 4): (1) Kabongo - Kamungu (Kabongo Zone); (2) Budi (Kabongo); (3) Malemba-Nkulu; (4) Bukama; (5) Kabalo.

During the preparation of the Project Paper, in-depth research on each of these five target areas was carried out and priorities were established for the type and phasing of project interventions. The criteria that were used in setting these priorities are: 1) rural population density and number of people benefiting; 2) present and potential importance of the area as a food production center; 3) presence of private sector organizations willing and able to participate in development activities; 4) ease of implementation; 5) amount of return on investment; and 6) rapidity of return on investment. The project takes advantage of the capacity (equipment and personnel) already in the PNS area by including road improvements and village grain storage facilities in areas closest to PNS early on in this project.

F. Project Outputs

- The production of basic food crops, in particular corn, will have increased sufficiently to obviate the present need for imports.
- Small farmer income will have increased both in absolute amount and in relative share.
- A 1,000 kilometer regional link road, connecting the major agricultural zones of the project area to railheads (and thence to the major urban markets of Shaba and the Kasai regions), will have been rebuilt.
- The regional Roads Bureau will have increased its capacity to maintain the regional highway system through an expanded work force and fleet of road maintenance equipment.
- In the major agricultural zones of the project area, at least 1,000, and up to 2,000, kilometers of feeder roads, connecting to the link roads, will have been rehabilitated, thereby facilitating the marketing of food crops.

- A regional seed company will have been established. It will supply improved seed for sale to the farming population. The seed enterprise will be operated by a private company on a profitable (financially self-sustaining) basis.
- Agricultural extension services for small cultivators will have been introduced, working with PVOs and other local entities. Extension services will provide information about improved farming practices and varieties of seed.
- In-village crop storage facilities will have been installed; these will have reduced crop damage and loss caused by vermin and spoilage.

Other donor assistance will have provided the following, closely linked to the project's outputs:

- Essential improvements to the Shaba railroad system, the primary means of transporting food crops to market, will have been carried out under IBRD and German aid programs.
- A viable financing mechanism for maintaining the feeder roads not presently within the National Roads Bureau's mandate will have been identified under a joint IBRD and UNDP program.

G. Project Management

1. GOZ role. The GOZ will be actively involved in the management and monitoring of project activities. Both the roads and agricultural components of the project will be overseen by a committee chaired by the Ministry of Agriculture (MOA) and including representatives of the Governor's office, USAID, and national and regional officials of the Roads Bureau and the Ministry of Plan (MOP). During project implementation, this committee will meet at least twice a year to review project progress and planned activities.

GOZ staff from regional offices in Lubumbashi will also be involved with the studies and data collection systems the project's Information Office will undertake. The Office will provide the training and resources needed for field work and analysis. Participation by GOZ regional staff in these activities will provide them an opportunity to upgrade their planning and analysis capabilities as well as to keep abreast of the progress of the project.

Six hundred kilometers of link road and up to 2,000 kilometers of local-interest road will be rebuilt by O.R. by force account. The remaining four hundred kilometers of link road will be reconstructed by a private firm under a host country contract with O.R. In addition, all procurement of goods and services for the road component will be handled by O.R.

2. Field management. The project will be managed by two contractors; one for the roads component and one for the agricultural activities.

USAID recommends that the roads component be contracted to the American ORT Federation (ORT), a U.S. PVO which, over the last fifteen years, has demonstrated a unique capability among American firms in Zaire for providing technical assistance to O.R. Use of ORT for this important contract will conform to Congressional concern that ESF funds for Zaire be channeled to the maximum extent practicable through PVOs. ORT will provide an implementation team of eight advisors. In addition to the ORT personnel, a contract manager will be funded through a host-country PSC and be assigned to O.R.'s central office in Kinshasa. This contractor will assist in contract preparation and oversight, procurement of equipment and spares, and liaison with USAID under the project.

The contractor for the agricultural components will be procured through open competition. The two Ngaba seed farm technical advisor positions presently under PNS will be filled under USAID PSC contracts from October 1, 1986 (PNS's PACD) until the arrival of the project's agricultural management and TA team (estimated in March 1988).

Finally, a contract with a private company for the establishment of a seed enterprise will be negotiated jointly by an American law firm with offices in Lubumbashi and Kinshasa and the A.I.D. Regional Legal Advisor. Management of this contract will initially be the responsibility of a USAID-contracted PSC assigned to Lubumbashi, and will later devolve to the agricultural component contractor.

3. USAID management. USAID will split the management of this project between the Agriculture and Rural Development Office (ARD) and the Design, Evaluation, and Capital Projects Office (DEO). USAID field management in Lubumbashi will include two PSCs: one, for the roads component, already in place, oversees USAID's three Shaba refugee projects, and reports to DEO; the other will be hired by October 1986 and will report to ARD. The latter would spend most of his first year in Kinshasa procuring goods and services for the project,* and then move to Lubumbashi to provide field oversight for the agricultural components, as well as for other ARD activities in Shaba (e.g. Applied Agricultural Research and Outreach, 660-0091). In short, USAID management requirements for the project can be met by adding one PSC to the Mission's present staff.

Coordination within USAID of project implementation will be assured by regular (at least quarterly) meetings between the two responsible offices, DEO and ARD. These meetings will be chaired by the Chief of the Agriculture and Rural Development Office.

USAID engineering oversight of the project's road construction activities will be provided by the Mission's U.S.-trained Foreign Service National Direct Hire Engineer and by a PSC Engineer currently within USAID's staffing pattern, with support as required from REDSO/WCA.

H. Project Elements

1. Agricultural production improvements. There are three major agricultural production elements in the project -- establishment of a private sector seed enterprise, development of farmer-based extension services in the project area, and construction of village storage facilities. These three elements directly address the primary constraints to increasing corn production and farmer income in central Shaba. They have already proven their effectiveness in increasing production and income in the North Shaba Rural Development Project (PNS).

The objective of the project's seed component is to assist a private company to establish a profitable seed business to serve the project area. The project will contract with a company for seed production and distribution services.

To ensure a continued supply of improved seed to northern Shaba farmers during its early years, the project will finance costs of technical assistance to continue the activities of the Ngaba seed farm (established under PNS) until the seed business can supply that area.

The extension services element will be initially financed by the project. The heart of this component will be a cadre of locally supported farmer leaders selected from village communities to serve as sources of information on improving corn (and other crop) production. Local PVOs will help in the identification and recruitment of these farmer leaders. The farmer leaders will be trained and supported by a limited number of local extension agents funded initially by the project. Up to twelve Peace Corps Volunteers will work alongside these extension agents to provide additional support. The extension component will be managed by an expatriate Extension Specialist, and up to four Zairian crop specialists will be hired to develop extension materials and programs. These will work closely with the Applied Agricultural Research Project (660-0091), making use of the training center at the Gandajika research station near the project area, and also will work closely with the seed company.

To the maximum extent practicable, local private and voluntary organizations will be used to develop the extension network. In some cases, the extension workers may be employed by these local organizations as their agricultural capabilities develop. Where this is not possible, avenues to assure continued funding of the local extension agents will be explored and developed during the course of the project.

*Note that USAID has retained the regular TDY services of a retired A.I.D. Supply Management Officer who is competent to provide the expert procurement assistance needs of the Mission.

The third agricultural production element of the project is the construction of village storage facilities. Inexpensive (\$2,000 equivalent) storage units built under PNS from locally-available materials have reduced crop losses by 15-20% and enabled farmers to profit from higher prices for corn offered by buyers later in the season. Village storage facilities will be constructed and operated by local community groups under the guidance of the local extension agents and Peace Corps Volunteers, supported by short-term technical advisors. Priority sites for the construction of the storage facilities will be determined on the basis of criteria which include the ability of a local group to support and manage such a facility and the villagers' willingness to supply labor and local materials. Construction of the storage units will begin in the northern Shaba area where infrastructure and corn production are already well developed, and will continue into the central Shaba area as production and organizational structures increase there.

2. Agricultural Marketing Improvements.

a. Transport improvements. To relieve the constraints on the movement of food crops from farming villages, the project will support the rehabilitation and upgrading of a 1,000-kilometer regional link road that will enable areas of high agricultural output to transport their produce to area railheads and thereby to final markets in southern Shaba and eastern Kasai. This road also will serve as a major distribution route for improved seeds. Reconstruction of the link road is the first objective of the project, and will encourage increased agricultural production even before the project's agricultural interventions begin to take effect.

Reconstruction is slated also for the feeder road systems of the major agricultural production areas of west-central Shaba. These probably will include roads in the vicinity of Budi, Kafuku, Kitenge, Kabalo, Mwanza, and Kabondo Dianda. Rehabilitation will stress the reconstruction of vital water crossings and the improvement of roads to a level that subsequently can be maintained. Total length of the secondary and tertiary roads planned to be rehabilitated is 2,000 kilometers. One thousand kilometers of the feeder road system definitely will be maintained by the Roads Bureau. To the extent possible, maintenance will be performed by local groups through contracts funded by O.R. The remaining 1,000 kilometers of feeder road will be reconstructed by O.R. only after reliable maintenance financing is identified, and also will be maintained by O.R.

An in-depth analysis was undertaken as part of the design to determine road construction standards and costs. O.R. brigades will perform the reconstruction of approximately 600 kilometers of the link road and the 2,000 kilometers of secondary and tertiary roads. The remaining 400 kilometers of link road will be contracted by O.R. to a private construction contractor.

O.R. is responsible for the maintenance of the regional road system, but presently lacks the personnel and equipment to fulfill adequately its responsibilities. To strengthen the capacity of this agency, the project will finance road construction equipment, construction materials, and a technical assistance team. O.R. will expand its regional organization to accommodate the additional equipment and road work. Some maintenance work also will be contracted to local PVOs and the local private sector. The O.R. regional training center, which provides basic training in various technical skills for O.R. personnel in the Shaba, Kasai-Oriental, Kasai-Occidental, and Bandundu regions, is now partially financed by USAID's Agricultural Marketing Development Project (660-0028). Under the central Shaba project, the Center will receive additional technical assistance. The project also will assist O.R. to strengthen its contracting and contract management capabilities by providing a technical advisor to its Kinshasa headquarters. In addition, the project will pursue ongoing efforts to ensure that adequate funding is made available for the upkeep of agricultural feeder roads not within O.R.'s present mandate. This will require close coordination with the IBRD, and with regional and central GOZ authorities.

b. Agricultural support center improvements. The project will encourage the development of privately-owned grain mills and railhead storage facilities in the marketing and transportation centers in the project area. Shaba firms wishing to invest in such facilities will be assisted through USAID's existing CIPs.

In parts of central Shaba, in particular the Kabongo zone, there are few grain mills. The lack of these facilities prevents local processing of corn for either commercial or household purposes. Discussions with local private voluntary organizations have determined that these groups are interested in operating small grain mills on a self-financing basis.

Such facilities will reduce milling costs for rural people and will contribute to increased local corn consumption, thereby improving the nutritional status of villagers. Moreover, any income realized from these mills could be used to support the agricultural extension activities provided by these PVOs, helping to make those activities more self-sustaining. The timing of such installations depends upon production increases and the interest of the local organizations.

There is also a need at the railheads for larger commercial cleaning, milling, and storage facilities which would permit the shipment out of the area of more and higher-quality corn flour instead of unprocessed corn. As the project evolves, ways will be sought, through USAID's CIP and AEPRP activities, to provide credit on commercial terms to private entrepreneurs to construct such facilities.

3. Project Information Office. In order to satisfy the project's need for data to monitor and evaluate project activities and their impacts, a modest Information Office headed by a Senior Research Specialist will be established as part of the project management unit. Local staff of GOZ agencies will be seconded to the Office and will participate in all phases of the information gathering and analysis. The training and experience these staff receive during their secondment will improve their professional capabilities and enable them to better perform their development-related work when they return to their home agencies at the end of the project.

I. Relevant Experience with Similar Projects and Relationship to Activities of Other Donors.

The Central Shaba Agricultural Development Project will build upon and help sustain the achievements of two predecessor USAID-assisted projects. First, implementation of this project will begin as A.I.D. assistance to PNS is completed. The project will incorporate the essential elements of PNS -- roads, seeds, extension, and storage -- and will help sustain its achievements by continuing development activities in northern Shaba. Specifically, the link road and several of the feeder roads that will be repaired under this project will extend through the PNS area; the project will fund for three years the technical assistance required to sustain seed multiplication activities at the Ngaba farm established by PNS; and extension and storage activities undertaken by this project will encompass the former PNS area.

Second, the project will continue, at a reduced level of effort, the technical assistance program to O.R.'s Regional Training Center in Lubumbashi that was begun in 1983 with funding from the Agricultural Marketing Development II Project (660-0028). A team of three expatriate advisors funded by that project has established successful Mechanical and Equipment Operating sections within the Center, and management of these sections has now been turned over to Zairians trained by the project. Management of the entire Center will be turned over in January 1987 to a Zairian now being trained abroad with USAID funding. To sustain the achievements of this activity, the project will finance two TA positions, an Advisor to the Center Director and a Chief of the Center's newly-established Civil Engineering Section. These technicians also will be replaced at the Center by their Zairian counterparts.

The project also will work in close cooperation with several ongoing USAID-assisted projects. The Applied Agricultural Research and Outreach Project (660-0091) will help train the Peace Corps Volunteers who will be assisting the project's extension services, and research undertaken by project 091 will help develop foundation corn seed that will be multiplied by the seed enterprise the project will establish. The baseline data system and the methodology for monitoring the impact of road improvement activities now being designed by the Agricultural Marketing Development III Project (660-0098) will be employed by the project's Information Office. And the project's relationship with indigenous private voluntary organizations in central Shaba will be informed by the experiences of the Area Food and Market Development Project (660-0102) now working with PVOs in the Bandundu region.

Similarly, activities to be undertaken by the project are in harmony with the initiatives of other donor agencies. This project's approach to the rehabilitation and maintenance of agricultural feeder roads not within the mandate of the Roads Bureau will be informed by the results of studies of this issue now being conducted by the World Bank and the United Nations Development Program, and by the national policy on feeder road maintenance that will evolve from these studies. The project's activities and objectives are similar to, and will complement, those of the World Bank's South Shaba Agricultural Development Project, which will finance the improvement of feeder roads and the production of seed corn for farmers in southern Shaba in an area immediately adjacent to the central Shaba project area. Finally, the project's road improvement, extension, and village storage efforts in the Bukama and Malemba-Nkulu zones will complement health and sanitation activities that UNICEF plans to launch in those zones beginning in 1987.

J. Grantee Implementing Agency

The project involves activities falling within the jurisdictions of the Ministry of Public Works (Roads Bureau), the Ministry of Agriculture, and the Ministry of Plan. The project design maximizes the participation of private entities and minimizes the requirements for GOZ financial support and project management. All the concerned GOZ agencies,

especially the regional authorities, have been consulted during project design. Senior staff from the Ministries of Agriculture, Plan, and Public Works also have participated in the field studies. They understand and accept the objectives and underlying concepts of the project.

The GOZ will play a role in project oversight through its participation with USAID on an oversight committee, which will meet twice a year to review project progress and to examine problems that arise during implementation. This committee will include representatives of the Governor's office, the Ministry of Agriculture, the Ministry of Plan, the Roads Bureau, and USAID. The project Information Office also will provide information and means of analytical coordination and oversight for the concerned agencies.

USAID will sign a project agreement for the project with the Ministry of Agriculture responsible for the seed enterprise, extension, and grain storage activities, with the Ministry of Public Works for road construction), and with one ministry of plan (responsible for regional training and for general development oversight). The project Information Office will provide information and means of analytical coordination and oversight for the concerned GOZ agencies.

Cost Estimate and Financial Plan

A. Introduction

The budget projections for this project reflect the estimated costs of the inputs required to achieve the project outputs described in the logical framework. Five percent of these costs has been added for contingencies and inflation. The estimated total A.I.D. dollar contribution over the seven-year implementation period comes to \$33,807,000. Local currency costs for the life of the project are estimated to be the equivalent of \$24,413,000; \$16,363,000 of these will be met through counterpart funds, and the balance provided by non-CPF GOZ contribution.

B. Host Country Participation

As this project emphasizes the participation of the private sector, including local PVOs, the Government of Zaire's contribution to the project is more limited than normally. The Roads Bureau will directly contribute the equivalent of about \$5,850,000 in materials and fuel for the agricultural road rehabilitation, as well as an estimated \$2,000,000 in-kind for staff, equipment, and materials. In addition, the GOZ will second staff to the project's Information Office and continue to pay the salaries of these individuals, estimated at \$200,000 over the life of the project.

C. USAID Costs

Of the total seven-year project costs of \$59,020,000, approximately 56 percent (\$34,607,000) is in foreign exchange. \$800,000 of this amount is the Peace Corps contribution; the balance, \$33,807,000, is A.I.D.'s contribution.

Table I shows the proposed obligation schedule to meet these costs. An initial obligation of \$9,570,000 in ESF grant funds and \$600,000 in DA/ARDN (deobligated from PNS, 660-0059) is anticipated for FY 1986. Local currency costs to be covered by counterpart funds are \$16,363,000. If Zaire's PL480 program remains at adequate levels, and if the planned AEPRP for Zaire is approved, then the Mission expects to have sufficient counterpart funds to cover these; if not, either local currency costs will have to be met by dollar purchases, which would increase the foreign exchange costs; or the project's scope would need to be reduced.

Table II shows a breakdown of project costs by component. By far the largest project component is road rehabilitation, which represents 68 percent of overall project costs. Administration of the project, which includes the costs of the project management unit and the information office, amounts to 11 percent of total costs.

Table III provides a breakdown of project costs by budget category. From this table it can be seen that commodities represent 45 percent of total budget expenses. Technical assistance is the next most important item, representing 21 percent of overall costs.

Table IV summarizes annual expenditures (FX and LC) by component.

Table V provides a detailed breakdown of expenditures by category, by component, and by year, and also shows the foreign exchange to local currency split.

Table VI shows person-months of technical assistance, both short- and long-term, over the life of project.

Detailed budgets for each project component are included in the technical annexes.

D. Budget Reductions

This project was originally budgeted for an A.I.D. contribution of \$41 million. The budget has been cut back to accommodate present constraints on commitments of future-year ESF. Examples of the types of cuts made in the dollar budget are:

Fuel and construction materials for bridges and culverts (\$7,370,000 as originally proposed) have been shifted into local currency costs, to be shared between a non-counterpart-fund O.R.

contribution of \$5,870,000 and \$1,500,000 from counterpart funds. While O.R. has agreed to undertake this obligation, clearly it will mean shifting their own resources from some other area to this project.

- The Initial Environmental Examination recommended budgeting for non-lethal support (\$100,000) for anti-poaching activities in a National Park adjacent to the project area; while worthy, this activity is not central to the project's objectives and has been cut.
- All project components sustained reductions in planned technical assistance and commodities.
- Fuel costs, four-wheel drive vehicles, and motorcycles were rebudgeted in local currency, to come from counterpart funds.

Thus, the budget presented is a bare-bones estimate of project costs. Additional reductions, should they become necessary, would require cutting out parts of the project and would affect the ability of the project to meet its objectives.

TABLE III
SUMMARY COST ESTIMATE AND FINANCIAL PLAN
(BY BUDGET CATEGORY)

BUDGET CATEGORY	FX	LC	TOTAL	%
Technical Assistance	9,835	1,493	12,328	21%
Local Hire Personnel	1,890	1,665	4,555	3%
Training	192	243	435	1%
Commodities	13,046	11,647	25,693	44%
Operations	28,188	4,203	7,428	16%
Sub-Totals	24,588	19,251	50,439	85%
Contigencies and Inflation	5,719	2,862	8,581	15%
GRAND TOTALS	33,907	22,113	56,020	100%

TABLE II
SUMMARY COST ESTIMATE AND FINANCIAL PLAN
(BY PROJECT COMPONENT)
(EXCLUSIVE OF IN-KIND CONTRIBUTIONS)

Project Component	FK	LC	TOTAL	%
Grain Storage and Processing	2,372	1,431	3,803	7%
Project Information Office	1,336	585	1,921	3%
Road Rehabilitation	21,880	15,762	37,642	67%
Seed Farm	1,510	393	1,903	4%
Extension Services	815	728	1,543	3%
Grain Storage and Processing	275	251	526	1%
Sub-Totals	28,188	19,150	47,338	85%
Contingencies and Inflation	5,719	2,963	8,682	15%
GRAND TOTALS	33,907	22,113	56,020	100%

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Implementation Plan

In the first and second years of implementation, the project will initiate road construction and seed production activities; in the third year, it will initiate the agricultural extension, grain storage,* and information activities.

A. Road Construction

O.R. will let three contracts for services and procure all heavy equipment for road construction. The trucks, bulldozers, and loaders will be standardized with American equipment already belonging to O.R./Shaba. O.R. will request pro forma invoices for this equipment in July and August 1986, and firm orders will be placed within a month of project obligation. The first contract, for TA, will be with a competitively-procured contractor and will be signed before October 1, 1987. The second will be a host-country personal services contract, to be executed for one contract management and procurement specialist who will be based in Kinshasa and assist O.R. in its management of the contracts funded by the project. This advisor will arrive before April 1, 1987. The third will be a construction contract for the southern 390 kilometers of the link road, to be negotiated with a private firm and signed in 1988. The TA contractor will provide technical field oversight of this contract for O.R. The main elements of the implementation plan for the roads component follow:

1. The PNS-founded PRE (Ponts et Routes de l'Est) brigade will be absorbed by O.R. and, on October 1, 1986, begin construction from Kongolo to Katshi (220 kilometers). This stretch will be completed by late 1988.

2. Construction of the center section of the road, Katshi to Musao (395 kilometers), will begin in mid 1987, when the TA and heavy equipment arrive. O.R.'s contract for TA will provide two technical advisors to the brigade charged with construction of this section, which will be completed in mid-1990. To equip this brigade, O.R. will procure (through single-source contracts) approximately \$5.5 million of heavy equipment, and (competitively) \$4.0 million of equipment through the PSA IQC USAID has with Business Promotion Consultants, Inc., an 8A firm.

3. O.R. will contract with a private firm for the construction of the southern section of the link road. The TA team will be responsible for drafting the RFP, and the PSC assigned to O.R./Kinshasa and USAID's Foreign National Direct Hire engineer will review proposals. The firm will build the road between 1988 and 1990.

*except in northern Shaba, where it will begin earlier.

4. As they go along, the construction crews will build the agricultural feeder roads that connect to the sections for which they are responsible.

5. Assistance to the Lubumbashi training center will be included in the TA contract, and will begin under this project on April 1, 1987 (the present contract for these services, funded out of the Agricultural Marketing Development Project, 660-0028, runs out on March 30).

B. Seed Enterprise, Grain Storage, Extension, and Information Office

USAID will competitively bid and directly contract for the technical assistance for the project's grain storage, extension, and information components. A separate contract will be signed with a local private firm for seed production and distribution. The main elements of the implementation plan for this component follow:

1. A law firm with offices in Kinshasa will be engaged to negotiate with a Shaba firm a contract for seed production and distribution. The A.I.D. regional legal advisor will participate in these negotiations. The contract will be signed in September 1987, and production and marketing of seed will begin in 1988.

2. A PSC project officer will be hired in October 1986 to procure project goods and services competitively. He will be based in Kinshasa until the project management contractor has been selected (June 1988), and then move to Lubumbashi to provide USAID oversight of the team.

3. Between October 1986 and March 1987 the baseline data collected during project design will be analyzed in Kinshasa (by the information team of the Agricultural Marketing Development Project, 660-0098). In April, an IQC economist will review this analysis and tell USAID what additional information should be collected before full-scale road construction begins. This additional data will be collected using local staff, and will serve the project management team when it arrives in March 1988.

4. In March 1988, the contract team will arrive and implementation of the grain storage, extension, and information components will begin. The contract team will assume responsibility for the oversight of the seed enterprise.

5. The team's contract will terminate in mid-1993.

Monitoring Plan

A. Information Requirements

The first phase of the project will increase corn production by small farmers through the introduction of improved technologies -- higher-yielding seed varieties, improved farming practices, and improved storage facilities. Road improvements will facilitate commercial sales of corn and contribute to the growth of the region's market system. These interventions are designed to increase the income small farmers derive from corn sales, and thereby improve their overall standard of living. The strategy for achieving these objectives minimizes government intervention through innovative approaches for key components of the project. Project components are designed to become self-sustaining by relying, where possible, on local generation of revenues and implementation by the private sector. Because of this approach, past experience from other agricultural development projects cannot wholly predict the consequences of this project's interventions. The performance, impact, and sustainability of the project's components, therefore, will require periodic and careful assessment.

The specific information requirements of the project to a great extent stem from the potential need for modifications or re-design of project components during implementation. The project's design is based on the best available information and knowledge garnered from extensive study of the project area. Nonetheless, as additional experience is gained during project implementation, this new information can be used to improve the effectiveness of the project. The phasing of project activities during the first four years of implementation provides an excellent opportunity for incorporating lessons learned into subsequent stages. Effective monitoring and evaluation will play a critical role in this process.

Sound project management will require an array of economic and social data concerning the project environment, local commercial development, market conditions, and the effects of project interventions on central Shaba's small farmers. For this, the project requires an effective and dynamic information system. Given the very limited capacity of GOZ regional authorities and central Ministries to collect and analyze relevant data, and following consideration of alternatives for establishing such a capacity, the formation of an Information Office within the project management unit emerged as the most cost-effective means for meeting the project's information requirements.

B. The Information Office

The Information Office will be based in Lubumbashi at the central project management headquarters. The Office will be responsible for collecting and analyzing the various socio-economic data necessary for monitoring and evaluating project implementation and its effects on

rural, market center, and commercial development. Initially, the Office will concentrate on a limited number of data collection and analysis activities to establish a data base for project monitoring and evaluation. As implementation proceeds and critical issues affecting the project emerge, the Office will also support special studies as requested by project management and by evaluators. The coverage of the data base will gradually expand to provide the basis for assessing implementation progress and the effects of interventions throughout the project area. This will allow identification of geographic areas or groups of people who are not benefiting as intended, so that project management can take ameliorative action. As longitudinal data are collected, a regional overview of changes in the project area will be possible. Finally, the various data collection systems and studies will provide a solid basis for project evaluations.

The organization and functions of the Information Office are designed to avoid the pitfalls which have undermined other monitoring and evaluation units. First, the Information Office has a clearly defined and delimited role. It is the only unit within the project which will collect primary data. The Office will coordinate its activities with other project units and collaboration among project staff will be necessary. For example, while staff from the Information Office will consult with extension agents concerning the collection of agricultural data, the extension services will be responsible only for providing advice to farmers; data collection and analysis will be the responsibility of the Information Office. Second, the purpose of the Information Office is to support project management. In this regard, the Information Office is a service-oriented unit to provide the types of information management requires. Third, the Office will be headed by an expatriate Research Specialist to assure that data collection systems and studies are designed appropriately and implemented expeditiously. Fourth, permanent staff hired by the Office will be kept to a minimum. Fifth, the Information Office will be established independent of GOZ Ministries or regional authorities, thus assuring that data collected by the Office are "public property" available to any interested users (e.g., all GOZ Ministries, university faculty, etc.) and that various GOZ agencies will have access to the information provided by the Office.

The Information Office will also provide training to local GOZ staff who have been seconded to work on studies of mutual utility to the project and their home Ministries. The training will be designed to develop their skills to collect and analyze data and to use the resulting information for administrative, planning, or policy-related purposes. Such training will include microcomputer applications. All seconded staff will attend short-term bi-annual in-country seminars organized by the expatriate Research Specialist. Short-term consultants will assist with this training. Depending on the level of GOZ participation, several seconded staff will be sent to the U.S. for short courses on data-related topics (e.g. research methods) and on development management (e.g. public administration or policy analysis). Training will be scheduled to minimize interference with on-going data collection and studies. In short, the purpose of the training is to strengthen local government

capabilities for more effective use of information in economic development activities and government operations, once seconded staff return to their home Ministries.

C. Data Collection and Analysis

As with the organization of the Information Office, the strategy guiding data collection and analysis for project monitoring and evaluation will avoid the problems which commonly undermine information components of other A.I.D. projects. A.I.D.'s experience indicates that large-scale household surveys have been, for various reasons, of limited utility in meeting project information requirements. This is especially true for rural development projects like the present project. On the other hand, some means of tracking the effects of the project over time is essential for sound project management and evaluation.

The approach this project will follow consists of a number of focused, relatively small-scale studies and data collection and analysis systems, rather than one or two comprehensive surveys. As a set, these studies will provide a composite overview of performance and impact of the project and facilitate the design of subsequent phases of the project.

A key source of information about the effects of the project on small farmers and the equitable distribution of benefits throughout the project area and within villages will be a community-level survey. The survey will be based on a twenty-five percent sample of villages (e.g. 125 villages distributed throughout the project area) stratified by distance from the nearest market town. Key informants and group interviews will be used to obtain data on agricultural and commercial activities and on changes occurring within the community due to project interventions (e.g. increased access to markets and services after completion of road improvements). Readily observable indicators of living standards (such as housing conditions) and basic demographic data also will be collected. The survey will be conducted during the first year of implementation and will be repeated every two years thereafter during the life of the project. The phased addition of new zones of activity in the project area over this period will initially permit comparison of villages where implementation has occurred with those yet to receive such assistance. (Annex 10 provides an example of the types of data a community-level survey can collect.)

Other recommended types of studies and data collection activities include the following: monitoring of corn shipments and corn market prices; a survey of trader operations concerning the marketing of agricultural commodities; a study of truckers and other transporters concerning commercial development and purchases of consumer goods by villagers; and a census of merchants and vendors operating in market towns. In general, the purpose of such studies and data collection systems is to track economic growth in the villages and nearby market towns as well as changes in the corn marketing system.

The Information Office also will be responsible for maintaining operational data on project implementation needed by management and outside evaluators. For example, accounting data on seed enterprise operations will be necessary to track progress toward sustainability of the business. Such data should be readily available from the partner enterprise. Similarly, data on the use and maintenance of village storage facilities and adoption of improved seeds and farming practices promoted by the extension service should be obtained. Such data will be essential for further refinement of these components in subsequent phases of the project. The community-level survey can collect some of these data; but the Office will also have to undertake focused, small-scale surveys to obtain others.

Finally, the Information Office will conduct special studies as requested by project management. Possible topics include adoption of agricultural technologies promoted by the extension service, changes in the gender division of labor, and detailed study of specific commercial activities or businesses. To the extent possible, these special study topics will be incorporated into the Office's on-going data-related activities.

D. Staffing

The Information Office will be headed by an expatriate advisor with experience in applied research and information systems for development projects. This Research Specialist will be responsible for all Office

activities, training, and computer applications for the project. Two Zairians with training in statistical research methodology and microcomputer applications will assist the Research Specialist. They will be responsible for maintaining the data base, and training and supervising field enumerators.

Depending on the level of GOZ participation in the activities of the Information Office, up to one dozen seconded staff from regional government agencies (e.g. Ministry of Plan, Ministry of Agriculture) will work under the supervision of the Research Specialist. Seconded staff will work both at the Office in Lubumbashi and in the field to carry out studies. Their salaries will be paid by the GOZ during their secondment. The project will cover all transportation and per diem costs associated with field work.

Short-term consultants will assist the Information Office with establishing the project's data base, designing studies, and providing training to seconded GOZ staff. Funds have been budgeted for fourteen months of such technical assistance, which will be obtained from microcomputer specialists, agricultural economists, and/or other social science specialists. Assistance from the faculty of the University of Lubumbashi or the Institut Supérieur de Statistique, or other such local institutions, will be obtained when appropriate.

The Information Office will be equipped with two microcomputers with sufficient capacity to run statistical software (e.g., the microcomputer versions of SAS or SPSS). The unit will have two four-wheel drive vehicles.

E. Sustainability

It is expected that the Information Office will be terminated at the end of the project. While it is possible that some of the studies and parts of the data base established by the Office could be continued by some government agency, it is not anticipated to occur due to the limited financial and personnel resources of the regional government. However, the return of seconded GOZ staff to their home agencies should improve local capabilities for data collection and analysis, contribute to greater inter-agency coordination due to contacts made during the period of secondment, and generally improve the performance of the GOZ agencies whose staff participated. Of course, should the GOZ wish to retain the unit (it could be attractive to regional authorities) and be able to discover the wherewithal for its support, then the unit possibly could remain in place as a long-term GOZ asset.

There are ten analyses included as annexes to the Project Paper.

A. Technical Analysis, Road Rehabilitation and Maintenance (Annex 6)

The rehabilitation of the road network in the project area will facilitate delivery of agricultural services to be provided by other project components (notably improved corn seed and extension services) and will enable areas of high agricultural output to transport their produce to area railheads and to final markets in southern Shaba and eastern Kasai. The major outputs of this component will be:

- A rehabilitated 1,000 kilometer link road from Luena in the south to Kongolo in the north. This road will link areas of great agricultural production potential to the railroad and thus to Zaïre's agricultural marketing system.
- At least 1,000, and perhaps as many as 2,000 kilometers of improved feeder roads that will afford producing areas access to the link road and the railroad.
- Improved ability of the regional Roads Bureau to maintain this road network.

To obtain these results, the project will provide the following inputs:

- \$9.8 million of heavy road improvement equipment and vehicles. This equipment will be used by the regional Roads Bureau to rehabilitate 615 kilometers of the link road and at least 1,000 kilometers of agricultural roads.
- Spare parts and fuel required to keep this equipment in operation.
- 462 person-months of technical assistance to the regional Roads Bureau in the areas of contract management, construction oversight, and training in road rehabilitation and maintenance techniques. This technical assistance effort will cost \$4.8 million.
- Financing for a \$6 million host country contract between the Roads Bureau and a private construction firm for rehabilitation of the remaining 390 kilometers of the link road.

Road improvement activities will begin shortly after signature of the Project Agreement as the Roads Bureau begins rehabilitation of the link road with equipment already on hand at its northern extreme, Kongolo. The link road will be completed in four years. Rehabilitation of 1,000 kilometers of feeder roads will begin in the second year of the project. Rehabilitation of an additional 1,000 kilometers will begin when and if adequate post-project funding for their maintenance is assured, and will continue until the PACD.

The total cost of the road rehabilitation and maintenance component (including both U.S. dollars and local currency) will be \$43.3 million (including a contingency and inflation factor).B.

Technical Analysis, Seed Enterprise (Annex 7)

The project will assist in the establishment of a seed company to produce and distribute improved varieties of corn seed to farmers in the project area. The project will contract with the company for the production and distribution services, and will assume certain of the risks (diminishing over time) associated with setting up the seed company. The project's extension activities will encourage the adoption of improved varieties, and will also provide instruction on their proper use; thus the seed company will focus primarily on seed production and distribution. It is expected that the seed company will become self-sufficient during the life of project, and will continue operations after the project terminates.

In this paper, the seed company is developed as a preliminary concept. It will be incumbent upon project management to set specific performance targets for the seed company's development and participation in the project. The first benchmarks should be established prior to the project's first scheduled evaluation (1987). Also, in further developing the seed company concept, project implementors and USAID management will be mindful of AID's policy restrictions regarding subsidies to the private sector. On this aspect of the concept, USAID should initiate a dialogue with appropriate AID/W offices. To ensure a continued supply of improved seed to the northern Shaba farmers during the project start-up period, the project will finance costs of technical assistance to continue the activities of the Ngaba seed farm established under PNS. This technical assistance will continue until such time as the seed company can undertake to supply the seed requirements of farmers in the area presently served by Ngaba (estimated at thirty months).

C. Technical Analysis, Extension Services (Annex 8)

The extension analysis describes the strategy and inputs required to reach as many as possible of the estimated 50,000 farming families in the central Shaba area, to motivate them to buy improved corn seed, to adopt basic improved cultivation practices, and to improve village-level corn storage and drying facilities. The system that is proposed involves the Ministry of Agriculture only at the policy level.

Established local PVOs are available and willing to participate in providing extension services. However, their present capabilities will not permit them to take on the management role in providing such services. Overall supervision and technical guidance is to be provided by an expatriate Extension Specialist and Zairian crop specialists; Peace Corps Volunteers and locally-chosen agents, working with the local PVOs, will provide the services to the farmers. Means of financing the local extension activities post-project will continue to be explored for those areas where the ongoing support of a PVO or other local organization is not possible.

D. Technical Analysis, Village and Railhead Grain Storage and Processing (Annex 9)

Corn losses as a result of improper or inadequate village and railhead storage are estimated to be as high as 50%. The corn marketed also is of lower quality (and therefore is less competitive with corn imported from Zambia) because of inadequate processing. To reduce the storage-related losses and to improve the overall corn quality, the project will undertake a program to improve village storage and to encourage private investment in railhead storage and processing facilities.

The project will provide basic village drying and storage units to selected villages in the project area. Construction materials will be granted to villages that have the initiative and the organization to construct and to manage the storage units, and the project's extension component will provide the required technical assistance. Participating villages will provide the construction labor and some local materials.

The project also will promote the benefits of improved corn quality and encourage private investment in railhead storage and processing facilities (drying and cleaning). Financing for these investments will be made available through the several USAID-financed activities designed to stimulate private sector investment, including the two Commodity Import Programs (Agricultural Inputs Support I and II, 660-0100 and 660-0103), the African Economic Policy Reform Program for Zaire (660-0121), and the planned Private Sector Support Project (660-0120). Wherever possible, USAID will encourage private investment in the project area.

E. Technical Analysis, Information Office (Annex 10)

An Information Office will be established to provide analysis of key issues for the project, such as the demand for corn in Shaba and neighboring regions, the effects of the project interventions on the welfare of small farmers, etc. Information Office activities also will include a system to monitor and evaluate the various elements of the project as a management tool.

The Office will be supervised by a senior Research Specialist, part of the project management team. The Office will be staffed by professionals seconded from the regional offices of the GOZ's various Ministries and agencies (the GOZ will continue to pay salaries and the project will pay all other costs of their work). Additional local staff will be contracted as necessary. In-service and short-term U.S. training will be provided to GOZ staff.

This unit will be disbanded at the end of the project, and the seconded staff will return to their home agencies.

F. Financial Analysis (Annex 11)

The financial analysis examines three crucial financial issues, and then looks at the project overall as a USAID investment in Zaire's economy. It first examines the investment in new, improved corn seed that must be made by

individual farmers for the project to achieve its objectives. It finds the simple return to the farmer's investment in seed is over the three-to-one ratio widely thought needed as an incentive to innovation, even if the farmer were to buy his seed on credit at 25% a year.

The analysis examines the financial feasibility of a seed business, whether as an adjunct to an operating farm or as a de novo investment. Either variant is profitable, even taking into account the high carrying charges (15%) for stocks and capital, and high loss ratios in storage and transport. Seed sales are also shown to be profitable for distributors, whose margin per kilo for seed is as large as the per-kilo price of corn.

As an overall investment, the project has a high foreign exchange return to Zaire: 2.5 to 1.

G. Economic Analysis (Annex 12)

The economic analysis examines the value of the project to the economy of Zaire in the context of its overall resource needs. It also places the project in the context of the Shaban economy. Returns from the project as an investment are estimated. The project as proposed has an internal rate of return of 14.5 percent. The AID/W review of this project proposal (ECPR) did not consider this to be a comfortable IRR. That review also called into question other assumptions and methodologies of the economic analysis. Consequently, implementors will be expected to further pursue the economic setting and rationale of the project. Assistance from AFR/DP in this endeavor may be appropriate if available.

H. Analysis of the Shaba Corn Market (Annex 13)

Central assumptions of both the financial and economic analyses are that the price for corn in Shaba will not decline and the total demand will continue to equal or exceed the available supply at economically sustainable prices. This analysis examines the market for corn in Shaba and the impact upon that market of the project's activities, those of an IBRD-appraised corn project in southern Shaba, and ongoing economic reforms in Zambia.

I. Social Soundness Analysis (Annex 14)

This analysis describes the socio-economic characteristics of the project area, indicating tribal groups and the density and dispersion of population. It describes cropping patterns and production activities in small villages and commercial activities in larger towns and throughout the region. The organizational structures (traditional, administrative and religious) are outlined. The agricultural production process is explained, including the allocation of time and the roles of men and women. The motivation to participate in the project and what is required if participation is to occur are discussed. The analysis explains how the project innovations can be diffused through local leadership and authority and through villagers' travels, and relates these to the learning process that prevails in the area. Finally, the analysis examines the social consequences and benefit incidence for each of the project's components.

In general, the findings of the analysis are that there is considerable opportunity for improving the welfare of central Shaba's rural populations if the project remains sensitive to the cultural and social systems of the area.

J. Administrative Analysis (Annex 15)

This analysis examines the capabilities of USAID, the Government of Zaire, PVOs (both local and international), and private sector firms (both in and out of Zaire) involved in the project to undertake the activities proposed. Where there are shortfalls in capacities of these agencies, the steps that would be required to assist them in carrying out the project interventions are outlined.

K. Environmental Impact Analysis

An Initial Environmental Examination was performed during PID preparation by the REDSO/WCA Environmental Officer. A negative determination was recommended and approved. Although the IEE recommended that \$100,000 be budgeted in the project for non-lethal support of anti-poaching activities in the Upemba National Park Area adjacent to the project zones, due to funding constraints and consequent budget reductions, this item has been eliminated from the proposed project budget.

Conditions and Covenants

The Project Agreement signed between A.I.D. and the Government of Zaire will include conditions to be met by the GOZ prior to the initial disbursement by A.I.D. under the project, as well as conditions to be met by the GOZ prior to disbursements for specific project activities. The Project Agreement also will contain covenants agreed to by the GOZ.

A. Conditions Precedent to Disbursement

1. Conditions Precedent to First Disbursement. Prior to the first disbursement under the Grant, or to the issuance by A.I.D. of documentation pursuant to which disbursement will be made, the Government of Zaire will, except as the Parties may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D. a statement of the name of the person holding or acting in the office of the Government of Zaire specified in Section 8.3 of the Grant Agreements, and of any additional representatives, together with a specimen signature of each person specified in such statement.

2. Condition Precedent to Disbursement for Roads. Prior to disbursement under the Grant, or to issuance by A.I.D. of documentation pursuant to which disbursement will be made, for the rehabilitation of roads not currently under the responsibility of the National Roads Bureau (Office des Routes, O.R.), the Government of Zaire will, except as the parties may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D. evidence that O.R. or another agency designated by the Government of Zaire will have the technical and financial resources to ensure post-project maintenance of such rehabilitated roads.

3. Condition Precedent to Disbursement for Seed Enterprise. Prior to disbursement under the Grant, or to issuance by A.I.D. of documentation pursuant to which disbursement will be made for the financing of the seed enterprise contract, the Grantee will, except as the parties may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D. evidence that the seed enterprise has been organized under the laws of Zaire, has a suitable establishment agreement with the Grantee, and meets the viability and performance needs of the project.

B. Covenants

1. Project Evaluation. The Parties agree to establish an evaluation program as part of the project. Except as the Parties otherwise agree in writing, the program will include, during the implementation of the project and at one or more points thereafter:

- a. reassessment of project goal and purpose to ascertain if the project rational and its associated economic justification, continues to be a sound one.
- b. evaluation of progress toward attainment of the objectives of the project;
- c. identification and evaluation of problem areas or constraints which may inhibit such attainment;
- d. assessment of how such information may be used to help overcome such problems; and
- e. evaluation, to the degree feasible, of the overall development impact of the project.

2. Other Covenants. The Grantee shall covenant:

- a. To maintain and encourage adherence to the present policy which permits inter-regional trade to be freely carried out between Shaba and neighboring regions;
- b. To pursue policy discussions on continued liberalization of the corn market, including the annulment of agricultural marketing campaigns, and especially the corn marketing campaign in Shaba;
- c. To maintain all roads rehabilitated by the project to a standard agreed to by the GOZ and A.I.D.;
- d. To continue to develop assured financing sources, including locally generated revenues, for maintenance of agricultural feeder roads; and

- e. To second to the project's Information Office professional staff from regional offices of appropriate GOZ Ministries.

Evaluation Arrangements

The evaluation schedule for the project is more intensive than that typically followed by A.I.D. projects. Experience with other rural development projects in Zaire, and in particular the North Shaba Rural Development Project, provides ample evidence of the importance and utility of frequent and thorough evaluation of project performance and the assumptions made during project design about the effectiveness of interventions.

During the life of the project, four types of evaluations will be conducted. These are:

- . Internal (on-going) evaluations;
- . Process evaluations;
- . External evaluations; and
- . End-of-project evaluation.

A. Internal Evaluations

Internal evaluations are in-house reviews which will be conducted periodically by the project management team. Central to these evaluations will be the analyses of data collected by the Information Office. The purpose of these evaluations is to assess implementation progress, to identify any constraints to implementation, and to examine the impacts of the project interventions on corn production, grain quality, and farmer income and standard of living.

B. Process Evaluations

Process evaluations will be conducted every twelve months. An external consultant will assess the quality of contract and USAID management. Project files, interviews with management staff, and comparison of project accomplishments to implementation schedules and benchmarks set out in the project paper will serve as the primary sources of information for these evaluations. The product of the process evaluations will be recommendations regarding changes needed in management procedures and in contract and USAID personnel to improve project performance.

C. External Evaluations

Two external evaluations will be conducted to re-examine project strategy and to assess the management, performance, and impact of the project. The first such evaluation will occur in March 1989 (after approximately two years of implementation) and the second in September 1991 (after four years of implementation). The external evaluations will use the results of the internal and process evaluations. These evaluations will be carried out by a team of outside (contract) evaluators. The project management contractor, the

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GOZ, the Peace Corps, and USAID will be involved in developing the scopes of work for these evaluations and in assisting the teams to perform their assignments. The results of these evaluations will serve as a basis for modifying project activities. Such modifications may involve changes in project strategy, inputs, implementation procedures, financing, or timeframe.

An important role will be played by the Information Office in these evaluations. The Office will organize data and analyses from previous internal and process evaluations into an appropriate format for use by the external evaluation teams. To the extent possible, the Office may conduct additional studies and analyses specifically for the evaluations. During the evaluations, the Office will assist the teams with support services. In addition to the information and data provided by the Office, the teams will make use of project records; field site inspections; and interviews with project staff, government officials, farmers, traders, merchants, and millers in the project area while conducting their evaluations.

The evaluation teams will assess the project's environment to determine whether changes have occurred which affect or have the potential to affect project implementation. This assessment leads to a second diagnostic task: to determine why project implementation has or has not proceeded according to schedule. The validity of initial assumptions upon which the project was based and the feasibility of the project's goals and purpose will be re-examined. Inputs must also be examined to determine whether they still are the best means for achieving project objectives. On the basis of these assessments, the team will recommend how project implementation can be improved or expedited through changes in the level or type of project inputs. If necessary, the team will recommend changes in project design to improve project performance.

The first external evaluation will be conducted after two years of implementation. Given the phasing of the project components, this evaluation will concentrate on road construction and seed farm operations. A three-person team consisting of a road engineer, a seed business specialist, and a management specialist will be required for four to six weeks for this evaluation. Because large agricultural projects like this one require several years of operation before they begin to have a significant impact upon the target population, the evaluation will focus on project management and implementation rather than impacts.

The second external evaluation, on the other hand, should give greater attention to the effects of the project on:

- . the incomes and living standards of small farmers;
- . the adoption of improved technologies -- i.e., corn seed, and husbandry, harvesting, and storage practices -- by small farmers;
- . the quantity and quality of corn and corn flour being produced and marketed;

- . the financial sustainability of the seed business and the village grain storage facilities;
- . the performance of the extension services;
- . the performance of the Information Office; and
- . any potentially adverse effects of the project.

This evaluation will serve as a basis for deciding whether a second phase of the project is warranted and give guidance for the design of second-phase activities. By the time of the second external evaluation, all project activities will be underway. The evaluation team should include a civil engineer, a seed enterprise specialist, a grain storage specialist, an economist/financial analyst, an anthropologist, and/or a management specialist. It is anticipated that this evaluation will require about six weeks of work.

Both external evaluations will take a fresh look at the project's goal, purpose, and basic rationale in order to advise USAID whether the perceptions at the outset continue to be validated by project experience. The teams for both external evaluations should include individuals capable of analyzing both the technical and socio-economic aspects of project achievements. Each team should include at least one person who has had previous experience with large-scale rural development projects in Africa. All team members should be proficient in French.

D. End-of-Project Evaluation

The end-of-project evaluation will summarize the achievements of the project, the lessons learned, and the development issues raised by the project. The evaluation will be conducted during the last year of the project. It will identify and assess the factors which account for the degree of success achieved by each project component. The evaluation will give particular attention to the replicability of the project strategy and activities to determine their utility in other rural development projects, and to continuing or newly-recognized constraints to development which might be addressed in subsequent phases of the Central Shaba Agricultural Development Project.

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Annex 1

PID Approval Message

Text of State 035140, February 4, 1986

1. The ECPR meeting for the central Shaba project was held on January 16, 1986. It was chaired by DAA/AFR Lois Richards and attended by USAID/Zaire's Mission Director and representatives of AFR/PD, AFR/TR, PPC, AFR/CCWA, AFR/DP, AF/C and Devres. The PID was approved, although the proposed funding levels were considered highly doubtful, with the following issues and guidance identified which the Mission and design team need to address during PP preparation.
2. Level of funding: The ECPR believes it necessary for the Mission to re-examine the scope of the project and the funding level given Gramm-Rudman and because of the program/policy implications of tying up all ESF resources which might become available over the next five years in this one project. AFR Bureau does not believe it will be possible to fund the level proposed over the next five years. Therefore, the Mission needs to reconsider the total magnitude of the proposal or alternatively the PP should indicate discrete activity/geographic packages and the funding required for each package. Each package or group of interrelated packages should be placed in priority order. This will enable all concerned to weigh various obligation levels against goal and purpose as well as indicate how cutbacks would affect achievement of project targets. If project funding can be stretched out over 6-7 years, this should be discussed, along with the consequences of such a stretch out. The agency as a whole has to be flexible in responding to budget realities; this fluid situation must be reflected in the PP.
3. Sustainability: The PP needs to define what sustainability means within this project, i.e., both resource mobilization for essential costs and sustaining the performance of the institutions responsible for individual project tasks, as well as what steps will need to be taken to achieve sustainability of resource mobilization and institutional performance. Particular concerns were expressed over sustainability of the Mission's proposed farm-to-market road maintenance plan, the seed farm, and PVO agricultural extension program. A CP or equivalent assurance will be needed to insure that: (a) A permanent system has been instituted to generate annual revenues for farm-to-market road maintenance; and (b) funds are in place for maintenance before disbursement on farm-to-market road rehabilitation projects. Existence of a long-term funding arrangement for maintenance of the Project North Shaba roads before project authorization may be necessary to provide initial evidence of GOZ commitment to the central Shaba project.
4. Project goal and purpose: While the project seeks to increase production and farmer income, a major objective also appears to be introduction of a substantially private production support system which is sustainable. This suggests that the project be defined differently from the description

presented in the PID text and the log frame. (Incidentally the log frame purpose statement did not conform with the text.) At a post-ECPR meeting, it was suggested that the purpose be: To introduce and strengthen a production and marketing support system which relies principally on locally generated revenue and private services. The end of project status indicators would then relate to making the components of the system effective. Output targets would be specified in terms of performance (by the components) and would be geared to assuring an appropriate level of production while also achieving sustainability.

5. Project design: The trade-offs between production and institutional development and the setting of benchmarks which really are indicative of performance become a key part of the design and one of the reasons why the ECPR raised concern about the design schedule. Given the complexity of the project design and the number of studies and design considerations to be completed before PP submittal, the ECPR expressed concern that it may prove difficult to meet the PP completion schedule. If significant delays arise, we would appreciate early advice from the Mission. The ECPR made the following recommendations concerning planned studies:

(a) Social soundness analysis: A variety of social issues will need to be understood (ethnic/gender division of labor, land use rights and patterns, cropping patterns and seasonal labor demands, etc.) Much of this will be needed prior to final project design. It is not inconceivable that original project concept per PID will change as result of studies. If so AID/W needs to be advised ASAP. In addition, recommend Mission incorporate followup research during project implementation.

(b) Local resource mobilization: The PP design needs to appraise alternative approaches to local resource mobilization (sources, timing, yields, etc.) and to specify what further studies and tracking systems will be needed during the project.

(c) Outputs and benchmarks: Given the suggested changes to the design of the project, during PP review AID/W will look at how the design handles project outputs and quantifiable benchmarks that are needed so that performance can be monitored and progress in meeting targets can be evaluated.

(d) Institutional capacity: The PP should examine the realism of decentralized government authority and local revenue generation; sources of revenue for regional and farm-to-market roads as noted in Para 3; the appropriateness of having the Office des Routes (OR) be responsible for either management or accomplishment of maintenance of farm-to-market roads; the realism of a private, commercial basis for the start-up of the seed farm; and the presence, capacity and receptivity of local PVOs to participate in seed distribution and extension (at what pace and for what areas).

Furthermore, the operational research that should occur during the project should be defined in the PP. Also, analyses should identify conditions precedent and covenants which may be needed to meet revenue requirements and overcome institutional weaknesses.

6. Economic return: Without wishing to increase the complexity of the project, the ECPR recognized that information will be needed about corn production and marketing in Shaba (including imports). The design effort should include a practical way of collecting data (recognizing the absence/unreliability of present statistics) that will permit a basis for appraising the economic viability of the project and that may be used to estimate actual and projected future production, demand and price variations during implementation. The ECPR noted as design concerns the relationship between the increased corn production in central Shaba in the face of surplus corn production in other countries in the region and farmers' ability to obtain a fair share of consumer prices sufficient to provide an incentive to produce corn. Other economic concerns include the viability of the seed farm and the anticipated return from the project with realistic assumptions about geographic scope and role of extension (other than seed distribution) in the early years, i.e., assuming that the essential benefits will come primarily from road improvements and production increases due to use of improved seeds. Project design should also examine the effect of credit shortages continuing to operate as a constraint on railhead and market town investments. The design will also want to recognize how the absence of agricultural credit will constrain farmer adoption of improved practices.

7. Policy changes and CPs: PP should identify and discuss project level policy changes. Policy changes should be in the areas of local revenue generation (railhead tax and other measures), GOZ decentralization to Shaba region of project oversight, interregional trade barriers, price controls, etc. The basis for initiating the seed farm was also raised, with a preference expressed, if practicable, to begin with conditions permitting a private enterprise to be self-sustaining from project inception in preference to start-up through a management contract which would be converted to an ownership position at a future time.

8. USAID management of design and implementation: The need for USDH engineering involvement in both design and implementation was discussed, since this burden would likely fall on REDSO/WCA. The ECPR also concluded that staffing decisions should be made by the Mission, but raised the central concern whether a USAID Project Officer in Kinshasa making periodic visits to the project area would be able to provide sufficient oversight of this complex project. Discussion of policy aspects needs to be done by direct hire personnel and supervision of a contractor who has oversight and/or advisory responsibilities to a number of organizations, some of whom represent new institutions, requires close, continuing supervision by A.I.D. management, especially during early periods of the project. The Mission may be wise to review again the PID's proposal on assignment of personnel.

9. The ECPR agreed that other issues identified in the PID need to be addressed. The ECPR concluded, except as noted in Para 3, that issues related to sustainability of the North Shaba Project components were not the subject of this review.

10. AID/W looks forward to PP submittal and review by late June 1986.

660-0105 Project Paper: Response to ECPR Issues.1. Level of Funding.

The ECPR noted that it might not be possible to fund the level of foreign exchange expenditure proposed by the PID (\$ 56 million over a five-year LOP). It therefore suggested that USAID consider stretching out funding over 6-7 years.

The project planning (PP) originally envisioned a funding level of \$41 million. That level remains the one that would most effectively achieve the project's objective of food self-sufficiency for Shaba. Because of the uncertainty that shrouds future funding levels, however, proposed A.I.D. financing has been reduced by \$13.1 million to \$27.9; this level is the minimum needed to achieve planned outputs. The cuts made and the risks associated with these cuts are as follows:

a. O.R. has demonstrated its commitment to the planned roads activities by agreeing to fund \$5.9 million (originally slated as part of the AID contribution) of the \$7.4 million budgeted for fuel, bridges, culverts and other construction materials. The risks of this transfer of financial responsibility are

- less certainty that project inputs will be delivered on time; and
- a reduction in the funds available to O.R. for its national road maintenance program.

b. The remaining \$1.5 million of the \$7.4 million for fuel, bridges, culverts, and other construction material was shifted from foreign exchange to local currency (PL480- and CIP-generated counterpart funds) costs. This shift reduces counterpart funds available for other USAID program activities. USAID has also cut the \$2.0 million budgeted for heavy equipment that was to be purchased at the end of project and used for road maintenance. This decision may reduce the quality of post-project road maintenance.

c. The seed business component sustained a budget reduction of \$1.0 million that was earmarked for the capital investment costs of a seed farm in Niembo. This renders less certain a continued supply of improved seed to project area farmers, after the project ends.

d. The contingency/inflation line item was reduced to five percent (compounded). This will limit USAID's flexibility to deal with unforeseen events that may arise during implementation.

In summary, the project inputs presented in the PP are the bare minimum required to achieve the stated objectives. Further budget reductions would have a considerable impact on project outputs.

Thus, the PP has addressed the funding issues raised in the ECPR in two ways:

- By cutting planned dollar costs in half from the PID level of \$56 million to \$27.9 million; and
- by stretching out the project two years from the PID's five to seven.

If it is determined that further reductions in this budget are necessary, then USAID would propose that the decision on where to cut be made by USAID in the course of implementation. This will provide USAID with the flexibility needed to take advantage of future opportunities (such as other donor or increased GOZ contributions) that could allow the project to go ahead as planned.

2. Sustainability.

The ECPR concluded that the Project Paper "needs to define what sustainability means within this project." It then offered a provisional definition by suggesting that the PP discuss this issue in terms of "sustainability of resource mobilization for essential costs" (i.e. financial sustainability) and "sustaining the performance of the institutions responsible for...project tasks" (i.e. institutional sustainability). All components of the PP strive to respond to these admonitions.

a. Seeds: The seed company will be operated on a for-profit (i.e., financially sustainable) basis, and its technical sustainability will be assured via the establishment of a joint venture between a Zairian firm interested in producing seed and a third-country firm already in possession of the requisite technical skills.

b. Extension: This component will not necessarily be fully sustainable after the initial seven-year phase of the project. Thus, it may be necessary to continue to finance some or all of the elements of this component in a second phase of this project. However, it is anticipated that local PVOs will, with assistance from the project during its first phase, further develop their nascent capability to provide some basic agricultural extension services to their constituents. In any event, the project's success is only partially dependent on the presence of an extension service per se; it is dependent rather on the introduction of improved seeds and practices, ongoing use of which would not necessarily require the continued presence of an extension service.

c. Roads: Technical and financial sustainability of the 1,000 kilometer link road and the first 1,000 kilometers of feeder roads is assured, as these will be the responsibility of the national Roads Bureau, which has both the technical competence and the assured off-budget revenue source (the national fuel tax) required to continue their maintenance post-PACD.

Sustainability of the remaining 1,000 kilometers of feeder roads is problematic, as neither a similar source of funding for their maintenance nor a competent institution capable of taking charge of them now exists. However, these feeder roads will not be repaired unless and until both these problems are solved and USAID's dialogue with the GOZ on these questions will be informed by the joint IBRD/UNDP initiatives now taking place on the same subject.

d. Storage: This is essentially an infrastructure-building activity. Village storage units will be constructed free of charge in those villages that demonstrate (by their willingness to provide labor and a construction site) their capability to receive them. Once these technically very simple units are in place, they will require little maintenance or further investment. Thus, their technical and financial sustainability is not in question.

e. Information Office: This office will be disbanded at the PACD and is not itself meant to be sustainable. However, the skills imparted to the GOZ officials who will be seconded to the office will remain with them after project assistance is completed.

3. Project Goal and Purpose.

The ECPR did not take issue with the project's goal of self-sufficiency in staple food crops. It suggested that the project's purpose be "To introduce and strengthen a production and marketing support system which relies principally on locally-generated revenue and private services." This has been refined in the PP to read: "To increase the production of corn in Shaba, relying to the extent practicable on private sector interests mobilized to induce and support small cultivator productivity." The project design team considered a production purpose to be more measurable and to provide clearer direction to project implementors than an institution-building purpose. Institutional development remains an integral activity contributing both to purpose achievement and to the sustainability of that achievement.

4. Project Design.

The ECPR made a number of suggestions as to the types of studies that should be undertaken during the remainder of the design process. Most of these were completed during preparation of the PP. They included:

a. A social soundness analysis addressing such issues as ethnic/gender division of labor, land use rights and patterns, cropping patterns, and seasonal labor demand. No significant changes in the design concept from that presented in the PID resulted from this research.

b. A study of local resource mobilization. One member of the PP team prepared an extensive study of this topic. His conclusion was that sufficient amounts of local government financing for this project were not likely to become available in the near term, though sources of such

revenue do exist, and these might be tapped in the longer term. For the moment, mobilization of existing institutional assets (especially PVOs) would seem more promising. Also, the project itself will further explore the local revenue question. USAID had hoped to do so in conjunction with S&T's related project, and the project budget initially included \$500,000 for this purpose. However, present funding levels preclude this option.

c. Specification of outputs and benchmarks. These are included in the Logical Framework.

d. Various studies of institutional capacity, including that of the regional government to generate and provide revenues, that of the Roads Bureau to maintain roads post-PACD, and that of local PVO's to participate in seed distribution and extension. All these points were studied in detail during the design process and are addressed in the PP. In brief, the conclusions are that one cannot yet count on local government to raise or provide revenues (we are therefore dealing with the issue of financial sustainability in the ways described in Section 2 above); that the Roads Bureau can and will maintain at least 1,000 kilometers of agricultural feeder roads in the project area; and that while there exist only a few rural PVOs in central Shaba at present capable of participating deeply in project activities, the project will work with those that do exist to the extent that they are willing to participate.

5. Economic Return.

The ECPR's concerns included:

a. That the project design incorporate a practical way of collecting data that will provide a basis for appraising the economic viability of the project. The PP allocates this task to the Information Office.

b. The relationship between increased corn production in central Shaba in the face of surplus corn production in nearby countries and the farmers' ability to obtain a fair price. The economic analysis addresses this point, and concludes that small farmers will be the major beneficiaries from the incremental production that results from project activities. Changes in the marketing system (notably lower barriers to entry brought on by lower transport costs and a lower capital investment requirement for beginning transport operations) will work to the benefit of the small farmer, as will the active liberalization of inter-regional trade and investments now being made by the GOZ with assistance from other donors in improving the dissemination of market information (e.g. by radio). Moreover, the distorting effects of surplus corn production in neighboring countries, particularly Zambia, on the Shaba corn market will soon abate, as the price differential between imported and domestic corn will decline following the Zambian government's recent removal of subsidies on fertilizer (Annex 13 presents a study of the Shaba corn market that was prepared during the PP design).

GD

c. The effect of credit shortage on potential railhead and market town investments. While this project does not deal directly with this problem in its first phase (i.e., in the seven years proposed herein), other planned USAID activities (e.g. the planned Private Sector Support Project 660-0120 and the proposed AEPRP activity) may help alleviate this constraint.

d. The effect of the lack of agricultural credit on the farmers' adoption of improved agricultural practices. Village cultivators in general are facing first-generation constraints to increased food production and marketing (i.e., lack of improved roads and of economical market access). Only when these constraints have been overcome will second-generation constraints (such as agricultural credit) loom sufficiently large on the horizon to demand attention. The improved practices to be promoted by this project will require no cash outlay by practicing cultivators, except for small amounts required to purchase seed. Experience in the PNS area and elsewhere in Shaba indicates that farmers can and do reserve cash for this purpose without recourse to credit facilities.

6. Policy Changes and CPs.

The ECPR suggested that these focus on the following points as appropriate:

- a. Local revenue generation.
- b. GOZ decentralization to the Shaba regional government of responsibility for project oversight.
- c. Removal of inter-regional trade barriers and price controls.

The CPs and covenants specifically address the third of the above concerns. Further, USAID will, as noted above, continue to pursue its ongoing dialogue with the GOZ on the issue of local financing for feeder road maintenance and extension services. On the question of decentralization, the project is designed so that, for most of its components, the question of direct GOZ oversight (whether centralized or decentralized) does not arise, as these components are to be implemented through private entities. Those components that do require direct GOZ oversight will be handled partially at the regional level and partially at the national level in accordance with the GOZ's standard operating procedures.

The ECPR also noted that AID/W would prefer, "if practicable," that the seed enterprise "begin with conditions permitting a private enterprise to be self-sustaining from project inception in preference to start-up through a management contract which would be converted to an ownership position at a later time." The design responds to this concern by mandating that a local firm with which USAID will contract will indeed own the seed business from the very beginning of the project. In short, this will not be a USAID seed farm, but a private business.

7. USAID Management.

The ECPR expressed concern about USAID's lack of a U.S. Direct-Hire Engineer and about the ability of a Kinshasa-based project officer to oversee project activities effectively. The PP responds to these concerns by:

a. Funding a PSC Engineer responsible for providing needed engineering oversight.

b. Proposing a technical assistance team for the road improvement component that will include no fewer than five on-site engineers.

c. Funding a PSC who will be based in Lubumbashi to oversee the agricultural components.

d. Devolving responsibility for local oversight of the road improvement activities to a PSC already in place in Lubumbashi.

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Annex 2

Logical Framework

Narrative Summary	LOGICAL FRAMEWORK	CENTRAL SHABA PROJECT	
	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Program or Sector Goal			
A. To achieve regional self-sufficiency in basic food production, in particular corn.	<p>A.1. A net increase of 200% in the quantity of marketed corn in Central Shaba (Kabongo, Kabalo, Malemba-Nkulu, and Bukama zones) within seven years from the start of the project. Total Central Shaba corn production to increase from approximately 35,000 MT in 1985 to an estimated 85,000 MT in 1992.</p> <p>2. Decreased importation of corn (flour) into Shaba from Zambia and other countries.</p> <p>3. Improved nutritional level of the rural population.</p>	<p>A.- Volume of locally produced corn and corn flour available in markets.</p> <ul style="list-style-type: none"> - Volume of corn stored in rural villages. - Volume of imported corn available in markets. - Official GOZ production and import statistics. - SNCZ shipping records. - Project contractor reports and surveys: - Interviews with farmers, millers, and corn buyers. - Surveys of selected farming communities. - Reports of extension agents. - Reduced number of malnutrition cases as evidenced by reports of health facilities. 	<p>A.1. The market demand for corn in the Shaba region is approximately 380,000 MT. Within the Kasai regions, there exists an additional market demand of at least 100,000 MT for Shaba producer corn.</p> <p>2. Increased yields due to improved seeds in combination with improved cultural practices and village storage facilities that reduce production losses will sufficiently increase farmer incomes so as to encourage farmers to maintain or increase their production levels.</p> <p>3. The efficiency and competitiveness of the corn marketing system improves.</p>
B. To increase the income of village cultivators in Central and North Shaba.	<p>B. Increased standard of living for village cultivators.</p>	<p>B. Village level surveys to monitor changes in real income.</p> <ul style="list-style-type: none"> - Monitoring of the variety and quality of goods available in local markets, as well as the number of sellers. - Interviews with local merchants. - Surveys to monitor nutritional changes in farm family diets. 	<p>B.1. The average farmgate market price for corn does not decline.</p> <p>2. Corn buyers from the Kasai are allowed free, unhindered entry into the Shaba corn market.</p> <p>3. Project interventions increase the competitive system among corn buyers and millers</p>
C. To introduce self-sustaining innovations that will strengthen corn production and marketing.	<p>C.1. An extension service, assisted by the Peace Corps, offers ongoing advice on agricultural and storage practices to farmers.</p> <p>2. Village grain storage and conservation facilities established in the project area.</p> <p>3. A profit-making privately run seed farm exists.</p> <p>4. At least 2000 kilometers of regional link road and feeder roads are improved and maintained in Central Shaba.</p>	<p>C. Project contractor reports.</p> <ul style="list-style-type: none"> - Reports of extension agents. - Interviews with farmers, millers, and corn buyers. - Quarterly and annual reports of the seed farm company. 	<p>C.1. The GOZ does not discourage private sector investments in the agricultural sector.</p> <p>2. The GOZ continues to make available to the Roads Bureau the funds needed to maintain roads in the project area.</p> <p>3. Any official barriers to the entry of new buyers into the corn market will be reduced if not eliminated.</p>

LOGICAL FRAMEWORK

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Project Purpose			
<p>To increase the production of corn in Shaba, relying to the extent practicable on private sector interests mobilized to induce and support small cultivator productivity.</p>	<p>150% increase in useable corn production in the Central Shaba area by the project's seventh year.</p>	<ul style="list-style-type: none"> - Project surveys of selected villages. - Interviews with cultivators, traders, and millers. - Observed yield increases from use of improved seed. - Marketing records (milling and shipping). 	<ol style="list-style-type: none"> 1. Reduced costs of transport on improved project area roads will induce area haulers to provide more frequent and timely marketing services to the project area cultivators. 2. Project area farmers will adopt improved seed and improved storage techniques.
Objectives			
<p>A. To upgrade the quality of the selected rural link roads and feeder roads of Central Shaba so that marketable corn and other basic food crops can be efficiently transported to consumption centers and so that consumer goods can be brought into the area.</p>	<p>A.1. 1000 kilometers of link road rehabilitated to specification from Makulakulu to Kongolo.</p> <p>2. At least 1000 kilometers of feeder roads rehabilitated to specification within the project area.</p> <p>3. Three ferries installed at critical river crossings.</p>	<p>A.- On site control and verification of road rehabilitation work.</p> <ul style="list-style-type: none"> - Visual examination of the condition of the roads after usage and comparison with predicted conditions based upon specifications being met. - Visual observation and evaluation of the operating conditions of the ferries. - Project contractor reports. - Recurrent and sufficiently detailed engineering and inspection reports on road conditions. 	<p>A. The present level of competence continues within the Roads Bureau.</p>
<p>B. To upgrade the capacity of the Roads Bureau to maintain the regional link road and the project reconstructed portions of the Central Shaba feeder road system.</p>	<p>B.1. An operations base for the Roads Bureau is constructed at Kamungu to service the Central Shaba area, and the existing base at Kongolo is rehabilitated.</p> <p>2. Three support bases are established at Kabondo Dianda, Nalenba-Nkulu, and Kabalo.</p> <p>3. Specified road construction and maintenance equipment has been obtained and is maintained in working order.</p> <p>4. Professional and technical staff have been hired, are at work, and receive full salaries on a regular basis.</p>	<p>B.- Visual observation of the operations base and support base.</p> <ul style="list-style-type: none"> - Vehicle and equipment purchase and maintenance records. - Recurring reports on staffing and payrolls. - Recurring reports on the availability within the Roads Office supply depot of an adequate supply of spare parts and maintenance materials. - Project contractor reports. 	<p>B. Adequate national and regional tax revenues will be provided to the Roads Bureau to finance maintenance operations and replacement of equipment.</p>
<p>C. To establish a privately-operated seed company that will both produce and contract local farmers for the production of improved open-pollinated corn seed that will be sold commercially to farmers within Central Shaba (and elsewhere).</p>	<p>C.1. A seed company is established in Shaba.</p> <p>2. Improved seed is being produced by the seed company and the contract growers.</p> <p>3. The seed company is providing technical advice and inputs to its contract growers.</p> <p>4. Improved seeds are being distributed to the target population.</p>	<p>C.- Quarterly and annual reports of the seed company.</p> <ul style="list-style-type: none"> - Legal agreements and visual verification that the seed farm exists and is operational. - Project contractor reports. - Reports from extension workers. 	<p>C.1. A private seed company will undertake a seed business in Shaba.</p> <ol style="list-style-type: none"> 2. The GOZ will not impede a private seed company from establishing an effective and efficient operation in Zaire. 3. The seed company will aggressively market its product and sell to all interested buyers. 4. Farmers will see the benefits of improved seed and rapidly adopt it.

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LOGICAL FRAMEWORK

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p>D. To establish a system of agricultural extension services that will a) provide project area farmers with advice and guidance on improved cultural practices and on the operation and maintenance of village grain storage facilities and b) allow them to continue such activities without aid once the project ends.</p>	<p>D.1. 133,000 farmers have received extension services</p> <p>2. Villages provided with extension services have increased corn production due to improved cultural practices and/or corn storage and preservation practices.</p>	<p>D. Reports of extension agents. - Project contractor reports. - Village surveys.</p>	<p>D. The extension agents, with technical assistance from the project, will have the capacity to organize effective extension geared to the needs of project area farmers.</p>
<p>E. To establish grain storage and preservation facilities in selected villages in the project area to reduce post-harvest losses, improve product quality, and increase village cultivators' income.</p>	<p>E. 68 farming villages within the project area equipped with grain storage facilities.</p>	<p>E. Visual observation of the existence and operation of the village storage facilities. - Reports of extension agents. - Sample interviews with farmers in selected villages.</p>	<p>E. The extension services provided by the Peace Corps and locally-hired extension agents will assist villages in the construction and operation of storage facilities.</p>
<p>F. To establish for the life of the project, an information office that will increase the technical capacities of selected GOZ staff at the regional level while carrying out research and analysis for project requirements.</p>	<p>F.1. Twenty GOZ professional staff have received in-country training in data analysis and in project management and evaluation.</p> <p>2. Four members of the GOZ professional staff of the Shaba region have received U.S.-based training in project management and micro-computer usage.</p> <p>3. The information office has completed studies and analysis of key project issues such as: a) the nature and structure of the corn market; and b) the income benefits of increased food crop production and improved storage and cultural practices upon village cultivators.</p> <p>4. This office has provided continuous monitoring and evaluation of the project during its entire life.</p>	<p>F. Project contractor records. - Reports and studies published by the information office. - Reports on GOZ regional government staffing.</p>	<p>F. The GOZ regional agencies will be willing to second the desired staff to the project and will continue to pay on a regular basis their salaries during their period of secondment.</p>

LOGICAL FRAMEWORK

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Inputs			
A. Long-term U.S. staff providing technical and institution building assistance.	A. 14 senior and middle level staff.	A. Project contractor records.	A. Funding for contract implementation is available as needed.
B. Short-term U.S. staff providing technical and institution building assistance.	B. Short-term technical assistance.	B. Project contractor records.	B. Vehicle and equipment waivers are granted.
C. Training courses in data analysis, micro-computer usage and project management and evaluation for selected staff of GOZ regional agencies.	C.1. 200 man-months of in-country training for GOZ seconded staff. 2. Four man-months of U.S. based training for 4 GOZ professional staff members.	C. Project contractor records.	C. GOZ seconded staff to project.
D. Equipment and vehicles.	D.1. Heavy road construction equipment and ferries for the Roads Bureau. 2. Vehicles, equipment, and supplies for extension services. 3. Vehicles, equipment, and supplies for the grain storage construction activity. 4. Vehicles, equipment, and supplies for project management unit and project information office located in Lubumbashi.	D. Project contractor records. - On-site inspection.	D. Project equipment and materials can be delivered to project area on time without serious losses or damage.
E. Facilities.	E.1. One operations base (at Kamungu) and 3 support bases (Kabondo Dianda, Malemba Mkulu and Kabalo) constructed for use by Roads Bureau, plus rehabilitation of the existing base at Konkolo. 2. Seed farm established. 3. 68 village storage facilities constructed.	E. Project contractor records, - Visual observation of facilities.	E. Construction of facilities can be complete by end of the project.
F. Direct financial assistance.	F. \$6,038,000 for private contractor construction work on link road.	F. Project contractor records.	
G. Private firm to operate seed business.	G.1. Sub-contract signed between seed company and primary contractor. 2. 200 MT of seed corn produced annually by seed company by end of project life.	G. Project contractor records. - Annual reports of seed company.	G. A private seed company will be able to operate in Shaba on a profit-making basis.
H. Peace Corps Volunteers to provide agricultural extension services to project area farmers.	H. Farmers have received extension services by end of project life.	H. Project contractor records. - Extension agent reports.	H. Local PVOs will support extension network.

LOGICAL FRAMEWORK

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Outputs			
A. Improved, high-yield, open-pollinated seed available to all project area farmers.	A. 200 MT of improved seed produced annually by the seed company.	A.- Quarterly and annual report of the seed company. - Project contractor reports.	A.1. Price structure for corn remains such that production of corn remains competitive in production with other crops. 2. Incentives exist for farmers to increase income through increasing agricultural production. 3. Farmers are willing to pay market prices for improved seed and renew their seed stock every three years.
B. Improved cultural practices employed by project area farmers.	B. Farmers have received and adopted the advice on improved cultural practices communicated by the extension services.	B.- Reports of extension agents. - Surveys of village. - Interviews with farmers. - Visual observation of cultivated fields.	B.1. Farmers readily realize the value of adopting improved cultural practices.
C. Improved grain storage and processing facilities are located in villages throughout the project area and result in a higher quality grain product.	C. 68 villages within the project equipped with storage facilities	C.- Visual observation of the existence and operation of village facilities. - Project contractor reports. - Reports of extension agents. - Analysis of the quality of the grain and the flour produced from it.	C.1. Farmers have acquired, through the extension agents, the skills needed to operate and maintain village storage facilities. 2. Farmers, corn buyers, and millers will all realize the economic advantages to be gained from improving the quality of grain and its resultant flour.
D. Rehabilitated roads and bridges.	D.1. 1000 kilometers of link road rehabilitated to specification from Makulakulu to Kongolo. 2. At least 1000 kilometers of feeder roads rehabilitated to specification within the project area. 3. Three ferries installed at critical river crossings.	D.- Visual observation of rehabilitated roads and bridges and newly installed ferries. - Project contractor records. - Roads Bureau reports and statistics.	D.1. Roads Bureau has the capacity to maintain the link road and feeder roads after end of project. 2. GOZ guarantees Roads Bureau sufficient funds to fulfill mandate.
E. Increased technical and management abilities of GOZ regional government officials seconded to project.	E.1. At least 20 GOZ personnel have received in-country training in data analysis and in project management and evaluation. 2. At least four GOZ personnel have received U.S.-based training in project management and micro-computer usage.	E.- Project contractor records. - Reports on GOZ regional government staffing.	E. The GOZ regional agencies will have seconded the desired staff to the project and pay on a regular basis their salaries.

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Annex 3

Statutory Checklist

CROSS REFERENCES:

IS COUNTRY CHECKLIST UP TO DATE?
HAS STANDARD ITEM CHECKLIST BEEN
REVIEWED FOR THIS PROJECT?

Yes.

A. GENERAL CRITERIA FOR PROJECT

1. FY 1985 Continuing Resolution
Sec. 525, FAA Sec. 634A.

Describe how authorizing and appropriations committees of Senate and House have been or will be notified concerning the project.

1. Congress was notified concerning this project in the FY1986 Congressional Presentation.

2. FAA Sec. 611(a)(1). Prior to obligation in excess of \$500,000, will there be (a) engineering, financial or other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?

2. Yes; described in the Project Paper.

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?

3. None required.

4. FAA Sec. 611(b); FY 1985
Continuing Resolution Sec.
501. If for water or water-related land resource construction, has project met the principles, standards, and procedures established pursuant to the Water Resources Planning Act (42 U.S.C. 1962, et seq.)? (See AID Handbook 3 for new guidelines.)

4. N/A.

5. FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed \$1 million, has Mission Director certified and Regional Assistant Administrator taken into consideration the country's capability effectively to maintain and utilize the project?
5. Yes; see Annex E to the Project Paper.
6. FAA Sec. 209. Is project susceptible to execution as part of regional or multilateral project? If so, why is project not so executed? Information and conclusion whether assistance will encourage regional development programs.
6. No.
7. FAA Sec. 601(a). Information and conclusions whether projects will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; and (c) encourage development and use of cooperatives, and 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.
7. This project is designed to foster private initiative and competition and to discourage monopolistic practices.
8. FAA Sec. 601(b). Information and conclusions 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).
8. U.S. firms will have the opportunity to bid for project implementation and technical assistance contracts, and proprietary procurement for certain U.S. commodities will be authorized.

9. FAA Sec. 612(b), 636(h); FY 1985 Continuing Resolution Sec. 507. 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 in lieu of dollars.
9. GOZ-owned counterpart funds, generated by PL480 Title I and Commodity Import programs, will be used to the extent that they are available to meet local currency costs of the project.
10. FAA SEC 612(d). Does the U.S. own excess foreign currency of the country and, if so, what arrangements have been made for its release?
10. No.
11. FAA Sec. 601(e). Will the project utilize competitive selection procedures for the awarding of contracts, except where applicable procurement rules allow otherwise?
11. Yes.
12. FY 1985 Continuing Resolution Sec. 522. If assistance is for the production of any commodity for export, is the commodity likely to be in surplus on world markets at the time the resulting productive capacity becomes operative, and is such assistance likely to cause substantial injury to U.S. producers of the same, similar or competing commodity?
12. N/A.
13. FAA 118(c) and (d). Does the project comply with the environmental procedures set forth in AID Regulation 16? Does the project or program take into consideration the problem of the destruction of tropical forests?
13. Yes; see Initial Environmental Examination, Annex 2 to the Project Identification Document.

14. FAA 121(d). If a Sahel project, has a determination been made that the host government has an adequate system for accounting for and controlling receipt and expenditure of project funds (dollars or local currency generated therefrom)?

14. N/A.

15. FY 1985 Continuing Resolution Sec. 536. Is disbursement of the assistance conditioned solely on the basis of the policies of any multilateral institution?

15. No.

16. ISDCA of 1985 Sec. 310. For development assistance projects, how much of the funds will be available only for activities of economically and socially disadvantaged enterprises, historically black colleges and universities, and private and voluntary organizations which are controlled by individuals who are black Americans, Hispanic Americans, or Native Americans, or who are economically or socially disadvantaged (including women)?

16. N/A; this project is ESF-, not DA-funded. However, a considerable portion of project activities will be implemented by and through PVOs. In addition, some procurement services will be obtained through certified 8(a) firms.

B. FUNDING CRITERIA FOR PROJECT

3. Economic Support Fund Project Criteria

a. FAA Sec. 531(a). Will this assistance promote economic and political stability? To the maximum extent feasible, is this assistance consistent with the policy directions, purposes, and programs of part I of the FAA?

a. This project will increase local production of basic food crops, thereby reducing Zaire's dependence on imported foods and contributing to the country's economic and political stability.

b. FAA Sec. 531(c). Will assistance under this chapter be used for military or paramilitary activities?

b. No.

c. ISDCA of 1985 Sec. 207. Will ESF funds be used to finance the construction of, or the operation or maintenance of, or the supplying of fuel for, a nuclear facility? If so, has the President certified that such country is a party to the Treaty on the Non-Proliferation of Nuclear Weapons or the Treaty for the Prohibition of Nuclear Weapons in Latin America (the "Treaty of Tlatelolco"), cooperates fully with the IAEA, and pursues nonproliferation policies consistent with those of the United States?

c. NO.

d. FAA Sec. 609. If commodities are to be granted so that sales proceeds will accrue to the recipient country, have Special Account (counterpart) arrangements been made?

d. N/A.

Annex 4

Grantee Request for Assistance

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English Translation of French Original

Kinshasa, June 20, 1986

No. OR/ADR/001/427/86.-

The Director
USAID
Kinshasa

Subject: Central Shaba Project

Dear Sir:

During a meeting on June 11, 1986, your representatives discussed with us the options proposed in the "Project Paper" for project 105.

We have recognized your proposal to program a total of approximately \$30 million to the roads component of this project, and thank you for this important contribution to our Five-Year Plan.

The major part of the network this project is concerned with consists of roads classified "National" or "Regional," and consequently within the normal responsibility of the Roads Bureau.

Thus, there is no problem for the Roads Bureau in assuring the financing of the expenditures (in local staff and fuel) necessary to the work on these roads, estimated at \$750,000 per year equivalent in Zaires.

In any case, the Office des Routes undertakes to assure, at the end of the project, the maintenance of these roads normally in our charge.

Sincerely,

National Roads Bureau
Roads Department

A. de Penfentenyo
Advisor

J. Baudoin
President and General Director

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REPUBLIQUE DU ZAIRE

Mouvement Populaire de la Revolution

Kinshasa, le 20 JUN 1986



A.F./a.m.

N° OR/ADR/001/ 427 /86.-

V/Réf. :
Annexe :
Objet : Projet Shaba Central.

A Monsieur le Directeur
de l' USAID
à
KINSHASA.-

Monsieur le Directeur,

Lors d'une réunion en date du 11 juin 1986, vos services nous ont fait part des options proposées au " Projet Paper " du projet 105.

Nous avons pris bonne note de votre proposition d'affecter un montant de l'ordre de 30 Millions US \$ à la Composante routière de ce projet et nous vous remercions de cette importante participation à notre plan quinquennal.

La majeure partie du réseau concerné par ce projet est constituée de routes classées Nationales ou Régionales et par conséquent à charge normale de l'Office des Routes .

Il n'y a donc aucun problème pour que l'Office des Routes assure le financement des dépenses en personnel local et en carburant nécessaires aux travaux sur ces routes estimées à l'équivalent en Zaïres de 750.000 \$/ an.

Par ailleurs, l'Office des Routes s'engage à assurer, à la fin du projet, l'entretien de ces routes normalement à notre charge.

Veuillez agréer, Monsieur le Directeur, l'assurance de notre considération distinguée.

A. de PIERRENYO
CONSEILLER



J. BAUDOUIN
PRESIDENT DELEGUE GENERAL.-

C.C. : - D.E.
- Cons. Plan.

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Annex 5

Certification of Capability of the Host Country to Maintain and Utilize
Capital Assistance Project (Section 611(e) of the FAA)

Description of Project: The Central Shaba Agricultural Development Project (660-0105) will increase agricultural production and marketing in the Shaba region of Zaire by maximizing small cultivator productivity. Major project activities include: rehabilitation of regional and farm-to-market roads; development of a seed multiplication and distribution enterprise; assistance in establishing extension services for village cultivators; and improvements in crop storage and milling facilities in villages and at railheads. Approximately 63% of the project's \$28 million A.I.D. contribution will be for the road infrastructure improvements (including equipment and technical assistance).

Host Country Capability to Maintain and Utilize: The National Roads Bureau (Office des Routes, O.R.) is the GOZ entity charged with maintenance of 40,000km of primary and secondary roads nationwide. Most of these are used almost exclusively for the marketing of agricultural production and goods for farmers' consumption. It has an annual operating budget of \$50 million equivalent, which derives from a special sales tax on petroleum products and therefore does not depend on the central government's budget allocations. O.R. was created with IBRD financing in 1971, and continues to receive significant technical assistance and construction equipment financing from a number of donor agencies. Studies are underway by the IBRD and other donors, together with the GOZ, to identify sources of permanent financing for the maintenance of feeder roads not presently within O.R.'s mandate.

Host Country Maintenance and Utilization of Previous USAID Capital Projects:

- North Shaba Rural Development Project (PNS, 660-0059, PACD 9/86): Although PNS road rehabilitation activities were implemented independently, O.R. has agreed to take on at PACD the maintenance responsibilities for the 730km of feeder roads rebuilt under this project (see attached letter from O.R. to USAID on this subject).
- Agricultural Marketing Development (660-0026, 660-0028): These two projects are rebuilding regional priority roads in Bandundu, where the nature of the soils and climate require that maintenance of dirt roads begin immediately upon completion of their rehabilitation. Here, O.R. has promptly executed and financed long-term maintenance agreements with local private organizations for each section of the roads as the reconstruction work is completed, and periodically inspects them to verify that the contracted maintenance is taking place.

Certification: During Project 660-0105 design, O.R.'s maintenance capabilities (financing, technical expertise, equipment fleet, training/supervision) were assessed by engineers from AID/W, REDSO/WCA, USAID, and the project design contractor, as well as by commodity management specialists, a contracting specialist, and a lawyer. Based on these assessments and prior USAID experience, I certify that the Republic of Zaire is capable of maintaining and utilizing the capital assistance for road rehabilitation provided under this project.



Arthur S. Lezin
Acting Director, USAID/Zaire

Date July 1, 1986

Kinshasa, May 8th 1986.

No OR/DG/000/333/86.

Translation of Office des Routes
Letter

The Director
USAID Kinshasa.

Concerns: Project North Shaba Network.

Dear Sir,

At the May 4th 1986 meeting with Messrs. Braddock and Born we explained that the Office des Routes' responsibility is to maintain a network of 40,000 kms of roads, and that it receives a budget for this network only. It is therefore impossible to appreciably increase the total mileage without a proportional increase in the Office des Routes' resources.

So, at the present time, the maintenance of agricultural feeder roads is not funded. However, the World Bank and other donors are closely considering the issue. A mission for the identification of an agricultural roads project has already taken place and will be followed in the coming weeks by a mission of preparation and then evaluation, which should lead, in 1987, to an initial agreement for an agricultural road loan. One of the results of these studies should be to identify, in collaboration with the Zairian authorities involved, a way of financing the maintenance of these roads. The problem will therefore be resolved in the coming years.

In the meantime Project North Shaba is drawing to an end and it is imperative that the 730 kms of agricultural feeder roads that it has rehabilitated be maintained.

In order not to lose the major investment made in these roads, the Office des Routes would accept, if the Department of Agriculture as manager of the project should ask it to do so, to undertake the maintenance of Project North Shaba's network of agricultural feeder roads according to the standards of maintenance practiced by the Office des Routes, and corresponding to the traffic flows carried by these roads.

If an agreement can be reached, the Office des Routes is quite willing for this maintenance to be sub-contracted out to a local business directly involved with these roads, namely ESTAGRICO.

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With regard to the equipment currently at the disposal of PRE, we have noted your desire to cede it to the Office des Routes for use on the national and regional roads in North Shaba, and we thank you for this extra help to our program. The Office des Routes undertakes to use this equipment on the Kongolo - Kabalo - Nyunzu - Kongolo roads and to pay its maintenance and operating costs. We are also interested, within the limits of our staffing pattern, in taking over most of the qualified staff who were trained by Project North Shaba.

The Office des Routes also appreciates your desire to keep on some technical assistance in the form of a roads engineer and a head mechanic who will continue to work with PRE's equipment, until the start-up of Project 105.

We take this opportunity to thank you for the increasing interest you are taking in road problems.

Sincerely,

General Direction
Office des Routes.

Londala Malela
General Manager

J. Baudoin
P.D.G.

REPUBLIQUE CONGOLAISE
Mouvement Populaire de la Révolution

Kinshasa, le 28/05/1986

A.P/m.k.  OFFICE DES
ROUTES

N° OR/DO/000/ 333 /86.-

A Monsieur le Directeur
de l'U.S.A.I.D.

Objet : Réseau Projet Nord-Shaba.-

K I N S E A S A.-

Monsieur le Directeur,

Lors de la réunion du 4 Mai 1986 avec MM. BRADDOCK et TIM BORN, nous avons expliqué que l'Office des Routes avait pour tâche l'entretien d'un réseau de 40.000 Kms, et qu'il ne recevait un budget que pour ce réseau. Il n'est donc pas possible d'augmenter sensiblement le kilométrage total sans accroître, dans la même proportion, les ressources de l'Office des Routes.

Donc actuellement, le financement de l'entretien des routes de desserte agricole n'est pas assuré. Toutefois, la Banque Mondiale et d'autres Organismes de financement s'intéressent de près à cette question. Une mission d'identification d'un projet Routes Agricoles a déjà eu lieu et doit être suivie dans les semaines qui viennent d'une mission de préparation puis d'évaluation qui devra aboutir à la mise en place en 1987 d'un premier accord de crédit Routes Agricoles. Ces différentes études devront notamment déterminer, avec les instances égyptiennes concernées, un mode de financement de l'entretien de ces Routes. Le problème sera donc résolu dans les années à venir.

En attendant, le projet Nord-Shaba se termine et il est impératif d'assurer l'entretien des 730 Kms de routes agricoles qui ont été réhabilitées.

Pour ne pas perdre l'investissement important qui y a été réalisé, l'Office des Routes accepte, si le Département de l'Agriculture, gestionnaire de ce projet le demande, d'assurer l'entretien du réseau de routes de desserte agricole du Projet Nord-Shaba, selon les normes d'entretien pratiquées par l'Office des Routes et correspondant aux trafics supportés par ces routes.

Si un accord peut être trouvé, l'Office des Routes est tout à fait favorable à ce que cet entretien soit sous-traité à un Opérateur économique implanté localement et directement intéressé à ces routes, à savoir ESTAGRIC.

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En ce qui concerne le matériel actuellement mis à disposition du FRE, nous avons pris bonne note de votre souhait de le remettre à disposition de l'Office des Routes pour une utilisation sur les routes Nationales et Régionales du Nord-Shaba et nous vous remercions de cette aide supplémentaire apportée à notre programme.

L'Office des Routes s'engage à l'utiliser sur les Routes KUNENE - KABALO - NYUNZU - KONJOLA et à en assurer l'entretien et le fonctionnement. Nous sommes également intéressés, dans la limite de nos Organigrammes, à reprendre la majeure partie du personnel qualifié qui a été formé par le projet Nord-Shaba.

L'Office des Routes apprécie également votre souhait, de maintenir une assistance technique composée d'un Ingénieur Routier et d'un Chef Mécanicien qui continueront à travailler avec le matériel du FRE en attendant le démarrage du projet 105.

Nous profitons de la présente pour vous remercier de l'intérêt croissant que vous portez aux problèmes routiers.

Et nous vous prions de croire, Monsieur le Directeur, à l'assurance de notre considération distinguée.

LONDALA KALELA
 MINISTRATEUR DIRECTEUR

OFFICE DES ROUTES
 DIRECTION GENERALE
 ZAIRE
 DIRECTION GENERALE
 PRESIDENT DELEGUE GENERAL.-

RAPOIR

Annex 6

Technical Analysis

Road Rehabilitation and Maintenance

A. Component Overview

Rehabilitation of the transport system is critical to economic and social development throughout Zaire. The Shaba region possesses Zaire's most important economic resources, and the poor condition of its road network is a major impediment to sound economic growth of the entire country.

The elimination of road transport constraints is the purpose of the road rehabilitation and maintenance component of the Central Shaba Agricultural Development Project. The rehabilitation of the road network in central Shaba will provide access to areas of high agricultural output and will play an important role in accelerating economic development.

Three major assumptions underlie the road component:

- o The road network that this project creates will complement the existing railroad system, affording access to the railroad to those areas without current links to the transport system.
- o The road system will be rehabilitated to a standard that will provide reasonable, economic access now and over time to those areas with greatest agricultural production potential.
- o Continued support to, and expansion of the capacity of, the regional Roads Bureau will ensure long-term economic benefits to the region.

The interventions proposed under the project will include the following :

- o Rehabilitation of a 1,000 kilometer link road in central Shaba.
- o Rehabilitation of a system of at least 1,000, and up to 2,000, kilometers of feeder roads.
- o Technical assistance to help the regional Roads Bureau manage private contracts for road rehabilitation.
- o Institutional support to the regional Roads Bureau and its Training Center.

The project will marshal both public and private resources to implement this component. The rehabilitation of the link road will be undertaken in three sections. The first, northern section of 220 kilometers (Section I) will be repaired by the regional Roads Bureau, which for this purpose will absorb the road improvement arm of the

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predecessor North Shaba Rural Development Project, Ponts et Routes de l'Est (Eastern Roads and Bridges, or PRE). The second, central section of 395 kilometers (Section II) will also be repaired by the regional Roads Bureau. The third, southern section of 390 kilometers (Section III) will be rehabilitated by a private contractor experienced in this type of road activity and selected through competitive bids.

The ability to maintain the road network after initial rehabilitation will be an important measure of the project's success. Most post-project maintenance will be performed by the regional Roads Bureau, which has demonstrated the capability to assume this responsibility. It will maintain the link road and at least 1,000 kilometers of feeder roads. Its ability to continue to do so after the project is assured, for its revenues come from the off-budget national fuel tax that funds all Roads Bureau activities. An additional 1,000 kilometers of feeder roads will be rehabilitated when and if a similarly reliable source of funding for their maintenance is in place.

Technical assistance under this component will be divided into two parts. First, a team of eight technicians will assist the Roads Bureau in carrying out and monitoring rehabilitation of the link road and of those 1,000 kilometers of feeder roads for which the Roads Bureau is responsible. This team will include a Regional Technical Director, who will serve as Chief of Party, three Field Engineers, two Master Mechanics, and two training specialists (an Administrative Assistant for this team will be hired locally). The services of this team will be provided via a host-country contract between the Roads Bureau and the American ORT Federation, a registered U.S. private voluntary organization. Justification for this single-source procurement is set forth in a draft waiver that follows the Project Authorization.

Second, the project will provide management assistance to the Roads Bureau by funding one position, a Project Management Specialist who will live in Kinshasa and work in the Roads Bureau's national headquarters there. The Project Management Specialist will be hired under a host-country Personal Services Contract.

The technical assistance budget for this component also includes funding for the services of a USAID Project Manager and a USAID Engineer, who will be hired under Personal Services Contracts and assigned to USAID/Kinshasa.

The roads will be designed to a standard that is technically feasible and appropriate for the anticipated level of traffic and necessary maintainability. Construction of water crossings and drainage structures will be afforded a high priority to ensure a long life for the road network. A detailed explanation of technical standards and findings is presented in Sections I through III of Supplementary Technical Appendix 2, which was prepared during project design and is now on file in USAID/Kinshasa and in AID/Washington (AFR/PD).

The total cost (including both foreign exchange and local currency, and contingency/inflation) of the road rehabilitation and maintenance

component will be approximately \$38,461,000. Of this total amount, \$7.8 million is earmarked for the purchase of heavy equipment. Detailed budgets are included in Sections H and I of this Technical Analysis.

B. Expected Achievements

By the Project Assistance Completion Date, this component will have achieved the following:

- o A regional link road will have been established through the rehabilitation of 1,000 kilometers of roads linking the network of feeder roads with the railheads or centers of consumption. The link road will have been rehabilitated to an appropriate, cost-effective and maintainable standard affording 60 kilometer/hour travel.
- o A large network of feeder roads will have been established in the major crop production zones of the project area. This network will consist of at least 1,000, and possibly as many as 2,000, kilometers of roads rehabilitated to a standard providing an average of 40 kilometer/hour travel and providing crossing over all water obstructions. The feeder roads will provide access to the link roads and the railheads.
- o Technical assistance and material support to the regional Roads Bureau and its Training Center will have increased its physical capacity to maintain the road system in central and northern Shaba. This will facilitate the ability of both areas to market their corn production. The principal outputs of this support will be a new maintenance base in the project area, increased technical capabilities of road brigades to rehabilitate roads, increased numbers of fully trained road engineers from the regional Training Center, and new heavy equipment and materials for use in road maintenance in the project area.

C. Proposed Interventions

1. Link Road. The establishment of a principal link road will entail the rehabilitation of 1000 kilometers of existing sections of roads that were once more heavily travelled avenues affording egress for agricultural production. This road will complete a linkage between Makulakulu at the southern extreme and Kongolo at the northern extreme (see map, page 6-28). Its routing will be as follows:

Makulakulu	to	Kabondo Dianda	104 km
Kabondo Dianda	to	Malemba Nkulu/Mwanza	219 km
Malemba Nkulu/Mwanza	to	Musao	67 km
Musao	to	Kabongo	118 km
Kabongo	to	Budi	119 km
Budi	to	Katshi	148 km
Katshi	to	Ebombo	70 km
Ebombo	to	Kongolo	150 km

Total Link Road Distance: 1,005 km

In determining this routing, various options were investigated. USAID, the Shaba Roads Bureau, and the agricultural, storage and extension technicians on the design team provided specific guidance and priorities that assisted in this determination. The route was chosen in accordance with the following criteria:

- o The link road should connect all of the project target areas currently identified as possessing the greatest potential for increased agricultural production.
- o The link road should complement the existing railroad, not parallel it, to the greatest extent possible.
- o The link road should provide access to the railroad from the system of feeder roads.
- o The link road should make use of as many existing sections of road as possible and should apply sound technical standards, using existing surfacing materials where appropriate.
- o The link road should avoid heavily-forested areas and any other difficult or special terrain for both environmental and technical reasons.
- o The link road should complete the connection to the road network of the predecessor North Shaba Project.

It should be noted that the existing Makulakulu to Kolwezi laterite road provides the intermediate connection south toward Lubumbashi. Though not a direct route, it is the fastest and most economical approach to the existing paved road from Kolwezi to Lubumbashi. As it is not anticipated that the bulk of crop production will move along the road, but rather on the railroad, there is no current need to concentrate a maintenance effort on this section. If traffic flows from the project area later justify such an intervention it should be considered. In addition, the paved road link from Kolwezi to Lubumbashi is currently under consideration for repavement funding under the World Bank Sixth Highway Project and does not, therefore, require any activity under this project.

From a technical point of view there are two overriding considerations: that the link road be constructed to an appropriate technical standard for the anticipated traffic flow, and that emphasis be placed on provision of solid structures built to a twenty-five year minimum life. The discussions in Appendix 2 detail these approaches.

The Central Shaba Road Network map at the end of this annex illustrates the routing of the link road and of those feeder roads for which adequate post-project funding is already in place.

2. Feeder Roads. The project will rehabilitate no fewer than 1,000, and perhaps as many as 2,000, kilometers of feeder roads. The purpose of these roads is to provide access from farm gate to the link road and onward to the railhead.

The extent of the feeder road network, and the selection of feeder roads to be repaired, will be contingent upon the availability of post-project funding for maintenance of these roads. At present, such funding is assured for approximately 1,065 kilometers of the potential feeder road network. These roads are the responsibility of the regional Roads Bureau; thus, their maintenance is financed by the national fuel tax that funds all Roads Bureau activities. These roads are as follows :

<u>Road No.</u>	<u>Alignment:</u>	<u>Length:</u>
RN 33	Mwanza-Mukwendi	70 (est.)
RRS 634	Mani (Kasa border)-Link Road	51 (est.)
RRS 633	Kitengo-Lunteka-Mwadi-Katoloka	234
RRP 628	Kakuyu-Kilongo-Ankoro-Kaziba	227
RRP 631	Katshi-Kakuyu-Katimpi-Kabalo	115
RRP 630	Kabalo-Nyunzu	139
RRP 632	Kongolo-Nyunzu	182
RRP 632	Kongolo-Kivu border	47
Total:		1,065

Total annual post-project maintenance costs for these roads are estimated at the local currency equivalent of \$130 per kilometer, or \$138,450 for the entire 1,065-kilometer network. This cost is well within the capacity of the regional Roads Bureau to absorb (its annual field budget totals over Z200 million, or the equivalent of approximately \$3.5 million at present exchange rates), and the Roads Bureau has agreed to do so.

The project budget also includes funds for the repair of up to 1,000 additional kilometers of feeder roads for which the Roads Bureau is not now responsible. Maintenance of these roads is nominally the responsibility of the Ministry of Agriculture (MOA). However, the MOA has not been able to organize or finance maintenance of these roads, and they have long been in disrepair. The World Bank and the United Nations Development Program (UNDP) are presently funding studies aimed at solving the problem of agricultural feeder road maintenance throughout Zaire, and this project's approach to such roads will be informed by the results of these studies and the national policy that evolves from them. Possible solutions include increasing the fuel tax and turning these feeder roads over to the Roads Bureau; imposing or increasing railhead taxes on the transport of agricultural goods and channeling these funds into feeder road maintenance; or creating and funding a new institution charged solely with assuring the maintenance of these roads. The results of these studies are due, and a revised national policy is to be in place, before 1990 (i.e., during the life of this project). USAID has every

reason to believe that a coherent and effective maintenance system will result from these efforts, and therefore has programmed funds for rehabilitation of these additional 1,000 kilometers of feeder roads in this project. However, it must be stressed that no funds will be spent on repair of such roads until an adequate, continuing source of funding for their maintenance is in place and functioning.

The list of feeder roads in Supplementary Technical Appendix 2 suggests 1,650 kilometers of such roads that might be repaired. This list is, of course, subject to alteration during the life of the project as the areas of highest production potential are clarified.

The provisional list of additional feeder roads is based upon the recommendations of the agricultural and extension technicians on the design team regarding production and population, as well as the following criteria:

- o Connecting the most productive areas to the link road or the railhead.
- o Continuing agricultural roads into the Kasai Oriental Region at a number of different points over two distinct target areas and thereby connecting the markets of Kasai Oriental to both north and central Shaba.
- o Providing access to farmers for grain storage and extension activities.

From a technical point of view, the rehabilitation standard for the feeder roads will be lower than for the link road: the roads will have a reduced road bed width and will employ only in situ surface materials, except in problem areas. Once again, though, the emphasis will be on solid structures and provision of drainage. A number of winch-powered ferries will be needed to reach certain target areas. See the Supplementary Technical Appendix 2 for further discussion of these issues.

3. Technical Assistance.

a. Composition of the Team. In order to increase the capacity of the Roads Bureau to undertake and supervise this increased work load, technical assistance will be required. This assistance will be provided in two parts. First, a team of eight technicians will provide technical direction and training to the regional Roads Bureau and will supervise and monitor the execution of all project-funded roadwork. This team will consist of the following members, who will work and reside at the locations noted in the table below:

<u>No.</u>	<u>Position</u>	<u>Location of Work</u>	<u>Residence</u>
1.	Regional Technical Director	Roads Bureau HQ	Lubumbashi
2.	Field Engineer	Section I worksites	Kongolo
3.	Master Mechanic	Section I worksites	Kongolo
4.	Field Engineer	Section II worksites	Kamungu
5.	Master Mechanic	Section II worksites	Kamungu
6.	Field Engineer	Section III worksites	Luena
7.	Training Advisor	Throughout Shaba	Lubumbashi
8.	Civil Engineer/Trainer	Training Center	Lubumbashi

An Administrative Assistant for this team will be hired locally.

The Regional Technical Director will serve as the senior advisor to the Roads Bureau's Regional Director (who is Zairian), and will be responsible for overseeing all project-funded road work and for supervising the other seven members of this technical assistance team. He will also be responsible for assisting the Roads Bureau in developing the technical specifications for, awarding, and monitoring the execution of, a host-country contract with a qualified private firm for rehabilitation of Section III (Makulakulu - Musao) of the link road. The Regional Technical Director will begin work in April 1987.

The table above groups the remaining members of the team by their geographic location. Positions number 2 and 3, a Field Engineer and a Master Mechanic, will be based in Kongolo and will direct rehabilitation by the Roads Bureau of Section I (Kongolo - Katshi) of the link road. This work will be undertaken by crews from PNS's Ponts et Routes de l'Est (PRE) organization, which will be absorbed by the Roads Bureau. These two TA positions themselves also existed under PNS, USAID funding of which will be completed on September 30, 1986. To avoid a damaging (and needless) hiatus in road improvement activities in the northern Shaba area, the Central Shaba Agricultural Development Project will begin funding these two positions upon the completion of PNS. This will enable the Roads Bureau to begin rehabilitation of the northern section of the link road shortly after this project is authorized, drawing upon equipment already on hand at the former PRE logistics base in Kongolo until replacement equipment purchased with funds from this project arrives on-site.

The fourth and fifth members of the team, a Field Engineer and a Master Mechanic, will be based at a new Roads Bureau facility in Kamungu and will direct force account rehabilitation by the Roads Bureau on Section II (Musao - Katshi) of the link road. These team members will arrive on-site in April 1987. The sixth member of the team, an additional Field Engineer, will be based in Luena and will monitor on a

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daily basis work being carried out by the private construction firm that is selected to rehabilitate Section III (Makulakulu - Musao) of the link road. As the competitive bidding process for this contract will take some time to complete, this technician is not scheduled to arrive in country until the contractor is ready to begin work; i.e., in October 1988.

The last two members of the team listed above, the Training Advisor and the Civil Engineer/Trainer, will continue technical assistance to the Roads Bureau Regional Training Center in Lubumbashi. This Training Center has received assistance from USAID since 1983 under a host country contract between the Roads Bureau and the American ORT Federation. This contract was funded by the Agricultural Marketing Development Project (660-0028) and will expire on March 31, 1987. The Central Shaba Agricultural Development Project will continue this assistance, at a lower level of effort, so as to assure the continued successful operation of the Center's training programs and to create within the Center a functioning civil engineering section capable of training Roads Bureau personnel in correct road rehabilitation techniques.

Toward this end, the Training Advisor will serve as both the senior advisor to the newly-installed Center Director (a Zairian), and as a roving trainer who will travel throughout Shaba and the neighboring regions of the Kasais. In this latter capacity, the Training Advisor will assess the training needs of Roads Bureau personnel and design and implement programs to meet those needs. The Civil Engineer will serve as head of the Training Center's Civil Engineering Section, after which time he will be replaced by his Zairian counterpart. The Training Advisor will take up his duties in October 1986; the Civil Engineer in April 1987.

The second part of the technical assistance effort will furnish managerial assistance to the Roads Bureau in administering and overseeing this project. One technician, a Project Management Specialist, will be placed in the Roads Bureau's national headquarters in Kinshasa. This individual will assist the Roads Bureau in procuring equipment in accordance with A.I.D. regulations, in shipping that equipment from the port of entry to the worksite, and in all other administrative actions (e.g. accounting, bill-paying, and management of counterpart funds) needed in connection with this and other USAID-related Roads Bureau projects. This technician will be hired via a host-country Personal Services Contract and will arrive in-country in April 1987.

The Central Shaba Agricultural Development Project will also fund two presently vacant positions within USAID/Kinshasa, a Project Manager and a USAID Engineer. These individuals will be hired via Personal Services Contracts and assigned to USAID/Kinshasa's Capital Projects Office.

Complete job descriptions for all these positions are found in Section IX of Supplementary Technical Appendix 2 on the road rehabilitation component. The level of effort for technical assistance to this component will total 390 person-months at a projected foreign exchange cost of \$3,355,000.

b. Contracting and Management Structure. The services of the technical assistance team described above (except those of the Project Management Specialist, the USAID Project Manager, and the USAID Engineer) will be obtained through a host country contract between the Roads Bureau and the American ORT Federation, a registered U.S. private and voluntary organization. Justification for this single-source procurement appears in draft waiver No. 6, which follows the Project Authorization.

As the Project Management Specialist, the USAID Project Manager, and the USAID Engineer will be responsible for monitoring the activities of this ORT team on behalf of the Roads Bureau and of A.I.D., it would be inappropriate to obtain their services from ORT. Therefore, these positions will be filled by Personal Services Contractors.

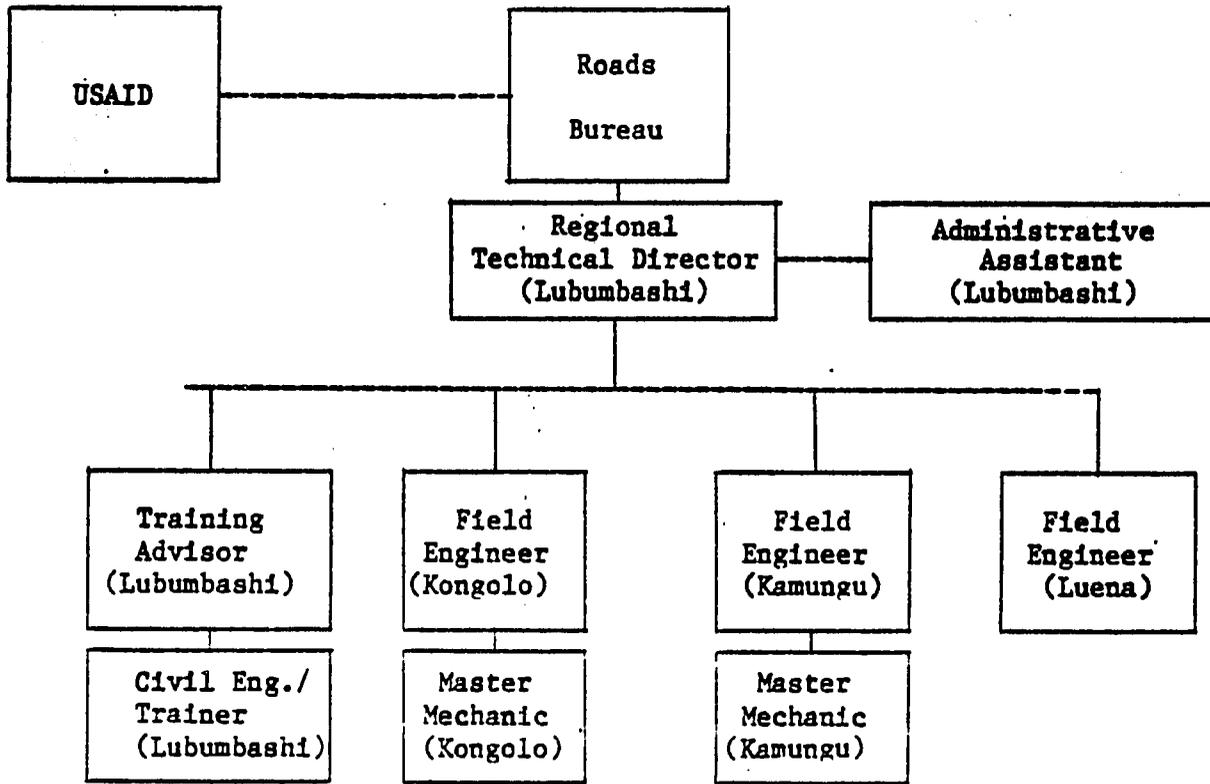
Road improvement activities will, of course, have to be coordinated with the activities of other project components (notably the seed production, extension, and storage activities), which will be managed separately. The most evident need for such coordination will involve the location and timing of feeder road rehabilitation, though other subjects are likely to arise. Such coordination as may be necessary will be provided by USAID via a Project Committee. The members of the committee will include the USAID Project Officer for the road rehabilitation component and the USAID Project Officer for the agricultural components. The committee will be chaired by the Chief of USAID's Agriculture and Rural Development Division.

The relationship between these various elements of the road rehabilitation and maintenance component is illustrated in the organigram on the following page.

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Road Rehabilitation and Maintenance Component

Illustrative Management Structure



4. Post-Project Maintenance. At the completion of USAID assistance, the Roads Bureau will have both the physical and the financial capacity to maintain the 1,000-kilometer link road and at least 1,000 kilometers of feeder roads. Its physical capacity to do so will be enhanced by the heavy equipment used during the rehabilitation work, which will have another five years of useful life. This equipment fleet will allow the Roads Bureau to maintain the road network in the project area after the Project Assistance Completion Date.

The Roads Bureau's financial capacity to maintain the project-funded road network post-PACD is also assured, for its revenues derive entirely from the off-budget national tax on the sale of petroleum products. The Roads Bureau's annual operating budget totals approximately \$60 million (local currency equivalent). Of this, approximately \$10 million is allocated to Shaba. As illustrated in Table G, the total annual cost of maintaining the link road after the PACD will be the local currency equivalent of approximately \$1.25 million. This cost is well within the capacity of the Roads Bureau to absorb with its present revenue base, and it has agreed to do so (indeed, it is already performing routine maintenance on the entire link road and on many of the feeder roads). The Roads Bureau is also capable of funding the maintenance of 1,065 kilometers of feeder roads (total annual cost: \$138,450), and has agreed to do so.

The availability of funds for the remaining feeder roads remains problematic, however. As noted in Section C.2 of this Technical Analysis, the World Bank and the UNDP are now conducting studies of the problem of feeder road maintenance throughout Zaire, and USAID's ongoing dialogue with the GOZ on this subject will be informed by the progress of these studies. The additional feeder roads will not be rehabilitated unless and until an adequate source of funding for their maintenance is identified and in place. However, USAID is confident that its efforts to encourage Zaire to establish such a mechanism, combined with the efforts of other donors toward the same end, will result in an effective national policy to resolve this problem.

D. Rehabilitation Approach

The following four principles will govern rehabilitation of the link road and the network of feeder roads:

- o Roads will be rehabilitated to appropriate standards for the region, incorporating anticipated traffic flow and ease of long-term maintenance.
- o Construction or rehabilitation of bridges, water crossings, drainage structures and ditches will have the highest priority.

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- o Roads will be rehabilitated in a timely manner to facilitate rapid project start up, beginning with the link road and moving to feeder roads.
- o The participation of private contractors will be encouraged to the maximum extent possible where cost effectiveness permits.

It is important to note that the project will not construct any new roads. Rather, this project will rehabilitate or realign existing roads, facilitating their use in the near term and constructing the structures necessary to ensure their serviceability over the long term.

1. Standards. A detailed technical discussion of roads standards and rehabilitation techniques may be found in the Supplementary Technical Appendix. However, some general comments are useful at this point.

The standards for the link road and the feeder roads (see Standard Road Profile designs in Section II of the Supplementary Technical Appendix) are not based solely on lower rehabilitation costs, though this is a distinct advantage. Rather the standards reflect the rationale cited above, and are economically appropriate for the anticipated traffic flow over the long-term.

The link road will have a six meter wide roadbed with an 18 meter cleared right of way. Surfacing with select materials will be accomplished over 70% of the link road with most of the surfacing on the lower third of the route, decreasing toward the northern extremes. The requirements for select materials are a direct function of the projected traffic pressure on the roadbed, along with the in situ soil characteristics.

The feeder road network will have a four meter wide roadbed and a flexible 12 meter right of way, allowing for the least amount of needed clearing. No need is envisioned for continuous two-way traffic on the feeder roads and, thus, there is no need for a wider roadbed. Single-lane access in which vehicles are required to slow and move to the shoulder to pass when encountering on-coming traffic is both appropriate and cost-effective.

2. Drainage Structures. The major current constraint to access throughout the central Shaba road system is not the poor quality of the roads themselves (though they are surely not in good condition); rather it is the fact that otherwise accessible roads are impassable due to eroded or nonexistent structures at critical water crossing points. Given solid structures, many roads in the network would be passable except during the most severe rains. Furthermore, the lack of adequate drainage structures is the most serious constraint to maintaining the roadbeds, as inundation destroys critical surface materials.

Consequently, the project will focus on constructing or rehabilitating bridges, culverts and drainage ditches. Bridges will be constructed entirely of steel or steel/concrete prefabricated panels. All existing steel girder bridges with wood plank decking will have new corrugated steel decking installed and girders reinforced where necessary. So constructed, these bridges will have a minimum useful life of 25 years.

Bridge abutments and headwalls will be all concrete or concrete and stone construction. Foundations and wing walls will be engineered with adequate slope and length to avoid damage from erosion. All culverts will be constructed with ARMCO (corrugated metal) or concrete sections with either concrete or stone masonry headwalls. On both the link and feeder roads, much attention will be given to the construction of longitudinal and diversion drainage ditches to carry all excess water away from the roadbed.

With a strong concentration on structures, the roadbeds themselves will have a longer life and long term maintenance costs will be lowered. Further, strong structures installed throughout the network as a part of the initial intervention will allow for local organizations to become more actively involved in routine, long-term maintenance where the need for repeated repair of structures might preclude that opportunity.

3. Rehabilitation Timetable. The link road rehabilitation will be divided into three distinct sections, as follows:

a. Section I, Northern. This section will begin at the northern limit of the link road at Kongolo and continue west to Ebombe and then south to Katshi. This section will be partially surfaced, up to 50%. Work will progress from north to south. The Roads Bureau will rehabilitate this section on a force account basis. A two year completion time is anticipated. The total length of the link road in this section is 220 kilometers. Section I also includes 483 kilometers of identified feeder roads. Rehabilitation of this section with existing resources will begin shortly after the authorization of this project, i.e., in October 1986.

b. Section II, Central. This section will radiate out from Kabongo/Kumungu eastward to Musao and northward through Budi to Katshi. This section will be partially surfaced, up to 50%. Initial work will open the Kamungu to Niembo link and then the Kamungu/Kabongo to Kitenge link. Work will then continue toward Budi and finally Katshi. The Roads Bureau will rehabilitate this section on a force account basis. A two and one half year completion time is anticipated. The total length of the link road in this section is 395 kilometers. Section II also includes 512 kilometers of identified feeder roads. Rehabilitation of this section will begin in July 1987.

c. Section III, Southern. This section will begin at the southern limit of the link road at Makulakulu, near Luena, and continue northward through Mwanza, terminating at Musao. This section will handle the highest anticipated traffic load and thus will be surfaced for 100% of its length. Work will progress from south to north. A rehabilitation contract between the Roads Bureau and a private contractor will be awarded via competitive procurement. Two years completion time is expected. The total length of this link road section is 390 kilometers. The rehabilitation contract will also include rehabilitation of a 70-kilometer feeder road from Mwanza to Mukwendi, which will afford the eastern bank of the Zaire river access to the project road network. Rehabilitation of this section will begin in October 1988.

Except for Section I, where rehabilitation will begin with existing equipment that formerly belonged to PRE, one constraint to rapid start-up will be the delay involved in delivering new heavy equipment to the work sites. Early procurement arrangements, including the issuance of several single-source waivers that will allow for standardization with USAID-funded equipment now on order for the Shaba Refugee Roads Project (660-0115), and the use of competent procurement services agents and freight forwarders will ease this constraint. The existing infrastructure and technical assistance in the northern section will allow the Roads Bureau to begin rehabilitation of Section I without oversight from an overall project management team.

4. Private Participation. The rehabilitation approach encourages the participation of the private sector wherever it is desirable and cost-effective. Just under 40% of the link road will be completed by a private, for-profit contractor. While the costs for a private contractor exceed those of Roads Bureau force account works, it is cost-effective to use a private contractor when the technical standard of the road will be higher and when intervention in a number of areas simultaneously is anticipated.

E. Maintenance Approach

The Supplementary Technical Appendix provides details on the approaches used in both mechanized and manual maintenance. It is important to note here that, at this time, all proposed maintenance is mechanized. However, the possibility of re-instituting manual maintenance will be explored during the project implementation phase. Potential recipients of project funding for manual maintenance include the traditional chief of the Luba people, who resides in Kabongo, and the Catholic mission at Kayeye. Both the chief and the missionaries have successfully directed manual maintenance contracts in the past and should be encouraged to do so again. Other local institutions and indigenous PVOs with similar capacities may be identified as project implementation proceeds, and their involvement in maintenance efforts will be encouraged.

Refer to Supplementary Technical Appendix 2 for a full discussion of the details of link and feeder roads maintenance.

F. Roads Bureau Capabilities

The success of the road rehabilitation and maintenance component will depend, of course, on the capabilities of the Shaba Roads Bureau. Based on extensive experience in working with the national Roads Bureau in general and with the Shaba regional Roads Bureau in particular, USAID is confident that the Roads Bureau will prove capable of implementing this component. This conclusion is based on the following:

- o Shaba is the most productive of O.R.'s eight regional offices each year (as verified by national Roads Bureau annual reports).
- o Shaba has the Roads Bureau's best Regional Training Center, which offers both formal and non-formal training to reinforce technical skills.
- o Production bonuses and special benefits plans maintain this high quality personnel.
- o The Roads Bureau has worked closely and effectively with USAID in procuring equipment under host country procedures for the Shaba Refugee Roads Project (660-0115).
- o The Shaba Roads Bureau is experienced in rehabilitating the type of roads foreseen for this project.

The project interventions seek to capitalize on these strengths and further enhance them through appropriate inputs and technical assistance. Any weaknesses are, or will be, addressed through the following approaches.

1. Standards. The standards of this project are designed to a level that capitalizes on proven Roads Bureau experience. Formal and on-site training will improve these skills and assure compliance with rehabilitation standards.

2. Technical Control. The technical assistance team is directed toward field-based activities so that continuous and competent technical expertise will be on-site on a daily basis. On-site training will develop Site Foremen who are technically capable of producing a finished road without constant supervision. Six of the eight members of the ORT technical team will spend more than 75% of their time in the field.

3. Contract Management. The Roads Bureau understands and articulates that it lacks experience in managing AID host country construction contracts. Its first request for technical assistance was in that area. The inclusion of the Field Engineer for oversight of work to be performed on Section III of the link road will adequately bolster the Roads Bureau's capability in this area.

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G. Implementation Plan

<u>July 1986</u>	<u>Project Paper Approved</u>
<u>August 1986</u>	<u>Project Agreement Signed</u>
<u>September 1986</u>	<u>TA Contract with American ORT Signed</u>
<u>October 1986</u>	<u>Technical Assistance Begins</u> - Field Engineer (Kongolo) - Master Mechanic (Kongolo) - Training Advisor (Lubumbashi) - Administrative Assistant (Lubumbashi)
<u>October 1986</u>	<u>Rehabilitation of Section I of Link Road Begins</u>
<u>October 1986</u>	<u>First Lots of Road Improvement Equipment Ordered</u>
<u>January 1987</u>	<u>Invitation for Bids for Additional Road Improvement Equipment Issued</u>
<u>April 1987</u>	<u>Technical Assistance Team Arrivals</u> - Regional Technical Director (Lubumbashi) - Field Engineer (Kamungu) - Master Mechanic (Kamungu) - Civil Engineer/Trainer
<u>May 1987</u>	<u>Construction of Kamungu Base Facility Begins</u>
<u>June 1987</u>	<u>First Lots of New Road Improvement Equipment Arrive on Site</u>
<u>July 1987</u>	<u>Rehabilitation of Section II of Link Road Begins</u>
<u>October 1987</u>	<u>Technical Specifications for Section III of Link Road Completed.</u>
<u>January 1988</u>	<u>Request for Technical Proposals for Rehabilitation of Section III Issued.</u>
<u>April 1988</u>	<u>Technical Proposals for Rehabilitation of Section III of Link Road Received</u>
<u>July 1988</u>	<u>Additional New Road Improvement Equipment Arrives On Site</u>
<u>July 1988</u>	<u>Contract for Rehabilitation of Section III of Link Road Awarded</u>
<u>September 1988</u>	<u>Section I of Link Road Completed</u>

<u>October 1988</u>	<u>Technical Assistance Team Arrival - Field Engineer (Luena)</u>
<u>October 1988</u>	<u>Rehabilitation of Section III of Link Road Begins</u>
<u>January 1990</u>	<u>Section II of Link Road Completed</u>
<u>September 1990</u>	<u>Section III of Link Road Completed</u>

H. Budget Summary

The project's road rehabilitation and maintenance component will cost a total of \$ 34,142,000 (not including contingency and inflation estimates). This figure includes all local personnel costs, all commodity (heavy equipment, spare parts, fuel, and materials) costs, all anticipated maintenance costs during the life of project, all costs of hiring a private construction firm to rehabilitate Section III of the link road, and the costs of the technical assistance team. Budget Table A summarizes the overall costs of this component.

Budget Table B-1 summarizes the anticipated costs of the technical assistance effort; Table B-2 illustrates the planned level of technical assistance effort.

Budget Table C summarizes the costs of commodities that will be used by the Roads Bureau in rehabilitation of Sections I and II of the link road.

Budget Table D lists the heavy equipment that will be procured by the Roads Bureau. This equipment is to be used in rehabilitating and maintaining Sections I and II of the link road and selected feeder roads.

Budget Table E summarizes the anticipated costs of hiring a private for-profit firm to rehabilitate Section III of the link road. These costs were derived from discussions with the Bureau of Roads and with local private construction firms capable of undertaking this type of work

Budget Table F lists anticipated maintenance costs for the project road network during the first five years life of the project. This table assumes that the Roads Bureau will begin routine mechanized maintenance (grading and ditch clearing) of the entire link road during Year 1 of the project and continue such maintenance throughout this period. As for the feeder roads, it is assumed that routine maintenance will be carried out annually on all rehabilitated sections beginning in Year 2 (FY 1988). This table assumes that no medium (filling trouble spots) or heavy (resurfacing) maintenance will be required during this period.

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Budget Table G summarizes the anticipated costs of maintaining the project road network after A.I.D.-funded assistance is completed. Like Table F, it assumes that routine maintenance will be performed annually on the entire link road and on all feeder roads. It further assumes that medium maintenance will be performed once every three years on each section of the link road and once every five years on each feeder road. Finally, it assumes that heavy maintenance (resurfacing) of the link road will be required every five years. (No resurfacing of the feeder roads will be required.) The estimated per kilometer maintenance costs included in both Tables F and G were derived from examination of Roads Bureau records.

I. Budget Tables.

The following budget tables summarize proposed expenditures by category and line item.

Budget Table B-1
Road Rehabilitation and Maintenance Component
Five-Year Technical Assistance Plan
(Projected Accrued Expenditures in Thousands of US Dollars)

	FY 1987		FY 1988		FY 1989		FY 1990		FY 1991		FY 1992		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
I. ORT Team														
Regional Technical Director	65	20	130	40	65	20	0	0	0	0	0	0	260	80
Field Engineer (Kongolo)	130	40	130	40	0	0	0	0	0	0	0	0	260	80
Master Mechanic (Kongolo)	110	40	110	40	0	0	0	0	0	0	0	0	220	80
Field Engineer (Kamungu)	65	20	130	40	130	40	65	20	0	0	0	0	390	120
Master Mechanic (Kamungu)	55	20	110	40	110	40	55	20	0	0	0	0	330	120
Field Engineer (Luena)	0	0	0	0	130	40	130	40	0	0	0	0	260	80
Training Advisor	130	40	130	40	0	0	0	0	0	0	0	0	260	80
Civil Engineer/Trainer	65	20	130	40	65	20	0	0	0	0	0	0	260	80
Administrative Assistant	60	20	60	20	60	20	60	20	0	0	0	0	240	80
Sub-Totals:	680	220	930	300	560	180	310	100	0	0	0	0	2,480	800
II. Managerial Team														
Project Management Specialist	40	15	80	30	80	30	80	30	0	0	0	0	280	105
PSC Engineer	55	15	110	30	110	30	110	30	0	0	0	0	385	105
USAID Project Manager	30	15	60	30	60	30	60	30	0	0	0	0	210	105
Sub-Totals:	125	45	250	90	250	90	250	90	0	0	0	0	875	315
GRAND TOTALS:	805	265	1,180	390	810	270	560	190	0	0	0	0	3,355	1,115

Budget Table B - 2

Road Rehabilitation and Maintenance Component

Five-Year Technical Assistance Plan

(Person - Months of Effort)

I. ORT Team

	FY 87	FY 88	FY 89	FY 90	TOTAL
Regional Technical Director	6	12	6	0	24
Field Engineer (Kongolo)	12	12	0	0	24
Master Mechanic (Kongolo)	12	12	0	0	24
Field Engineer (Kamungu)	6	12	12	6	36
Master Mechanic (Kamungu)	6	12	12	6	36
Field Engineer (Luena)	0	0	12	12	24
Training Advisor	12	12	0	0	24
Civil Engineer/Trainer	6	12	6	0	24
Administrative Assistant	12	12	12	12	48

Sub-Totals:	72	96	60	36	264
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II. Management Team

Project Management Specialist	6	12	12	12	42
PSC Engineer	6	12	12	12	42
USAID Project Manager	6	12	12	12	42

Sub-Totals:	18	36	36	36	126
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GRAND TOTAL:	90	132	96	72	390
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Budget Table C

Rehabilitation by Shaba Bureau of Roads

(Sections I and II of Link Road and 2,000 Kilometers of Feeder Roads)

Commodity Expenditure Plan
(Projected Accrued Expenditures in USD 1,000 or equivalent)

Item Description	87		FY 88		89		90		Total	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
Heavy Equipment	5744	0	2015	0	0	0	0	0	7759	0
Spare Parts	700	0	700	0	850	0	850	0	3100	0
Fuel/Lubricants	0	750	0	750	0	750	0	750	0	3000
Culverts*	0	600	0	600	0	600	0	600	0	2400
Bridging**	0	390	0	390	0	390	0	390	0	1560
River Ferries***	0	0	0	180	0	180	0	0	0	360
Small Hand Tools	0	100	0	100	0	100	0	0	0	300
Constr. Materials	0	750	0	750	0	750	0	750	0	3000
Total	6444	2590	2715	2770	850	2770	850	2490	10859	10620

NB: These figures do not include contingency and inflation estimates. These are provided in the overall project budget tables included elsewhere in this Project Paper.

* Includes 7,410 lm. of 80 cm. Armco culverts and 388 lm. of 150 cm. Armco culverts with headwalls for link road; and 4,000 lm. of 80 cm. Armco culverts and 480 lm. of 150 cm. Armco culverts with headwalls for feeder roads. 80cm. Armco culverts cost \$ 180/lm. and 150 cm. Armco culverts with headwalls cost \$355/lm.

** Includes \$ 200,000 for 100 linear meters of bridging on link road at \$ 2000/lm., \$ 1,200,000 for 600 linear meters of bridging on feeder roads at \$ 2,000/lm., and \$ 160,000 for 40 Accrow bridge elements for feeder roads at \$ 4,000/element.

*** Includes 3 winch powered ferries for feeder roads.

Budget Table D

Road Rehabilitation and Maintenance ComponentCommodity Procurement ListHeavy Equipment

(Including Initial Spare Parts)

Item Description	Quantity	Unit Price (CIF)	Total
Bulldozer CAT D-7 w/ ripper	6	150,000	900,000
Road Grader Champion 210 HP	11	144,000	1,584,000
Wheel Loader CAT 950 w/ ripper	3	115,000	345,000
Track Loader CAT 973 w/ ripper	2	138,000	276,000
Vibratory Compactor Ingersoll Rand 15 ton	4	92,000	368,000
Dump Trucks Mack 12 ton	17	70,000	1,190,000
Fixed Bed Truck w/Crane Mack 12 ton	5	80,000	400,000
Fixed Bed Truck Mack 12 ton	6	58,000	348,000
Tractors with Trailers HP	12	46,000	552,000
Skid Mount Cisterns 10000 l	15	13,000	195,000
Skid Mount Cisterns 5000 l	10	5,000	50,000
4 x 4 Station Wagon	18	16,000	288,000
Light Mobile Maintenance Trailers	4	17,000	68,000
Heavy Mobile Maintenance Trailers	6	34,000	204,000

Budget Table D
Continued

Item Description	Quantity	Unit Price	Total
Generator with Welding Unit	5	5,000	25,000
Water Pumps	10	2,000	20,000
Concrete Mixers 350 1	5	5,000	25,000
Concrete Mixers 500 1	5	10,000	50,000
Small Compressors	5	6,000	30,000
Large Compressors	1	15,000	15,000
Semi Tractor, Low Boy Trailer	1	120,000	120,000
Shipping Containers	18	5,000	90,000
Heavy Equipment Transport Trailer	6	26,000	156,000
Self Contained Mobile Workshop	1	120,000	120,000
Mobile Housing Units	4	30,000	120,000
Radio Base Unit	1	10,000	10,000
Radio Mobile Units	8	5,000	40,000
GeoTechnical Test Equipment (set)	1	100,000	100,000
Surveying Equipment (set)	1	25,000	25,000
Mechanics Shop Tools(set)	9	5,000	45,000
TOTAL COST			7,759,000

Budget Table E

Road Rehabilitation and Maintenance ComponentLink road rehabilitation cost estimatesBy private contractor - 390 KM (Section III)(in USD)

Item Description		Quantity	Unit Price	Total
Clearing	(per km)	390	320.00	125,000
Blading and Shaping	(per km)	390	220.00	86,000
Surfacing	(per m3)	390,000	8.00	3,120,000
Embankments	(per m3)	80,000	6.00	480,000
Cut, Fill	(per m3)	400,000	1.40	560,000
Rock Excavation	(per m3)	7,500	30.00	225,000
Outlet Ditching	(per ml)	180,000	.70	112,000
Culverts - ARMCO	(80cm)(ml)	4,680	200.00	936,000
Type w/Headwalls	(150cm)(ml)	312	390.00	122,000
Steel or Concrete Bridges				
Less than 12 meters	(per ml)	30	2000.00	60,000
Bridge Deck Repair	(per m2)	800	265.00	212,000
TOTAL				6,038,000

TOTAL ESTIMATED REHABILITATION COST: 6,038,000 USD

* N.B. For budgeting purposes, this Project Paper estimates (see Table A) that 69 % of these total costs will be paid in US dollars and 31 % in local currency. This is consistent with standard business practice for road rehabilitation contracts in Shaba.

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Budget Table F

Road Rehabilitation and Maintenance ComponentOn-going Maintenance Costs During LOP

(Project Accrued Expenditures in USD 1,000 or equivalent)

	87		88		FY 89		90		91	
	Km	Cost	Km	Cost	Km	Cost	Km	Cost	Km	Cost
<u>Routine Maintenance</u>										
Grading, Ditch Cleaning										
A. Link Road (\$150/km/year)	1005	151	1005	151	1005	151	1005	151	1005	151
B. Feeder Roads (\$70/km/year)	0	0	400	28	800	56	1200	84	1600	112
Total Cost		151		179		207		235		263

Budget Table G

Road Rehabilitation and Maintenance ComponentEstimated Post-Project Maintenance Costs(Local Currency Equivalent in USD 1,000)

	<u>Annual Cost Per km.</u>	<u>No. km Per/Year</u>	<u>Total Annual Cost (\$000)</u>
I. Routine Maintenance			
A. Link Road	\$ 150	1005	151
B. Feeder Roads	70	2000	140
II. Medium Maintenance			
A. Link Road	900	335	302
B. Feeder Roads	300	400	120
III. Heavy Maintenance			
A. Link Road	4,000	201	804
B. Feeder Roads	N/A	0	0
 Total Annual Maintenance Costs			
A. Link Road			1,257
B. Feeder Roads			260
GRAND TOTAL			<u>1,517</u>

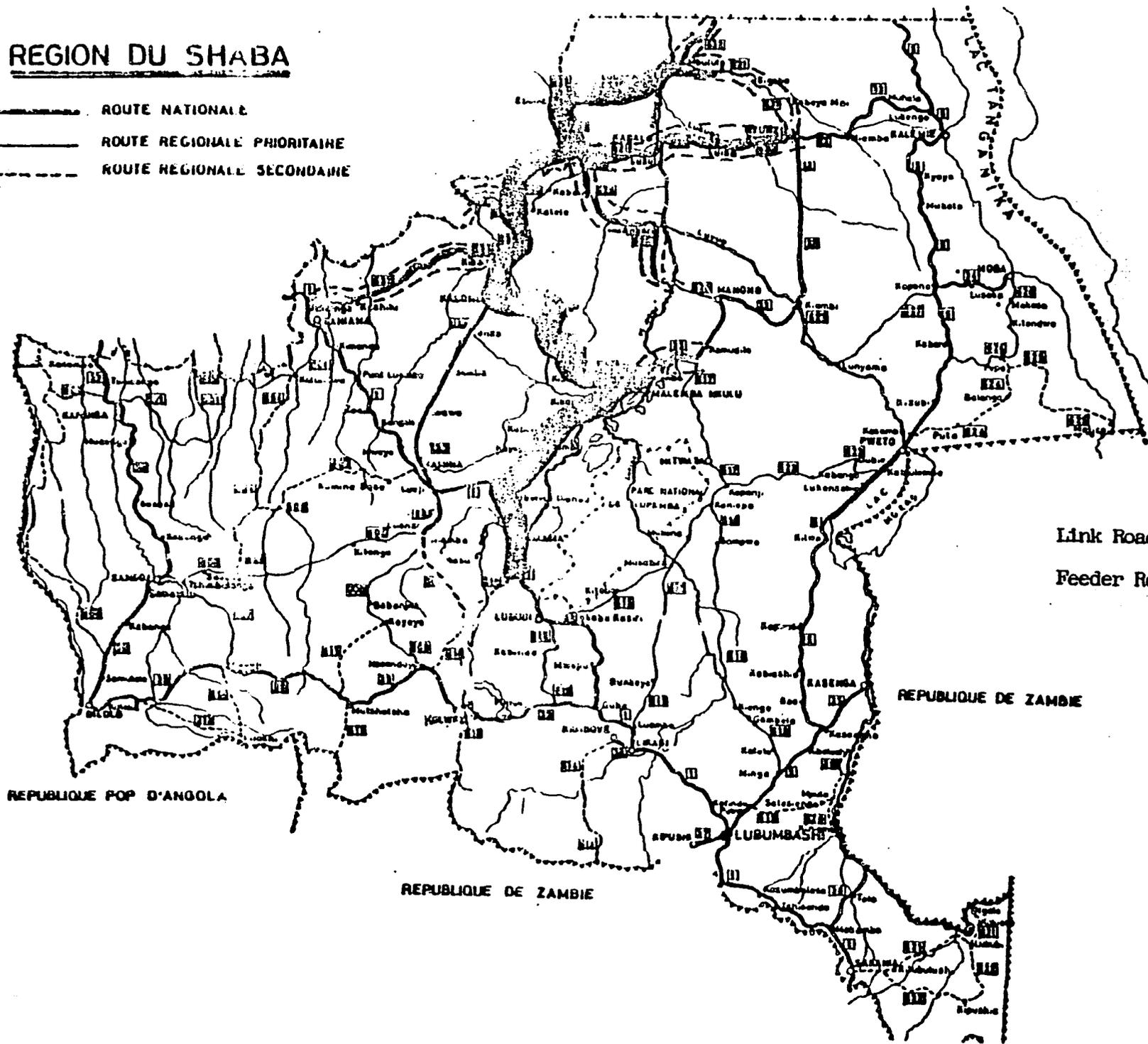
Budget Item	FY 86		FY 87		RDARS BUDGET (\$0000)		FY 88		EXPENDITURES		FY 89		FY 90		FY 91		FY 92		FY 93		Sub Total		Total	
	\$	L/C	\$	L/C	\$	L/C	\$	L/C	\$	L/C	\$	L/C	\$	L/C	\$	L/C	\$	L/C	\$	L/C	\$	L/C	Cost \$	
I. Technical Assistance																								
1. Long-Term Personnel			805	265	1,180	390	810	270	560	190	0	0	0	0							3,355	1,115	4,470	
2. TDY																						0	0	0
Subtotal	0	0	805	265	1,180	390	810	270	560	190	0	0	0	0							3,355	1,115	4,470	
II. Local Hire		0		160		320		320		320		0		0								0	1,120	1,120
Subtotal	0	0	0	160	0	320	0	320	0	320	0	0	0	0							0	1,120	1,120	
III. Training																								
1. US-based	0	0	0	0	0	0	0	0	0	0	0	0	0	0								0	0	0
2. In-country	0	0	0	0	0	0	0	0	0	0	0	0	0	0								0	0	0
Subtotal	0	0	0	0	0	0	0	0	0	0	0	0	0	0								0	0	0
IV. Commodities																								
1. Heavy Equipment			5,744	0	2,015	0	0	0	0	0	0	0	0	0								7,759	0	7,759
2. Spare Parts			700	0	700	0	850	0	850	0	0	0	0	0								3,100	0	3,100
3. Fuel & Lubricants			0	750	0	750	0	750	0	750	0	0	0	0								0	3,000	3,000
4. Materials and Supplies			0	1,840	0	2,020	0	2,020	0	1,740	0	0	0	0								0	7,620	7,620
Subtotal	0	0	6,444	2,590	2,715	2,770	850	2,770	850	2,490	0	0	0	0								10,859	10,620	21,479
V. Operating Budget																								
1. Road Rehab Contracts			0	0	0	0	2,083	936	2,083	936	0	0	0	0								4,166	1,872	6,038
2. Ongoing Maintenance			0	151	0	179	0	207	0	235	0	263	0	0								0	1,035	1,035
Subtotal	0	0	0	151	0	179	2,083	1,143	2,083	1,171	0	263	0	0	0	0	0	0	0	0	0	4,166	2,907	7,073
Totals	0	0	7,249	3,166	3,895	3,659	3,743	4,503	3,493	4,171	0	263	0	0	0	0	0	0	0	0	0	18,380	15,762	34,142
Cont. & Inflation	0	0	362	158	399	375	590	710	753	899	0	73	0	0	0	0	0	0	0	0	0	2,104	2,215	4,319
Total	0	0	7,611	3,324	4,294	4,034	4,333	5,213	4,246	5,070	0	336	0	0	0	0	0	0	0	0	0	20,484	17,977	38,461
GRAND TOTAL	0		10,936		8,328		9,546		9,316		336		0		0		0					38,461		

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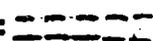
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REGION DU SHABA

- ROUTE NATIONALE
- ROUTE REGIONALE PRIORITAIRE
- - - - ROUTE REGIONALE SECONDAIRE



Link Road: 

Feeder Roads: 

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Annex 7

Technical Analysis

Seed Business Component

A. Introduction

Given the present state of deteriorated rural infrastructure, there is little incentive for smallholder farmers to produce beyond the subsistence level, for there are few marketing opportunities. By improving the rural infrastructure under this project, production and marketing increases can be expected. However, other necessary inputs will be required to maximize these increased marketing opportunities (for example, improved corn seeds and effective agricultural extension services). These inputs can be expected to result in increased agricultural production and marketing, increased availability of consumer goods, and an overall improvement of the standard of living for the rural poor, including improved health status. Because of the greater supply of corn, substitution of corn for less-nutritious cassava can be expected, leading to improved nutritional status.

This project component will assist in the establishment of a private sector seed company, Zaire's first, to provide improved varieties of corn seed to farmers in the project area. The project will contract with the company for the production and distribution services, and will assume certain risks, on a diminishing basis, associated with setting up the seed company. A certain demand for improved seed is known to exist already in the project area. Experience in central Shaba shows that this demand will develop, to a moderate degree, on its own, without the benefit of extension services. When they become operational, the project's extension activities will intensively encourage the adoption of improved varieties, and also will provide instruction on their proper use. Thus, the seed company will focus initially on seed production and distribution for the latent demand, and expand to meet the demand created later by the extension services. It is expected that the seed company will become self-supporting during the life of project, and will continue operations after the project terminates.

Seed production operations will likely begin in southern Shaba, rather than in the project area. This decision was arrived at following attempts to interest private sector companies in establishing production activities, at the project's outset, in the project area. However, USAID found no business concern which would undertake setting up a seed company in central Shaba until the demand could be demonstrated. (The corollary to this decision is that, if we were not to follow this approach, the only option would be for USAID itself to fully finance the seed farm operation.)

To ensure a continued supply of improved seed to the northern Shaba farmers during the project start-up period, the project will finance costs of technical assistance for thirty months to continue the activities of the Ngaba seed farm established under PNS, until the seed company can undertake to supply the seed requirements of farmers in the area presently served by Ngaba.

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The corn now grown in central Shaba is of poor quality — the result of years of uncontrolled mixing and crossing. Yields are extremely low, and seed degeneration for the important plant characteristics of yield, grain type, color, and resistance to disease are extensive. With the introduction of improved varieties, significant and immediate increases in production can be expected. Trial data generated independently by Zaire's National Maize Program (PNM) and by the North Shaba Rural Development Project (PNS) indicate a potential production increase of 40% for every hectare planted to improved varieties (such as Kasai I) when compared with yields of local varieties.

Despite the benefits to be derived from using improved seed, project design research has indicated that a relatively low demand for improved seed presently exists in central Shaba — perhaps no more than 20 to 50 metric tons (MT) per year; presently, approximately 10-15 tons of improved seed is being purchased annually from the PNS area by traders and is sold in central Shaba, at full market price. Thus, it is expected that demand for improved seed will be relatively limited in the initial years of the project and then increase rapidly as farmers become more aware of the benefits of better seed. This pattern has already been seen in PNS.

Demand for improved seed also will increase elsewhere. Two corn-producing areas outside the project's zone represent a potentially important corn seed market: western Shaba (Kaniama-Kasese area), and the neighboring southern Kasai-Oriental region. Total seed demand for these areas is projected to be 550 MT per year.

3. Options Considered

The project design team weighed various options to guarantee a supply of improved seed to the entire project area. The first option was to have the project produce and provide the seed directly to the small farmer at concessional rates. This approach has been tried elsewhere, and while it is effective in getting seed out to the small farmer, it proves detrimental in the long run because it (a) creates an undesirable expectation on the part of the farmers, who come to expect cheap or free seed (and later cheap or free ag inputs); and (b) disappears once the project is over (i.e., is not sustainable). Given the project's objective to ensure that seed supply will continue once the project is over, this approach was rejected in favor of one that addressed sustainability from the outset.

The second option considered was to establish a seed farm in the center of the project area, operate it during the project's life, then sell it to a private company or turn it over to the GOZ at the end of the project.

Located in the center of the project area, Niembo is a government farm which produced seed during the pre-independence period. This site was selected as appropriate for the project because of its central location, its proximity to the railroad, the fertile soil conditions, and its proven capacity as a seed producing farm. The approach considered was for the project to upgrade the physical infrastructure of the farm — building construction, warehousing, land clearing, etc. — then operate it to produce and distribute the needed seed. When the project neared completion, it was thought the activity could be ceded to the GOZ or sold to a private

entrepreneur to continue seed activities. This approach was finally rejected because it became increasingly doubtful that a satisfactory transition of activities, with an expectation of their long-term continuation, could be effected at the end of the project's life, with any entity (whether governmental or private) that had not already invested itself in the operation, and so built up necessary expertise.

A third option seriously pursued by the project design team proposed establishing a seed farm in the center of the project area to be managed by a private company. This company would at PACD take over the operation, thus resolving the sustainability issue.

During project design, USAID contacted several local businesses and third-country seed companies to determine their interest in beginning seed production and distribution activities in central Shaba (from Niembo). Although the seed companies were interested in beginning seed production and distribution activities in Zaire, they were reluctant to make a large investment in staff and resources at the Niembo site because of its remoteness and because the demand for the seed in the project area had not been established. (It is estimated that at the present seed price of 25z/kg, an effective demand of 500 MT would be required for a seed farm, such as that anticipated to be established at Niembo, to be viable.) Local businesses were similarly reluctant, since most of them already had established operations in southern Shaba. Even with the offer of considerable incentives, they remained hesitant to move their operations to Niembo, and this option was also put aside.

The fourth option proposed a two-phase approach to the Niembo operation. During the first phase, USAID would not expect the partner company to set up at Niembo, but only require that it distribute seed to the project area; this approach was attractive to the private investors, as they would be able to begin operations at their existing facilities in southern Shaba, which are relatively easier and cheaper to support logistically (being readily accessible by paved road and by rail), and because of those facilities' proximity to the southern Shaba hybrid corn seed markets. The second phase would see the seed farm established in Niembo, operated by the seed company, with certain start-up and capital costs financed by the project (building construction, land clearing, equipment, etc.).

This option, while more feasible, was considered less than ideal because it was determined to be contractually unwieldy. More importantly, it was apparent that by following this approach, USAID would be entering into an area which might be counterproductive to reaching its basic objectives, namely to support the establishment of a profit-making seed company that would provide, in a least-cost manner, appropriate seeds to smallholder farmers in the project area. By stipulating that the farm be located at a particular site such as Niembo, USAID would be inappropriately forcing conditions onto the seed business that may or may not be financially sound.

USAID finally concluded that the project should focus on establishing a functioning seed business to serve the project area. A company, most likely a partnership of a local business and an experienced African seed company, will be contracted by USAID to provide improved open-pollinated seed to the small farmers in the project area. This company will obtain foundation seed,

reproduce it on its farm and possibly with contract growers, and establish a marketing system and distribution network for the seed in the project area. USAID's obligation would be to support the operation in its initial phases, and to guarantee minimum seed sales through subsidization of marketing costs in the early years. Since the support to be provided by USAID will be minimal and on a diminishing basis, the seed company must become self-sustaining as soon as possible.

Once the demand for seed is established, it may prove desirable to move seed production and distribution operations to the project area, especially if USAID will help cover the heavy start-up costs either through loans or grants. Certain financial and technical factors weigh in favor of moving to the project area. These include (a) proximity to the market, reducing distribution costs; (b) production of seed in ecologically similar areas to the seed market, increasing seed production efficiency, and (c) closer contact with the marketplace, reducing market information cost.

While the USAID feels that market forces will in time dictate a move to central Shaba, this is a decision for the private company to make. In any case, if the seed business is a profitable one, seed will continue to flow to central Shaba farmers.

During project design three qualified local entrepreneurs expressed interest in the seed business venture proposed by the project. In addition, two Zimbabwean seed companies expressed interest in providing technical assistance or entering into a joint venture in developing a seed company in the central Shaba region (see attached letters).

To ensure a continued supply of improved seed to northern Shaba farmers during the project start-up period, the project will finance technical assistance costs associated with the Ngaba seed farm established under PNS. This technical assistance will be provided through Personal Services Contractors until such time as the seed company can undertake to supply the seed requirements of farmers in the area presently served by Ngaba (estimated at three to five years). Ngaba's contract grower arrangement for obtaining required quantities of improved seed will continue to be used.

Improved seed produced by the Ngaba operation will be distributed through the network established by PNS and run by the GOZ Ministry of Agriculture. Under that network, improved seed is sold to farmers in northern Shaba by MOA extension agents. The price paid for the seed covers Ngaba's operational costs; the only costs not covered are those associated with supporting the expatriate technical assistance.

C. Seed Company Development

1. General. Given the project's objective of facilitating the creation of a commercially sustainable private company to produce and distribute improved varieties of corn seed to the project area, criteria have been established and assumptions made for use in developing the terms of reference for the RFTP.

The criteria are:

- That the seed be sold, as close to full market price (cost plus profit) as possible during the start up period, and at full market price by PACD;
- That the seed be available to the farmers in time for the planting season;
- That the seed continue to be produced and distributed to the project area after the termination of the project;
- That the quality of the seed be as high as possible — properly processed, packaged, and treated, as appropriate;
- That the private seed company undertake its own marketing and quality control mechanisms to ensure that demand is created and maintained.

The assumptions are:

- That for the foreseeable future, farmers in the project area will have the sophistication and resources to use only open-pollinated seed; and
- That diversification into other potentially lucrative ventures by a seed company (e.g., hybrid seed) is acceptable, so long as the objective of supplying the project area with appropriate improved seed is met.

2. Type of seed. The project will advocate the use of improved open-pollinated seeds in central and northern Shaba. The seed company might also provide quality open-pollinated seed to the agricultural areas outside the project area, namely western Shaba (Kaniama) and southern Kasai-Oriental regions.

Several open-pollinated seed varieties are being considered for reproduction and distribution in the project area. These are Kasai I, Shaba I, and TZRW (white or yellow). Kasai I is being used in the PNS area and results have been favorable; however, its yield is slightly lower the further south it is produced. Shaba I produces high yields, but is susceptible to leaf streak. The third variety, TZRW, has been only recently developed; initial test results are very favorable, but further testing may be required.

3. Seed availability. Because of the time required to produce foundation seed for further reproduction, improved seed will not be available to the farmers from the seed company until the 1988/1989 growing season, which is planted in September-October. The seed company will obtain its foundation seed from the Applied Agricultural Research and Outreach Project (RAV, 660-0091) which needs one complete growing season to produce the required seed. Upon project approval in late FY86, a request will be made to RAV for 750 kilograms of foundation corn seed. This will be sufficient foundation seed for 30 hectares, which will yield the estimated 30-50 tons of improved seed to be distributed initially in the project area. RAV will produce the foundation seed during the 1986-87 growing season, and will provide it to the seed company for reproduction during the 1987/88 growing season. The seed company will then have sufficient seed available for distribution for the 1988/89 growing season. A delay of even a couple of months would push back the operation for an entire year, due to the growing seasons.

4. Demand for seed. The projections of improved seed sales to small cultivators are based on USAID's experience with PNS, and on other donor experience in adjacent areas.

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Present PNS-area demand runs a little over one hundred tons a year. In this area 33,000 farmers cultivate at least 26,500 hectares of corn annually (PNS figures), and seed is replaced approximately every five years. If the seed necessary to cover this area were renewed every three years, as recommended, the annual demand would rise to 177 MT.

Field work and research conducted during project design indicate that there are approximately 50,000 farming families in central Shaba, of which 40,000 currently grow an average of 0.8 hectares of corn. The amount of seed required for an area of 32,000 hectares, with seed being replaced every five years, is 130 MT annually. If the seed were replaced every three years, the annual demand would rise to 213 MT.

To summarize, following is the annual projected seed demand, showing three- and five-year seed replacement schedules for the project area:

	5-Year Replacement	3-Year Replacement
North Shaba =	106 MT	177 MT
Central Shaba =	<u>130 MT</u>	<u>213 MT</u>
Subtotal - Project Area	236 MT	390 MT

Markets exist for improved seed outside the project area as well. A large GOZ farm near Kaniama has recently been taken over by Gecamines Developpement (the agricultural arm of the copper mining parastatal), which intends to produce corn commercially. In recent years, this farm has been producing and selling approximately 150 MT of seed a year to area farmers. The seed company could reasonably expect to take over this market, as Gecamines Developpement is primarily interested in producing corn to provision its employees in the south, and not in continuing seed production.

Project Mais Kasai Oriental (PMKO) in southern Kasai-Oriental region (adjacent to the project area) recently requested 450 MT of seed from the Kaniama farm. PMKO produces about 100 MT of seed on its own farm near Gandajika, but has a greater demand than it can supply; it also has the capability to distribute seed over a wide area, using its fleet of four-wheel drive trucks. This represents a potential market for the seed company of over 400 MT a year.

Assuming that this demand remains constant, the annual demand for improved seed outside the project can be summarized as follows:

Kaniama area =	150 MT
Kasai-Oriental =	<u>400 MT</u>
Subtotal - Outside Project Area	550 MT

Thus, the total demand for seed (inside and outside the project area) is projected to be between 786 and 940 MT annually.

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D. Budget

The budget figures shown on page 7-13 are illustrative. They are based on the estimated cost of establishing a seed operation in southern Shaba, and includes estimated capital improvement costs for the Niembo seed farm (as an example of probable costs to establish facilities in the project area). Because it is presently unknown what conditions and incentives proposing companies might require, the actual costs for this component of the project may differ significantly from this estimate. Nonetheless, it serves as a basis for project budgeting purposes and also for calculating the rate of return for this component and for the project as a whole.

E. Implementation Plan

1. General. The approach to be taken to implement this component is a new one for A.I.D. The goal is to foster the establishment of a private business which will provide seed to the project area because it is in its interest to do so. The project is not, therefore, simply hiring a company to implement a project activity; but rather inducing a company to invest along with it. Because this is new territory, procurement procedures are not clear, nor are the limits to the terms of such a contract. Thus, a Request For Technical Proposal (RFTP) will be prepared to elicit responses from private entrepreneurs interested in a seed business in Zaire.

Upon project approval, USAID will engage competent legal counsel to develop the terms of reference for the seed business RFTP. Once the RFTP is issued, pre-bidding conferences may be held among interested parties. Proposals will be evaluated and award made to the company whose proposal appears most likely to achieve the project's objectives at the least cost to the USG. This process will be completed during the first twelve months of the project, and a contract will be executed prior to the beginning of the 1987/88 growing season (beginning September 1987).

Once the contract is signed, the seed company will begin multiplication of the foundation seed, and investigation and development of marketing channels in the project area. Technical assistance may be required for the former, to be provided by the third-country seed company. For the latter, some technical assistance may be required for both these activities from a third-country seed company, although it is highly likely that the local company will have sufficient experience with marketing in Zaire to develop a plan to get the seed to the small farmers efficiently.

One aspect of USAID support to the seed business might be support to marketing activities during the business's early years. For example, the seed company might be reimbursed by the project, up to a specified level, for costs it incurs to establish its market in the project area (and in adjacent areas). The level of marketing support would be gradually reduced as marketing expertise in the area developed. By year seven, the seed company would have developed its market adequately to permit it to profitably continue its operations.

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Certain capital expenditures might be required by the seed company to begin seed production operations. These are not budgeted in this project, as financing mechanisms exist under other USAID-programs. For example, under USAID's Commodity Import Programs (Agricultural Inputs Support I and II, 660-0100 and 660-0103), dollar financing is available to import seed farm equipment (seed dryers, cleaners, packaging equipment, etc.), and repayment terms can be modified as necessary to meet the requirements of the seed business. In addition, the proposed African Economic Policy Reform Program for Zaire (\$15 million, FY86, 660-0121) would provide financing to business like this in two ways: through additional commodity import financing support, and through program-generated local currency loans through intermediate financial institutions. As proposed, this program will channel the equivalent of \$6 million through such local financial institutions, which would provide credit to private firms or individuals making investments in the agricultural sector in Zaire. Other possibilities include loan or grant financing under the proposed Private Sector Support Project (660-0120) or through a portion of the local currency generated from sales of PL480 commodities to be channeled to the private sector through intermediate financial institutions. Wherever possible, USAID will encourage direct investment by the seed company.

2. Contracting. This component will be implemented through two A.I.D. direct contracts with private firms; host country contracting is not an alternative since the GOZ will not be directly involved in this activity.

Contract 1 - Legal Services: The Mission will contract with a law firm having offices in Zaire to furnish legal counsel and drafting assistance and to assist in negotiation of Contract 2. The law firm will, in consultation with the A.I.D. Regional Legal Advisor and the A.I.D. Regional Contracting Officer, counsel and assist the Mission's Chief Negotiator and Associate Negotiators.

Contract 2 - Seed Company: The Mission will contract with a Zairian commercial firm to implement the seed component of the project. The contractor will, with the objective of developing a commercially viable seed business, procure or produce, sell, and distribute high-quality open-pollinated seed to project area farmers. The contractor will obtain, to A.I.D.'s satisfaction, technical assistance from an established seed company having substantial experience in Africa.

The contractor will undertake whatever steps it deems necessary to establish the business and make it profitable. Although it will be the contractor's responsibility to determine its requirements, it is assumed that these will include development of (a) a source of supply of appropriate seeds, (b) a marketing and distribution scheme and (c) a management/administrative/logistics regime.

The project will offer inducements to potential contractors in the RFTP, some of which will be fixed and others optional. The contract will be awarded to the responsive and responsible offeror who submits the most cost effective proposal, taking into consideration the value of the offeror's investment and the cost to the USG of the inducements chosen.

Fixed inducements include:

Improved road network in the project area.

Extension services for village cultivators.

Improvements in crop storage and milling facilities in villages and at railheads.

Optional inducements include:

A financial grant or loan to the contractor to help defray initial technical assistance, plant and equipment acquisition, sales promotion, and other startup costs.

Provision of stocks of foundation seed for improved corn varieties, together with certain elements of coordination and quality control for the seed enterprise, through an assistance agreement under the Applied Agricultural Research and Outreach Project (RAV, 660-0091).

Guarantee of a certain minimum level of sales during a prescribed period of time. This can be done indirectly, via subsidization of marketing costs.

Facilitation of relations with the Government of Zaire, as required, e.g., negotiation of establishment agreement, obtaining of governmental licenses and approvals, and arranging land acquisition.

A waiver to open eligibility to Code 941 countries is requested because the seed enterprise as proposed requires extensive experience in the seed business in Africa, and limiting the RFTP to Code 000 and the Cooperating Country is unlikely to yield sufficient or acceptable responses. The local firms proposing for this contract presumably will subcontract with experienced seed companies from another African country to provide the technical and managerial assistance needed to begin seed operations. The partner firm will do its own procurement for commodities it might require to fulfill the terms of the contract, making use of USAID's Commodity Import Programs where appropriate.

The estimated value of these contracts, technical assistance, and commodities is \$2.24 million.

3. Management. Oversight of the seed company contract will rest initially with USAID, and will pass to the project management contractor once that team is on board. Since the contract will require the seed company to provide specified quantities of quality seed and establish a distribution system, contract management will include technical oversight of the distribution network.

F. Implementation Schedule

September 1986	Lawyers hired to develop RFTP and assist in contract negotiations
September 1986	Prepare Personal Services Contracts for Ngaba seed farm technicians
September 1986	Foundation seed order placed with RAV
October 1986	RFTP prepared and distributed to local and interested African seed companies
November - December 1986	Pre-bidding conferences held, as required
January - February 1987	Proposals submitted and reviewed
March - April 1987	Contract negotiated and signed
April 1987	Begin seed company operations (begin preparations for seed reproduction, research marketing situation and develop plan to establish distribution network, import required equipment for seed production operation, etc.)
September 1987	Plant first crop of foundation seed
May - June 1988	Harvest first crop of foundation seed, process and package it for distribution
July - August 1988	Market seed in project area through distribution network
August 1988	Prepare fields for next crop of foundation seed
September 1988	Plant next crop of foundation seed
October 1988	Review seed distribution experience and amend as required
May - June 1989	Harvest seed, process and package it for distribution
July - August 1989	Market seed in project area through distribution network

August 1989	Prepare fields for next crop of foundation seed
September 1989	Plant next crop of foundation seed
October 1989	Review seed distribution experience and amend as required; expand operations as appropriate
May - June 1990	Harvest seed, process and package it for distribution
July - August 1990	Market seed in project area through distribution network
August 1990	Prepare fields for next crop of foundation seed
September 1990	Plant next crop of foundation seed
October 1990	Review seed distribution experience and amend as required; expand operations as appropriate
May - June 1991	Harvest seed, process and package it for distribution
July - August 1991	Market seed in project area through distribution network
August 1991	Prepare fields for next crop of foundation seed
September 1991	Plant next crop of foundation seed
October 1991	Review seed distribution experience and amend as required; expand operations as appropriate
May - June 1992	Harvest seed, process and package it for distribution
July - August 1992	Market seed in project area through distribution network
August 1992	Prepare fields for next crop of foundation seed
September 1992	Plant next crop of foundation seed

October 1992	Review seed distribution experience and amend as required; expand operations as appropriate
May - June 1993	Harvest seed, process and package it for distribution
July - August 1993	Market seed in project area through distribution network
August 1993	Prepare fields for next crop of foundation seed
September 1993	Plant next crop of foundation seed
October 1993	Review seed distribution experience and amend as required; expand operations as appropriate
May - June 1993	Harvest seed, process and package it for distribution
July - August 1993	Market seed in project area through distribution network
August 1993	Prepare fields for next crop of foundation seed
September 1993	End of project - plant next crop of foundation seed
October 1991	Review seed distribution experience and amend as required; expand operations as appropriate

(6) ACTION AID2 INFO AMB DCM ECON CHRON

VZCZCKI0812
RR RUEHKI
DF RUEHSB #3502/01 1700906
ZNR UUUUU ZZH
R 190903Z JUN 86
FM AMEMBASSY HARARE
TO RUEHKI/AMEMBASSY KINSHASA 0466
INFO RUTAH/AMCONSUL LUBUMBASHI 0144
BT
UNCLAS HARARE 03502

LOC: 229 254
19 JUN 86 0955
CN: 32561
CHRG: AID
DIST: AID

ACTION TAKEN	
NAME	DATE

AIDAC

E.O. 12356: N/A
SUBJECT: PROJECT 105 SEED FARM

1. FOLLOWING MESSAGES RECEIVED FROM MR. CAVANAGH,
GENERAL MANAGER OF SEED COOP ON 17 JUNE:

2. QUOTE:

CENTRAL SHABA AGRICULTURAL DEVELOPMENT PROJECT

WE THANK YOU FOR THE HOSPITALITY SHOWN TO OUR TEAM DURING
THEIR RECENT FACT FINDING TOUR OF THE SHABA PROVINCE AND
HAVE PLEASURE IN CONFIRMING OUR INTEREST IN THE PROPOSED
SEED PROJECT.

YOUR PRIMARY OBJECTIVE, AS IT RELATES TO OURSELVES IS, WE
UNDERSTAND; TO MAKE SEED AVAILABLE TO CENTRAL SHABA
CULTIVATORS. IN ACCEPTING THIS OBJECTIVE WE WOULD
RECOMMEND TO ACHIEVE IT THE ADOPTION OF AN APPROACH
SLIGHTLY DIFFERENT TO THAT ENVISAGED IN SOME OF THE
PAPERS WE HAVE HAD SIGHT OF.

IN SUMMARY WE BELIEVE THAT A SEED FARM AS SUCH SHOULD NOT
BE SET UP AT THIS STAGE BUT RATHER A SEED COMPANY WHICH
WOULD CONTRACT OUR SEED PRODUCTION TO EXISTING COMMERCIAL
FARMS AND SEED PROJECTS WHILST PUTTING AN INCREASED
EFFORT INTO MARKETING AND RESEARCH. THE SEED COMPANY
WOULD COMPRISE OURSELVES SUPPLYING THE TECHNICAL INPUT
AND SOME SUCCESSFUL COMPANY WELL ESTABLISHED IN SHABA ON
THE COMMERCIAL SIDE.

A. PROPOSED NIEMBO SEED FARM

WE BELIEVE THAT BEFORE BECOMING A SEED PRODUCER A FARM
SHOULD FIRST BECOME AN ESTABLISHED AND SUCCESSFUL MAIZE
PRODUCER. IF THE LATTER CANNOT BE ACHIEVED THEN THE
FORMER STANDS LITTLE CHANCE.

SHOULD IT BE INTENDED TO DEVELOP NIEMBO AS A COMMERCIAL
FARM THEN IT IS RECOMMENDED THAT THIS BE DONE OUTSIDE THE
SEED PROJECT AND WHEN SUITABLY ESTABLISHED IT CAN BECOME
ONE OF THE FARMS PRODUCING SEED UNDER CONTRACT TO THE
SEED COMPANY. A NATURAL PROGRESSION WOULD BE PROFICIENCY
IN THE PRODUCTION OF COMMERCIAL MAIZE, THEN OPEN

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6/25/86
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POLLINATED SEED MAIZE, THEN HYBRID SEED MAIZE AND FINALLY FOUNDATION SEED MAIZE, ALL OF WHICH WOULD TAKE MANY YEARS EVEN WITH GOOD MANAGEMENT.

NEIMBO COULD ALSO AT AN EARLY STAGE PERFORM AN EXTENSION ROLE IN THE CENTRAL SHABA PROVINCE.

WE ARE ALL AWARE OF THE RUINS OF MANY WELL INTENTIONED PROJECTS IN AFRICA. POOR ON THE GROUND MANAGEMENT IS LIKELY THE SINGLE BIGGEST FACTOR IN SUCH FAILURES AND AN ISOLATED LOCATION LIKE NIEMBO MUST BE CLASSED AS A VERY HIGH RISK ESPECIALLY SINCE THE SIZE OF THE PROJECT DOES NOT JUSTIFY ANY DEPTH IN MANAGEMENT AND CONTINUITY WILL BE REQUIRED OVER A LONG PERIOD.

B. CONTRACT SEED PRODUCTION

IT SEEMS TO BE GENERALLY ACCEPTED THAT THERE ARE CERTAINLY EXISTING COMMERCIAL FARMS AND EVEN POSSIBLY A FEW SEED FARMS CAPABLE OF PRODUCING THE REQUIRED SEED.

THERE APPEARS TO BE CONCERN HOWEVER THAT SUCH FARMS ARE OUTSIDE THE TARGET CENTRAL SHABA AREA. WHILST CONCEDED THIS TO BE A DISADVANTAGE WE DO NOT CONSIDER IT TO BE THAT IMPORTANT. TO EFFECTIVELY DISTRIBUTE THE SEED MAIZE IT WILL BE NECESSARY TO PHYSICALLY MOVE IT FROM SEED PRODUCTION FARMS TO SUITABLE MARKETING OUTLETS. IN OUR PROPOSAL THIS WILL INVOLVE ADDITIONAL TRANSPORT (RELATIVELY INEXPENSIVE IF USE IS MADE OF RAIL) AS AGAINST THE PROPOSED NEIMBO SITE.

SUCH ADDITIONAL COST, WHICH CAN READILY BE ASCERTAINED, CANNOT BE EXCESSIVE WHEN IT IS CONSIDERED THAT MOST COMMERCIAL MAIZE MOVES A SIMILAR DISTANCE AT PRESENT IN THE REVERSE DIRECTION, AND SEED MAIZE BEING SOLD AT ABOUT 5 TIMES THE PRICE OF COMMERCIAL MAIZE HAS A VALUE TO BULK RATIO MUCH MORE SUPPORTIVE OF TRANSPORT COSTS.

THE NEXT QUESTION TO BE RAISED AS REGARDS CONTRACT PRODUCTION IS THAT OF QUALITY CONTROL. THIS WILL BE ENFORCED BY INSPECTORS EMPLOYED BY THE SEED COMPANY, THESE INSPECTORS WILL ALSO PERFORM AN EXTENSION ROLE AMONGST SEED PRODUCERS.

BY SPREADING PRODUCTION AMONGST A MEMBER OF CONTRACT GROWERS IT WILL REDUCE THE RISK OF A MAJOR SEED CROP FAILURE THEREBY ENSURING CONTINUITY OF SUPPLY.

C. SEED PROCESSING EQUIPMENT

IT IS PROPOSED TO INTRODUCE THE SAME DECENTRALISED HANDLING SYSTEMS THAT WE USE HERE IN ZIMBABWE, WHEREBY THE SEED MAIZE IS DRIED (IF NECESSARY) SHELLED, CLEANED, GRADED, TESTED AND PACKED ON THE PRODUCERS FARM. HAVING PUT INTO SALEABLE FORM IT IS CHECKED BY THE INSPECTORS AND SAMPLED FOR GERMINATION AND PURITY. AFTER SUCCESSFULLY PASSING THE LATTER TESTS IT IS READY FOR DESPATCH TO CUSTOMER AS DIRECTED BY THE SEED COMPANY.

THE CONTRACT PRODUCER MUST PROVIDE SUITABLE ON FARM WORKING AREAS AND WAREHOUSING WHILST THE SEED COMPANY WILL PROVIDE FREE ON LOAN THE SEED SPECIFIC EQUIPMENT. THE LATTER FOR THE LIKELY VOLUMES INVOLVED IS CURRENTLY AVAILABLE AT LESS THAN U.S. DOLS 10,00 FOR SET (I.E. EACH FARMS REQUIREMENT) ON AN F.O.R. HARARE BASIS.

IT IS ROBUST UNSOPHISTICATED EQUIPMENT THAT, WHILST NOT COMPLETELY PORTABLE, CAN BE FAIRLY EASILY MOVED FROM FARM TO FARM (SHOULD A CONTRACT PRODUCER GIVE UP PRODUCTION) USING NORMAL TRANSPORT AND ERECTED, OPERATED AND MAINTAINED BY ANYONE CAPABLE OF MAINTAINING A TRACTOR.

AT THIS STAGE WE ARE UNSURE OF WHAT ARRANGEMENTS IF ANY NEED TO BE MADE FOR ARTIFICIAL CROP DRYING. IT APPEARS THAT THE NECESSITY FOR ARTIFICIAL DRYING MAY BE TIED INTO THE LOCATION. IN ANY EVENT FURTHER INVESTIGATIONS WILL BE NECESSARY WITH AT WORST AN UNSOPHISTICATED DRYING SYSTEM BEING REQUIRED ON EACH CONTRACT PRODUCERS FARM.

D. PROJECT AREAS

WHILST CENTRAL SHABA IS THE TARGET PROJECT AREA WE BELIEVE THAT THE PROPOSED SEED COMPANY SHOULD AIM AT A LARGER AREA, POSSIBLY THE WHOLE SHABA PROVINCE AND WELL INTO THE KASAI, IN ORDER THAT IT BECOMES LARGE ENOUGH TO BE VIABLE.

WITHIN THIS ENLARGED AREA THE PROJECT PAPERS INDICATE THAT THERE ARE A NUMBER OF EXISTING OR PLANNED SEED PROJECTS. IT WOULD BE DESIRABLE TO INCORPORATE THESE INTO THE PROPOSALS AS CONTRACT PRODUCERS TO THE SEED COMPANY. UNDOUBTEDLY THIS IS EASIER TO SUGGEST THAN TO GET AGREEMENT ON, RECOGNISING THAT THERE ARE LIKELY MANY DIFFERENT INTERESTS INVOLVED. HOWEVER, INDIVIDUALLY THESE UNITS ARE UNLIKELY TO SUCCEED OVER TIME AND MOST CERTAINLY WILL BE UNABLE TO PROVIDE THE REQUIRED TECHNICAL EXPERTISE ON A LONG TERM BASIS.

E. DISTRIBUTION

WITHIN CENTRAL SHABA IT IS RECOMMENDED THAT A NUMBER, POSSIBLY FIVE OR SIX, OF SALES WAREHOUSES BE BUILT IN THE

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MAIN CENTRES TO ENSURE EFFECTIVE PHYSICAL DISTRIBUTION. THESE COULD BE LINKED TO VARIOUS STORAGE OR MILLING FACILITIES AS ENVISAGED IN PROJECT DOCUMENTS.

IN THE ENLARGED AREA, I.E. OTHER THAN CENTRAL SHABA, EXISTING FACILITIES WILL BE USED COMPLETELY FOR DISTRIBUTION.

F. RESEARCH

THE SOURCE, QUANTITY AND PURITY OF PROPOSED OPEN POLLINATED LINES APPEARS CURRENTLY IN DOUBT. AT BEST IT WOULD APPEAR THAT A CLEANING UP OPERATION WOULD BE REQUIRED. THIS WE WOULD PROPOSE TO UNDERTAKE IN ZIMBABWE ON OUR OWN RESEARCH STATION AS WE WOULD THE MAINTENANCE AND DEVELOPMENT OF SUBSEQUENT LINES.

ANOTHER MOST CRITICAL ELEMENT IS ASCERTAINING SEED YIELDS OF THE PROPOSED VARIETIES ON THE PROPOSED CONTRACT FARMS THIS IS A PRIORITY AND WILL TAKE AT LEAST TWO SEASONS TO GIVE MEANINGFUL RESULTS.

G. FINANCING AND STAFFING

WHILST WE HAVE NOT ENDEAVOURED TO DO A DETAILED FINANCIAL ANALYSIS AT THIS STAGE CLEARLY WHAT WE ARE LOOKING AT IS A RELATIVELY LOW CAPITAL PROJECT REQUIRING SUBSTANTIAL

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SUPPORT IN ITS INITIAL YEARS.

IN BROAD TERMS WE ENVISAGE ONE OR TWO EXPATRIATES FOR THE FIRST 2 - 3 YEARS AND THEREAFTER IT SHOULD ONLY NEED PERIODIC ON THE GROUND SUPPORT FROM OURSELVES.

H. NEXT STEPS

WE NOW AWAIT YOUR REACTION TO THESE BROAD PROPOSALS AND SHOULD YOU BELIEVE WE/ARE CLOSE ENOUGH THEN OBVIOUSLY WE NEED TO MEET WITH YOU AGAIN TO DISCUSS DETAIL.

ATTACHED ARE REQUESTS FROM OURSELVES FOR INFORMATION. IT WOULD BE APPRECIATED IF THE SAME COULD BE SUPPLIED SOONEST AS IT IS BASIC TO ANY DETAILED PROPOSALS.

WE WILL ALSO NEED TO ARRANGE MEETINGS WITH POTENTIAL PARTNERS FOR THE PROJECT AS SOON AS WE HAVE REACHED BROAD AGREEMENT WITH YOURSELVES.

YOUR EARLY RESPONSE IS AWAITED AND ONCE AGAIN WE THANK YOU FOR THE HOSPITALITY SHOWN DURING OUR RECENT VISIT.

3. EXISTING/PROPOSED SEED PROJECTS AND COMMERCIAL FARMS

WE WOULD WELCOME ANY INFORMATION YOU MAY BE ABLE TO ACQUIRE ON SEED PROJECTS AND COMMERCIAL FARMS IN THE SHABA AND KASAIS.

INFORMATION OF PARTICULAR VALUE WOULD INCLUDE EXACT LOCATION; OWNERSHIP FUNDING, QUALITY OF MANAGEMENT, FACILITIES, AREAS GROWN BY CROPS, YIELDS BY CROPS, HOW SUCCESSFUL AND WHEN ESTABLISHED (ALSO WHEN TO BE ADVERTISED WHERE APPLICABLE).

THE FOLLOWING IN PARTICULAR WE HAVE COME ACROSS IN YOUR PROJECT PAPERS OR FROM OTHER SOURCES AND WOULD APPRECIATE MORE INFORMATION ON THEM.

(A) NATIONAL SEED BUREAU (BUMASEM) - WORLD BANK, F.A.O. AND THE GOVERNMENT OF ZAIRE. IS THIS IN DIRECT COMPETITION TO THE PROPOSED PROJECT OR CAN THE TWO BE MADE COMPLEMENTARY? HOW DOES YOUR PNM RELATE TO THE TWO?

(B) KIU LUNGONGO SUGAR ESTATE.

(C) SWANEPOEL.

(D) GECAMINES DEVELOPMENT FARMS.

(E) NGABA FARM - WHEN IS IT GOING TO CLOSE DOWN?

(F) KARRIBAMBA FARM, TENPE - FUNGURUME (S.M.T.F.).

(G) DOMAINE DE KASESE - KANIAMA.

(H) LUBUDI SEED FARM.

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3/4 UNCLASSIFIED 7-18 HARARE 003502/33

- (I) EASTERN KASAI CORN PROJECT
- (J) FRERE GEORGES.
- (K) SODIMIZA
- (L) BRASIMBA
- (M) CEDERIM IN KASAI OCCIDENTAL - HAS IT BEEN CLOSED DOWN?
- (N) DATA IN KASAI OCCIDENTAL - WILL IT GET OFF THE GROUND?
- (O) PMKO IN KASAI ORIENTAL.

4. OTHER INFORMATION REQUIRED

- (A) DETAILS OF F.A.O. PROJECT - P.N.E./NATIONAL FERTILISER PROGRAMME). WHAT IS ITS DISTRIBUTION VALUE FOR SEEDS.
- (B) ROAD AND RAIL RATES WITHIN SHABA AND KASAIS.
- (C) TRADING CONCERNS AS LIKELY PARTNERS.
- (D) INVESTMENT CODE, LOCATION ETC. IMPLICATIONS.
- (E) VARIETAL TESTING FACILITIES FOR 86/87. END

QUOTE. LANPHER
BT
#3502

NNNN

4/4 UNCLASSIFIED HARARE 003502/34

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TRABEZA
TRAVERSES BETON ZAIRE

7-19

N.R.C. LIKASI 0469 TEL. G.C.M. 388
SIEGE SOCIAL LIKASI - 47, AV. DE L'ABATTOIR B.P. 171
TELEX 43143 - S.A.E.R. - LIK - Z.R. 41135 - S.H.S. LUB - Z.R.
BANQUIERS : U.Z.B. LUB. 26.300-12 KIN. 37.534-92

USAID
C/° USA AMBASSY

FUNGURUME, LE 14 juin 1986

V/REF.

N/REF.

A RAPPELER DANS VOS REPONSES:

A l'attention de Messieurs R.GRIECO et D. MITCHELL.

Chers Messieurs,

Suite à nos différentes visites tant à HARARE qu'à KONGOLO et NIEMBO la société TRABEZA souhaite poursuivre les contacts entrepris avec USAID dans le cadre du développement d'une ferme sé-mencière au SHABA.

Dans le stade actuel du projet, il nous semble difficile d'envisager une quelconque action sans le soutien technologique d'une firme étrangère spécialisée en la matière et sur la site de NIEMBO comme site de départ.
Le support technique venant de ZIMBAMBWE nous paraît jusqu'à présent le plus adapté à nos besoins et aux conditions politiques du projet.

Durant le mois d'août Mr WAUCQUEZ sera en congé, Mr COUTTENIER sera de toute façon présent durant cette période au SHABA.

Vous remerciant de cette franche collaboration dans l'établissement de ce projet, nous vous prions de recevoir, Chers Messieurs, nos salutations distinguées.

R. Waucquez

11/86

Translation from the French

June 14, 1986

USAID
c/o U.S. Embassy

Attention: Messrs. R. Griego and D. Mitchell

Dear Sirs:

As a result of our several trips to Harare, Niembo, and Kongolo, TRAPEZA would like to pursue the contacts undertaken to date in the context of the development of a seed farm in Shaba.

At the project's present stage, it appears to us to be difficult to envisage any action without the technological support of a foreign firm that is specialized in seeds, and at the Niembo site as the initial site. The technical support available from Zimbabwe appears so far to be the best adapted to our needs and to the political conditions of the project.

In August, Mr. Waucquez will be on holiday but, in any case, Mr. Couttonier will be in Shaba during this period.

Thanking you for this open collaboration in the establishment of this project, we pray that you will accept our distinguished salutations.

TRAPEZA
Traverses Beton Zaire
Likasi, Shaba Region

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Budget Item	SEED ENTERPRISE BUDGET (1000)																Sub Total		Total Cost	
	FY 86	L/C	FY 87	L/C	FY 88	L/C	FY 89	L/C	Fy 90	L/C	Fy 91	L/C	Fy 92	L/C	Fy 93	L/C	\$	L/C	\$	
I. Technical Assistance																				
1. South Shaba			50		150		150		150		0		0		0		500	0	500	
2. Ngaba			300		300		150		0		0		0		0		750	0	750	
3. Misc TDY/legal	15		60		15	0	15		15		0		0		0		120	0	120	
Subtotal	15	0	410	0	465	0	315	0	165	0	0	0	0	0	0	0	1,370	0	1,370	
II. Local Hire Personnel	0	16	0	32	0	41	0	41	0	41	0	41	0	41		20	0	273	273	
Subtotal	0	16	0	32	0	41	0	41	0	41	0	41	0	41	0	20	0	273	273	
III. Training																				
1. Third Country			50		50		20		20								140	0	140	
2. In-country				10		10		10		10							0	40	40	
Subtotal	0	0	50	10	50	10	20	10	20	10	0	0	0	0	0	0	140	40	180	
IV. Commodity			0	0	0	50	0	50	0	0	0	0	0	0	0	0	0	100	100	
Subtotal	0	0	0	0	0	50	0	50	0	0	0	0	0	0	0	0	0	100	100	
V. Operating Budget																				
1. Marketing Support						20		30		20		10					0	80	80	
Subtotal	0	0	0	0	0	20	0	30	0	20	0	10	0	0	0	0	0	80	80	
Totals	15	16	460	42	515	121	335	131	185	71	0	51	0	41	0	20	1,510	493	2,003	
Cont. & Inflation	0	0	23	2	53	12	53	21	40	15	0	14	0	14	0	7	168	85	254	
Totals	15	16	483	44	568	133	388	152	225	86	0	65	0	55	0	27	1,678	578	2,257	
GRAND TOTAL	31		527		701		539		311		65		55		27		2,257			

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Annex 8

Technical Analysis

Extension Services

A. Overview

The aim of the project is to provide extension services to the extent possible through PVOs and other local organizations in the project area. At present, the PVO network in the project area is not well enough developed to fully undertake these tasks. The project extension component will inter alia encourage and support local organizations and PVOs, to enhance their capabilities to undertake extension activities wherever possible.

The heart of this component is a cadre of locally-supported farmer leaders, many of them women, chosen from village communities to serve as sources of information on improved corn and other crop production. Local PVOs and religious organizations active in the region will help in the identification and recruitment of these farmer leaders. The farmer leaders will be trained and supported by a number of local level extension agents funded by the project. Up to twelve Peace Corps Volunteers will work alongside these extension agents to provide additional support. The extension component will be directed by an expatriate Extension Specialist, assisted initially by two locally-hired Crop Specialists (eventually four Crop Specialists will be hired). The extension component will work closely with the Applied Agricultural Research and Outreach Project (660-0091, RAV) and use the training center at the Gandajika research station near the project area. Close liaison with the seed enterprise also will be important.

Information to be extended will focus on improved seed and husbandry practices for corn and on grain storage facilities. By year six of this project the extension network will have worked with 14,880 farmers in 372 villages (see Table I).

B. Rationale

Farmers in the project area are presently using traditional slash-and-burn methods of cultivation, opening new land when yields diminish. Mixed cropping is practiced; farmers plant corn, cassava, and peanuts in the same field. Seed is wasted by inefficient planting techniques and failure to plant during the proper season. A high incidence of insect damage and disease (such as streak virus) also lower corn yields.

The extension component of the project will motivate farmers to adopt new cultural practices, including the use of improved seed and grain storage facilities. Extension agents and farmer leaders working in the villages will be the first to identify when farmers are ready to buy improved corn seed or to participate in the construction of grain storage units. They will then inform the Crop Specialists responsible for their area so that seed distributors may be informed and appropriate inputs for village storage may be acquired.

C. Expected Achievements

It is anticipated that by year six of the project all of the targeted communities in the project area will have been reached by direct contact with an extension agent or a farmer leader with the new technology of improved open-pollinated corn seed. The extension component will have trained 62 extension agents in extension techniques focusing initially on husbandry practices for corn and construction of village-level storage units. These extension agents will have set up demonstration plots with 744 farmer leaders in 372 villages and have constructed 68 village grain storage units. The farmer leaders will have encouraged 13,500 farmers to adopt improved agricultural practices. By year six, this extension network will have extended corn husbandry practices that will have increased the quantity of marketed corn 2.8 times.*

Improved cultural practices will increase farmer production, which will lead to increased income for the farm family. An estimated 40% increase in yield will occur when farmers use the improved open-pollinated corn seed. This production will increase by another 30-35% if proposed cultural practices are used, and by another 15% if improved storage techniques are adopted (see Table II). It is anticipated that the farmers will readily accept the improved corn seed whereas they will be slower to adopt improved storage techniques because of the cost and new technology involved.

D. Approach

To the maximum extent practicable, private and voluntary organizations such as religious missions or village-based organizations (e.g. cooperatives) will be used to develop the extension network. The Catholic, Methodist, and Pentacostalist missions all are structured to reach the villages surrounding their churches. Many of these religious organizations, already active in development work, are eager to participate in the extension component; few, however, are yet sufficiently developed to do so. Where possible these local organizations will provide bases for the extension agents and will identify appropriate community members to serve as farmer leaders. Extension agents will draw on the knowledge and experience of these local organizations.

The extension component will be led by an expatriate Extension Specialist, a member of the project management team, who will report directly to the Chief of Party. The Extension Specialist will work initially with the management team in Lubumbashi for approximately six weeks, during which period he will hire two Zairian Crop Specialists to assist him. They will all then move to Kamungu in the heart of the project area to establish an office and begin preparing extension materials. Simple one-sheet pamphlets on agricultural practices will be printed in the local language. These pamphlets will focus on open-pollinated corn seed and better husbandry and storage principles.

*Project North Shaba's experience shows that about 65% of the farmers were using improved cultural practices at the end of nine years. During this period corn marketed from the region increased more than ten-fold, from 5,000MT to 56,000 MT.

Fifty-six extension agents from the local agricultural high schools will be hired by the project to teach improved cultural practices to farmer leaders. Up to twelve Peace Corps Volunteers (PCVs), serving two-year tours, will assist the extension agents. The PCVs will be trained initially at the Peace Corps Training Center in Bukavu (Kivu region) for three months, where they will learn the local language and local agricultural practices; and then will join the locally-hired extension agents at the National Legumes Research Center in Gandajika in Kasai-Oriental region, adjacent to the project area, where they all will receive training in corn husbandry practices suitable for central Shaba, grain storage construction and management, and extension techniques.

Following this training, the extension workers will be posted in the project area. An extension worker will be responsible for a 30-kilometer radius around his post. He will have means of transportation (either a motorbike or bicycle depending on the distance he has to cover) with which he can make weekly visits to the farmer leaders in his area. The Peace Corps Volunteers will function also as extension agents assisting the locally-hired extension agents with their village-based work.

The primary role of the extension agents will be to promote the use of improved seed and improved grain storage techniques, although the agents will also provide information on planting methods, thinning, hilling, weeding, harvesting, and drying. Initially the project will focus on corn, but may later move into other crops as farmers adopt improved practices for corn. With community leaders, the extension agents will set up demonstration plots and work towards organizing farmers so that village storage units may be built (refer to Annex 9 for more information on village storage activities). Although the agents will be promoting the use of improved seeds and grain storage techniques, they will not act as salesmen. Instead, they will monitor their villages, informing the Crop Specialist responsible for their area when seeds or storage materials are required. The Crop Specialist will then contact the seed distributors, or supply construction materials for grain storage units as needed.

Farmer leaders will be identified to cooperate with the extension agents to learn better farming techniques, and then demonstrate these techniques to neighboring farmers. The farmer leaders will plant demonstration fields to show villagers in their communities the high yields of the improved seed. Each farmer leader will be responsible for demonstrating improved cultural practices to approximately 20 families. The farmer leaders will be selected and supported by their villages.

A key aspect of the extension activity will be the continuing education that the extension agents will receive at the National Legumes Research Center at Gandajika. Every quarter the extension agents will be called back to the Center to attend a short training course during which former training instructions will be reiterated and, depending on the rate at which participants can absorb it, new information on improved cultural practices will be introduced. These quarterly sessions also will encourage the extension agents in their work by allowing them to share their experiences and will permit the Crop Specialists to closely monitor the progress being made in the field.

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The farmer leaders also will receive training in one-day courses and demonstrations in the field or at establishments (schools, religious centers, meeting halls, etc.) near where they live. Much of their training will be practical advice on care of the demonstration plot, basic cultural practices, and extension information.

The extension component will initially focus on the PNS area, where extension agents have been working for several years, and in Kayamba Collectivity of Kabongo Zone, where farmer cooperatives presently exist. The PNS extension agents have convinced the majority of farmers in their area to use improved seed. They also have helped five villages build grain storage facilities. Their work will continue under this project. In Kayamba Collectivity there are two cooperatives which have bartered their agricultural produce for 6-ton trucks. These cooperatives will be encouraged to use improved seed and build grain storage facilities. The experiences in the PNS and Kayamba areas will be used to inform the implementation of extension activities in other areas, following the road rehabilitation work. (The PNS area already has an excellent feeder road system. The Kayamba area will be one of the first areas in which the project's road activities will start.) As feeder roads are rehabilitated, extension agents will establish demonstration plots with farmer leaders and promote the use of improved cultural and storage techniques.

The extension system will be closely linked to the National Foodcrop Research System. This research system will serve as a central source of information and research, providing technical assistance to field personnel. The extension agents who return regularly to the Gandajika Center for training will assist the Research Center to remain in touch with the needs of local farmers.

At PACD, it is envisioned that the National Research System will incorporate the Extension Specialist and four Crop Specialist positions into its program. Means of financing the locally-hired extension workers after the PACD will continue to be explored. Present options include: a surcharge on corn seed, revenues from regional taxes, revenues from sales of improved cassava cuttings that have to be grown and distributed locally, etc. In as many cases as possible, the extension workers will be employed by local organizations as they develop their agricultural development capabilities.

E. Demonstrations of Improved Corn Seed

The manner in which a demonstration shows the value of improved seed will be of primary importance in how effectively the demonstration promotes the actual buying of the seed at full cost (estimated at \$0.45 per kilo). Except for a limited number who have seen the benefits of improved seed and are able to obtain it, villagers are not now in the habit of purchasing seed, since there has been little available. Instead, they save corn from their annual harvest to plant the following season, even though this seed has degenerated. Detailed description of improved seed demonstrations follows.

The demonstration plot should be at least 15m x 15m (225 square meters) to assure that an adequate part of the plot will suffer no border effects. The project will provide seed for the demonstrations. All farmers involved in a given demonstration should participate in all steps of the demonstration: land preparation, planting, thinning, weeding, harvesting, and drying. This ensures that the best practices to use with improved seed are taught at the same time. Demonstration control plots using the farmer's seed and traditional practices should be adjacent to the experimental field.

The yield samples from equal surface area taken from the demonstration and the control plot are harvested, dried, and weighed together for comparison. The difference in yield is calculated into cash value per hectare. This amount is compared to the cost of improved seed per hectare to show the value of return over and above the cost of the seed.

While this comparison will be convincing, farmers also must have money to buy the improved seed. Following a demonstration, the extension agent must show the farmer how he can set aside money for next season's seed at the time he sells a crop, or buy seed at that time if retailers have it available. Storage of a bag of seed can be done in the same traditional way as a farmer stores the corn he produces for seed — it can be hung above the family's cooking area.

As a final step, to contribute to the project's research and evaluation data, the results of all demonstrations will be compiled in order to average results over the project area, and then analyzed to detect any area or zonal differences in results. These results can be assimilated into project pamphlets and leaflet teaching aids.

F. Implementation Plan

March 1988	Expatriate Extension Specialist arrives in Zaire
May 1988	Extension Specialist moves to project area
June 1989	Two Crop Specialists in place; office in project area functioning; work on extension materials begins
September 1989	Six Peace Corps Volunteers arrive; ten extension agents are locally hired; training at National Legumes Research Center begins
January 1989	Peace Corps Volunteers placed; ten extension agents are locally hired; extension work begins in PNS and Kayamba areas
June 1989	Extension agents return to National Legumes Research Center for training

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September 1989	Four Peace Corps Volunteers arrive; 15 extension agents are hired locally; their training at National Legumes Research Center begins
October 1989	Extension agents return to National Legumes Research Center for training
January 1990	New Peace Corps Volunteers and extension agents are posted
June 1990	Extension agents return to National Legumes Research Center for training
September 1990	Six Peace Corps Volunteers arrive, six depart; 15 additional extension agents are hired locally; two additional Crop Specialists are hired
October 1990	Extension agents return to National Legumes Research Center for training
January 1991	New Peace Corps Volunteers and Extension Specialists are posted
June 1991	Extension workers return to National Legumes Research Center for training
September 1991	Four Peace Corp Volunteers arrive; four depart; ten additional extension agents are hired; training at the National Legumes Research Center begins
October 1991	Extension workers return to National Legumes Research Center for training
January 1992	New Peace Corps Volunteers and extension workers are posted
June 1992	Extension workers return to National Legumes Research Center for training
October 1992	Extension workers return to National Legumes Research Center for training

G. Position Qualifications and Job Descriptions

1. Extension Specialist. Advanced degree in Agricultural Extension Management, or related field, or equivalent experience. African experience desired. Experience in implementation and evaluation of extension services

that have provided advice on cultivation practices to subsistence farmers in rural areas. Basic knowledge in corn storage and maintenance of corn storage facilities desired. Good writing and editing skills. Proficiency in French essential; Kiluba or Swahili desirable.

The Extension Specialist will be a member of the project management team. He will be required to live in the project area and will be responsible for all aspects of the extension component. He will be responsible for directing the activities of the extension network, preparing, testing and evaluating extension materials, and directing the Crop Specialists and other extension staff. Maintain liaison with RAV at Gandajika and the Associate Peace Corps Director in Mbuji Mayi.

2. Crop Specialist. Level A-0, A-1. Background in corn production. Proficiency in French and Swahili required; Kiluba desired. The Crop Specialists will assist the Extension Specialist by gathering and organizing information, preparing extension materials, and translating materials into Swahili and Kiluba. They will assist in the training and monitoring of the extension workers.

3. Peace Corps Volunteers. Bachelor's degree or higher. Degree in agriculture extension or equivalent experience desired. Construction experience also desirable. Proficiency in French and Kiluba. The Peace Corps Volunteers will work with the locally-hired extension agents under the direction of the Extension Specialist.

4. Extension Agent. Level A-2. Completion of a six-year agricultural secondary school program. Proficiency in French and Kiluba essential. The extension agents will inculcate the improved cultural practices in the villages by working with village-elected farmer leaders who serve as conduits for the information to the resident community. They will conduct short courses and seminars in the village with groups of village elected farmers.

5. Farmer Leaders. Married, farmer, literate, respected by the community, good communication skills. The farmer leaders will hold meetings with the farmers to explain and demonstrate how to plant, weed, and harvest improved seed, and to encourage them to construct village grain storage facilities.

Activity	1	2	3	Year 4	5	6
ROADS						
Link Road	PRE----->					
		Central----->				
			Southern----->			
Feeder Roads			Northern----->			
				Central----->		
					Southern----->	
SEEDS						
Tons sold		30	50	90	100	200
Ha Planted (new)		1,200	2,000	3,600	4,000	8,000
Ha Planted (total)		1,200	3,200	6,800	10,800	18,800
Farms involved (@ 0.8 Ha/Farm)		1,500	4,000	8,500	13,500	23,500
EXTENSION						
Administration						
Extension						
Specialist	1	--	--	--	--	--
Crop Specialist	2	--	--	--	--	--
Subtotal	3	3	5	5	5	5
PCV's		6	4	6	6	
Total	0	6	10	10	12	6
Zairian Exten Ag		10	15	15	10	6
Total	0	10	25	40	50	56
Grand Total	0	16	35	50	62	62
Villages worked with (6 village/EA)	0	96	210	300	372	475
Farmer leaders (2 per village)	0	192	420	600	744	950
Population touched (280 inhab/village)	0	26,880	58,800	84,000	104,160	133,000
Farm contacted (40 farm/village)	0	3,840	8,400	12,000	14,880	19,000
STORAGE						
Village silos						
North Shaba	3	3	3	5	10	15
Central Shaba				7	10	12
Total	3	5	9	21	41	68

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TABLE II

Corn Yields Using Traditional Practices, Improved Seed, and Improved Practices in the Project North Shaba Area*

The results of a number of demonstrations conducted in the PNS area showed that by using improved Kasai I seed and improved practices, farmers have increased corn production as shown below. (Note that there were four demonstration plots arranged in the form of a diamond.)

	<u>Yield Savannah</u>	<u>Yield Forest</u>
1. Traditional Practices/Local Varieties	0.8 T/Ha.	1.8 T/Ha.
2. Traditional Practices/Kasai I	1.2 T/Ha.	2.4 T/Ha.
3. Improved Practices/Kasai I	1.7 T/Ha.	3.2 T/Ha.
4. Improved Practices/Kasai I/Fertilizer	2.7 T/Ha.	5.2 T/Ha.

This demonstration has not been repeated for the last two years because, according to the PNS Data Collection and Analysis Service, local corn varieties have been virtually eliminated in the area, so there is no point in including them in demonstration plots. Before 1979, farmers used a number of corn varieties of unknown origin. These varieties were considered as local even though they possessed some characteristics of improved corn varieties.

In addition, traditional practices are no longer in use. PNS reported that their most recent data shows 65% of farmers in the PNS area followed practices recommended by PNS; 35% followed the recommended practices in part.

In summary, farmers using Kasai I of the second or third generation can increase yields by 40%. Farmers using recommended practices alone can increase corn production by 25-40%. Fertilizer use can increase yields by 1.2 T/Ha. A farmer strictly following recommended practices, planting Kasai I of second or third generation, and using 100 kg. of urea and 100 kg. of DAP per hectare can increase his harvest over pre-PNS yields by 300%.

*This table was prepared by PNS on April 5, 1986.

Budget Item	FY 86		FY 87		EXTENSION BUDGET (0000)		EXPENDITURES		FY 88		FY 89		FY 90		FY 91		FY 92		FY 93		Sub Total		Total Cost \$
	\$	L/C	\$	L/C	\$	L/C	\$	L/C	\$	L/C	\$	L/C	\$	L/C	\$	L/C	\$	L/C	\$	L/C	\$	L/C	
I. Technical Assistance																							
-Extension Spec.			0	0	60	10	130	10	130	10	130	30	130	10	65	5	645	75					720
Subtotal	0	0	0	0	60	10	130	10	130	10	130	30	130	10	65	5	645	75					720
II. Local Hire Personnel																							
-Crop Spec AD (2) (4)				0		2		4															
-Ext Ag AD (2) (16) (64)				0		2		11		4		4		4		2		0		20			20
-Secretary				0		1		1		14		14		14		7		0		63			63
-Accountant				0		1		2		1		1		1		1		0		7			7
-Chauffeur (4)				0		1		2		2		2		2		2		1		9			9
Subtotal	0	0	0	0	0	7	0	20	0	24	0	25	0	25	0	13	0	115					115
III. Training																							
1. US-based																							
2. In-country				0		0		12		12		12		12		12		0		60			60
Subtotal	0	0	0	0	0	0	0	12	0	12	0	12	0	12	0	12	0	12	0	60			60
IV. Commodities																							
1. Office Equip				0		1		1		1		1		1		1		0		6			6
2. Micro-computer (1)																							
3. Land Covers (4)				18		18		18		18		18		18		18		0		0			0
4. Office Supplies				0		0		0		0		0		0		0		0		72			72
5. Motorcycles 125cc (27)				0		18		18		0		1		1		1		0		3			3
6. Bikes (54)				0		3		3		0		6		6		0		0		57			57
7. Fuel				0		0		0		12		4		4		4		0		20			20
8. Radios (11)				0		20		20		20		15		15		15		0		74			74
Subtotal	0	0	0	18	20	49	20	53	20	45	10	27	0	27	0	15	70	233					303
V. Operating Budget																							
1. Vehicle maintenance				0		0		0		9		0		12		12		0		59			59
2. Computer servicing				0		0		1		0		1		1		1		0		6			6
3. Office Equip Serv				0		0		0		0		0		0		0		0		2			2
4. Seminars				0		2		3		4		4		4		4		0		19			19
5. Office Rent				0		5		5		5		5		5		5		0		30			30
6. Housing rehabilitation				25		75		5		5		5		5		5		0		100			100
7. Info Materials				0		3		4		4		4		4		4		0		21			21
8. Inducements Vulg.				0		1		1		1		1		1		1		0		4			4
9. Radio maintenance				0		1		1		1		1		1		1		0		6			6
Subtotal	0	0	0	25	0	95	0	23	0	28	0	28	0	28	0	18	0	245					245
Totals	0	0	0	43	80	162	150	110	150	119	140	122	130	102	65	63	715	720					1,443
Cont. & Inflation				2	8	17	24	19	32	26	39	34	44	35	22	21	169	152					322
Totals	0	0	0	45	88	179	174	136	182	144	179	155	174	136	87	84	884	880					1,764
GRAND TOTAL	0	0	0	45	267	310	310	326	326	334	334	310	310	172									

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Annex 9

Technical Analysis

Village and Railhead Grain Storage and Processing

A. Overview

The objective of this component is to reduce corn crop losses and improve processing, thereby improving grain quality. Project-funded interventions will improve the processing of corn from the farmers' fields through shipment from railheads in the producing area to final markets.

Specific objectives are to reduce corn losses in the field to an acceptable level of 5 - 10% (as compared to the 30% presently experienced), to obtain clean commercial-quality corn at the village level, and to provide the means for farmers to dry and store corn immediately after harvest to avoid losses before the marketing campaign and to take advantage of higher prices after the campaign, thus adding significantly to their yearly incomes. (See Conditions and Covenants.)

Initial attempts to improve village storage as well as marketing and processing have been made in the predecessor North Shaba Rural Development Project (PNS), which has been underway for ten years. The PNS extension service, which encourages these improvements, has been in operation for nine years. The storage component of the Central Shaba Agricultural Development Project builds upon the lessons learned from PNS, and takes into account both the successful elements and those where expectations were not fully realized or difficulties were encountered.

This annex describes the present storage and processing situation in the project area, and describes improvements to be implemented under the project. (A supplementary annex to the PP, entitled Preserving and Storage of Corn Yield: Grain Processing and Storage Facilities, is on file in AID/W and USAID and contains related technical data and plans.)

B. Present Corn Cultivation and Storage Practices in Central Shaba

1. Cultivation practices. Approximately 40,000 families in central Shaba grow corn. Each family plants about 0.8 ha to corn each year. Approximately 20% of this is planted in savannah fields, where yields average 0.7 T/ha; the other 80% is planted in forest fields, which yield an average of 1.7 T/ha. Fields are prepared, planted, and harvested by traditional slash-and-burn techniques.

Compared to European or American yields, the yield for corn in central Shaba is one-twelfth to one-fifth what it could be, even if weather conditions are taken into account. Despite these relatively low yields, however, this crop is an important income source to area farmers when compared to income generated by other cash crops such as manioc, peanuts, beans, and vegetables.

There are two major problems with the existing corn production and marketing system in central Shaba. First, huge losses are suffered at each stage of processing. Second, the corn produced is of poor quality; when milled, it cannot compete with imported corn flour in the southern Shaba markets.

2. Losses in corn production. One of the major causes of losses in the early stages of corn production is the farmer's practice of letting the corn ear dry on its stem in the field during the rainy months from early January (average date of maturity) to the end of April (the beginning of the corn marketing campaign). Even where farmers use the improved Kasai I and Shaba I corn varieties, this situation is catastrophic. The corn ear is attacked by mold, insects, rodents, birds, and predators, and rain and storms flatten the stems. In this way 30 to 35 % of the production is lost in the field. Once harvested, the farmer stores his produce in poorly sheltered bins with little protection from rain, rodents, and other vermin, resulting in an additional 10% loss.

The second major cause of losses is the absence of control over the bagging of corn, which takes place in the village. Buying operations are undertaken without any weighing, quality control, or verification of the moisture content and temperature of the corn in the bags; it is based rather on the number of sacks, that is, apparent volume, without control of the nature and quality of the product. In fact, sacks arriving at the mills are wet, infected with weevils; mildewed, or contain up to 15 to 20% foreign matter such as dust, stones, leaves, parts of cobs, and broken grains.

Poor intermediate storage practices are the third major cause of losses. The small traders, usually merchants who carry out a number of activities including buying corn, live in large villages generally located near the main highways or along the rail line. While awaiting the availability of railcars at the railhead stations, these traders store the sacks of corn in small rooms or huts that afford only minimal protection from rain and that lack ventilation; no insecticide treatment or humidity and temperature controls occur.

Several other factors contribute to losses. These include: (a) the poor condition of the roads and bridges leading to the producing villages, making access difficult and in certain seasons impossible. In this way some productive areas become completely isolated, and corn is spoiled for lack of a means to evacuate it; and (b) irregular availability of collecting trucks, and unreliable scheduling of railcars or locomotives.

The losses are summarized in the following example: In a village of 50 farmers, cultivating one hectare each, assume a total theoretical crop in the field before harvesting of 100 T.

Description and Percentage of Loss	Amount Lost	Total Remaining
1. Losses in the field (30%)	30 T	70 T
2. Village storage in huts or uncovered areas (10%)	7 T	63 T
3. Transportation losses and theft (3-4%)	2 T	61 T
4. Intermediate storage at the railhead (3%)	1.8 T	59.2 T
Subtotal, losses at the village level -- 40.8 of 100 T, or 41%.		
5. Rail transportation losses and inaccurate weighing (average 10%)	5.9 T	53.3 T
6. Storage in the mill warehouse before processing (average 6%)	3.3 T	50 T
Subtotal, cumulative losses -- 50%.		
7. Transformation into flour (3 to 5%)	2 T	48 T
Grand total losses -- 52%		

In this example, 48 T remain of the field production of 100 T; 52% is an immense loss rate. These estimates are realistic and have been confirmed in meetings with farmers, economic operators, and millers. Reducing losses is imperative and the objective of this component of the PP is to contribute to the reduction of these losses, especially at the village level.

3. Quality of the corn produced. In addition to losses suffered at each stage of the corn chain, the quality of the corn is generally poor. The present practice of shelling the corn by beating the ears in sacks with wooden sticks increases losses and introduces many impurities such as leaves, cob parts, smashed corn, and earth. There is no control of moisture content or temperature; therefore, corn is generally bagged with a high moisture content that encourages rot and further contributes to low quality. Corn milled locally on the village level can only be kept for eight to ten days. Even flour produced by large mills from locally grown corn cannot compete with imported flour because it quickly becomes rancid. More information on the quality of the corn and flour produced in central Shaba can be found in an Appendix to the Project Paper.

C. Proposed Interventions

1. Village-level storage units. The major losses in corn production occur in the fields and villages; the efforts of the project will therefore concentrate at this level. Accordingly, the project will introduce in 68 project-area villages storage units consisting of convection dryers and small storage silos.

Several storage models were considered during the project design process which could store respectively 30, 40, and 60 T or more (see Appendix to the Project Paper). These models would have a drying capacity superior to their storage capacity, permitting drying of corn that is not to be held for future sale, but consumed by the villagers. The models could be adapted to the size of the villages, and allow for technical improvements by adding on to the basic unit over time. The basic models considered were:

- Model 1 manually operated and uses local materials (wood or corn cobs for burning in the dryer), appropriate for use by groups of no more than 50 farmers cultivating 1 hectare each.
- Model 2 requires an energy source (diesel motor) in the village and additional instruments and equipment, appropriate for up to 60 farmers cultivating 2 hectares each
- Model 3 requires an energy source (diesel motor) and a means of transport (tractor and trailer), appropriate for 80 or more farmers cultivating 3 hectares each.

Only Model 1 will be constructed under the project. Models 2 and 3 may be appropriate for central Shaba later, if production and farmer organization improve as expected under the project; but villages in the project area are not financially capable at present of buying and maintaining diesel motors, tractors, and trailers, nor do the farmers now have the capability to cultivate more than one hectare per year.

2. Railhead storage. To correct deficiencies beyond the village level it is necessary first to rehabilitate the road network; then, to improve the collecting system; and subsequently, to create intermediate storage points between corn production areas and the large mills in the cities.

The project directly addresses the first and second of these deficiencies. By rehabilitating the road system and introducing improved seed and cultivation practices, it will make a major contribution to reducing present losses and increasing corn production. The project will not, however, become directly involved in the installation of railhead storage facilities, for this is a matter best left to private initiative. Other USAID-supported activities (e.g. Agricultural Inputs Support Project 660-0103, the planned Private Sector Support Project 660-0120, and the proposed African Economic Policy Reform Program, 660-0121) will encourage such initiative by providing

foreign exchange funding (in the case of the CIPs) and access to medium- and long-term agricultural credit for merchants and entrepreneurs interested in installing their own storage and processing facilities at area railheads. These private sector operators are better placed than is USAID to determine and respond to local needs; A.I.D.'s role, therefore, will be to make it possible for them to do so. The project will not finance railhead facilities, but will encourage their construction and inform interested private investors of financing assistance available through other USAID activities.

A simpler and less costly railhead storage improvement, amounting to the installation of covered raised platforms, might cut corn losses at this level considerably. The project will consider building one such installation with local currency at a railroad station in the project area to determine if this approach is effective.

3. Corn mills for local PVOs. In the central Shaba project area, there are few grain mills. The lack of these facilities prevents local processing of corn. Discussions with local private and voluntary organizations, particularly rural missions, have determined that these groups are interested in operating small grain mills on a self-financing basis.

Construction of such small grain-processing facilities will provide inexpensive milling for the rural population and will increase the amount of corn consumed locally, thereby improving the nutritional status of villagers. Moreover, any income realized from these mills could be used to support the agricultural extension activities of these PVOs, thereby helping to make those activities more self-sustaining. The timing of the installation of these mills on a wide scale will depend upon production increases and the increased storage capabilities of the villages.

D. Implementation

Information gathered in the design of the storage component of the project shows potentially enormous returns on investment in local and village storage facilities. Successful implementation of this storage investment, however, cannot be widely undertaken until a number of important preconditions have been met. The technology and required social organization and infrastructure to support successful implementation of a storage program are much greater than, for example, the introduction of improved seed. For this reason, even though storage investments are expected to provide major returns to farmers, the implementation of this component will be limited until the necessary preconditions are met though the implementation of other components of the project.

1. Important assumptions. The success of this component of the project will depend largely on the following factors:

- The establishment of a seed enterprise to produce improved open-pollinated seed for the central Shaba market.

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- Intensive field work by extension agents, to promote improved cultivation practices and use of improved seed in order to increase production, and to promote the use of the basic village storage units and subsequently encourage village investment of labor and local materials in their construction.
- Encouraging private sector economic operators to invest in railhead silos, and subsequently making available information on the various possibilities of financing through other USAID programs. Two companies, Tarica Frères and Kibwe Sakina (Kongolo), have already expressed a strong interest in this type of investment, and others are looking further into the possibility.
- Complete rehabilitation of the road network.

2. Project inputs. This component of the project will provide:

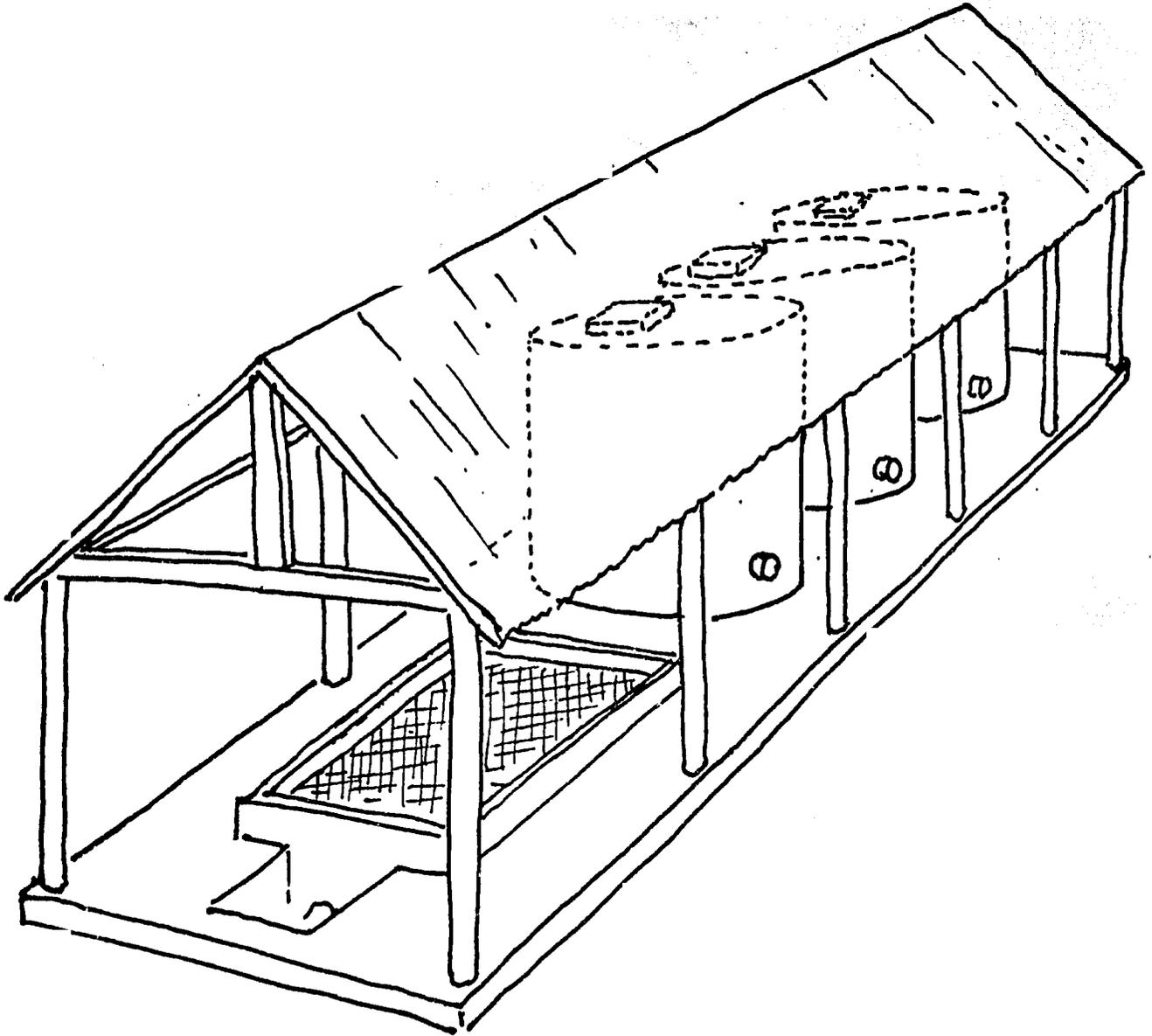
- 68 basic village drying and storage units to interested and qualified villages. Each unit will consist of storage silos, a polebarn hangar, and a convection dryer (see diagram, overleaf). Units will be built by the villagers with assistance in design and construction from the extension agents and Peace Corps Volunteers. Identification of qualified villages will be carried out by the extension agents and Peace Corps Volunteers with the help of local PVOs. Selection criteria include:

- Geographic considerations: The village must have access to a feeder road, and be near a PCV and a seed distribution point.
- Quantitative considerations: The village must produce at least 40 tons of corn per year.
- Technical considerations: The village group must have available ten laborers, including a mason and a carpenter, who will be able to work full time for three months, must have a dependable water source, and must demonstrate a willingness to provide construction materials and a construction site.
- Sociological considerations: The village must have an authoritative and cooperative chief. He must choose hard-working and dependable farmers to participate in the program. Clans must be judiciously and sensitively consulted in order to avoid exacerbating existing rivalries or creating new ones.
- PVO connections would be beneficial as they tend to represent a common bond among the members, who would then bring this team spirit into the silo construction and management.
- Participating farmers must continue to produce the food crops necessary for their families' traditional diet (peanuts, beans, manioc, rice, millet, and vegetables).

Information to private investors on the availability of financial facilities in other USAID programs such as the CIP, the AEPRP, and the Private Sector Support Project, in order to expedite the construction of railhead storage facilities. The USAID Project Officer responsible for the project will make periodic visits to the area to supply this information.

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Diagram of Village Storage Unit



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- Periodic technical assistance to the extension agents and Peace Corps Volunteers who will be introducing to villagers the idea of improved village-level grain storage and subsequently supervising the construction of the basic village drying and storage units. This technical assistance will be in the form of TDY visits by grain storage construction specialists and/or grain storage extension specialists who will assist in the basic training of PCVs and extension agents at the beginning of their service as well as at periodic in-service seminars. They will also visit village construction sites to offer on-site assistance and evaluation. The grain storage construction specialists may introduce other models of village-level storage units and evaluate their efficiency during the life of the project.
- Construction supplies and tools procured locally with project funds.
- Grain mills to qualified and interested PVOs (principally religious missions and cooperatives) in the project area. The PCVs and extension agents will assist in determining which PVOs are capable of operating such mills.
- Periodic visits to the project area by a qualified sociologist to study the impact of cooperatively-managed storage units on the village.

3. Implementation plan.

MONTH	ACTIVITY
July 1986	Project Paper approved Project Agreement signed Extension office established; extension specialist and two crop specialists on-site
August 1986	
July 1988	
January 1989	First group of Peace Corps Volunteers arrive on-site to begin extension work, extension agent selection begins
June 1989	Extension agent selection completed
Sept. 1989	First grain storage training in Bukavu for PCVs; grain storage TDY at Bukavu
January 1990	Trained PCVs arrive on-site in project area; grain storage extension begins; selection of villages for grain storage construction begins

May 1990	Begin construction of two demonstration storage units
August 1990	TDY grain storage specialist provides on-site technical assistance at demonstration sites
Sept. 1990	Grain storage TDY trains new PCVs in Bukavu
Nov. 1990	Grain Storage TDY holds grain storage in-service seminar in Gandajika for PCVs and extension agents already in the field
January 1991	New PCVs arrive
August 1991	Grain storage TDY provides on-site technical assistance
Sept. 1991	Grain storage TDY trains new PCVs in Bukavu
Nov. 1991	Grain storage TDY holds in-service seminar in Gandajika
January 1992	New PCVs arrive
August 1992	Grain storage TDY on-site
Sept. 1992	Grain storage TDY at Bukavu
Nov. 1992	Grain storage TDY at Gandajika
January 1993	New PCVs arrive
August 1993	Grain storage TDY on-site
October 1993	Grain storage TDY at Gandajika

E. Main Investment Costs

The following shows the unit value of the illustrative basic village drying and storage model, and the value of the total investment over a seven-year period. (Financial information on the more advanced village storage modules and the railhead storage unit can be found in an Appendix to the Project Paper.)

Illustrative Basic Village Drying and Storage Unit

Qty	Component	Unit Price	Subtotal
6	Silos (Z10,000 each)	Z 60,000	
1	Polebarn hangar	Z 60,000	
1	Convection dryer	Z 20,000	
	Contingencies	<u>Z 5,000</u>	
Total for one unit		Z145,000	
X 68 Units in Project			Z 9,860,000
Construction tools			Z 50,000
Grand Total			Z 9,910,000
Dollar Equivalent, \$174,000			

F. Economic Considerations

The installation of village dryers and silos will increase the annual income of farming families by approximately 350%. This is an excellent overall result deriving directly from improvements in the cultivation practices and methods of drying and storing. (For more details see the Appendix to the Project Paper.)

The following table compares the present production with that resulting from the use of the Basic Village Drying and Storage Unit.

Effects of the Basic Village Drying and Storage Unit

Assumptions: Village size: 60-100 families (360-1000 inhabitants); 50 corn-growing families in program; 1 hectare cultivated per family

	<u>Pre-project</u>		<u>Post-project</u>	
	Savannah yield (20% of hectares)	0.7 T/ha	1 T/ha	2.4 T/ha
	Forest yield (80% of hectares)		1.7 T/ha	
	<u>PRE-PROJECT</u>		<u>POST-PROJECT</u>	
	<u>Farmer</u>	<u>Total Village</u>	<u>Farmer</u>	<u>Total Village</u>
1. Cultivated land	0.8 ha	40 ha	1 ha	50 ha
2. Savannah Harvest	0.11 T	5.5 T	0.2 T	10 T
3. Forest Harvest	1.09 T	54.5 T	1.92 T	96 T
4. Estimated Production	1.2 T	60.0 T	2.12 T	106 T
5. Increased Production due to field loss recovery (25%)	--	--	+0.53 T	+26.5 T
6. Total Harvest available at the village level	1.2 T	60.0 T	2.56 T	132.5 T
<u>MINUS:</u>				
7. Village-level losses	0.12 T(10%)	6.0 T(10%)	0.8 T(3%)	4 T(3%)
8. Home Consumption	0.36 T	18 T	0.54 T(+50%)	27T(+50%)
9. Seed Stock Reserved	0.02 T	1 T	0.02 T	0.9 T
10. Total Minus	0.5 T	25 T	.64 T	31.9 T
11. Quantity available for sale	0.7 T	35 T	2.01 T	100.6 T
12. Storage capacity	--	--	.6 T	30 T
13. Immediate sale possibilities	0.7 T	35 T	1.4 T	70.6 T

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Budget Item	FY 86		FY 87		GRAIN STORAGE BUDGET (0000)				EXPENDITURES				FY 93		Sub Total	Total Cost \$			
	\$	L/C	\$	L/C	FY 88	FY 89	Fy 90	Fy 91	Fy 92	Fy 93	\$	L/C	\$	L/C			\$	L/C	
I. Technical Assistance																			
1. Long term Personnel			0		0	0	0	0	0	0	0	0	0	0	0	0	0		
2. TBV															0	0	0		
-Grain Storage Spec.			30		30	30	30	30	30	30	30	30	30	30	210	0	210		
-Sociologist			0		0	0	15	0	0	0	0	0	0	0	15	0	15		
Subtotal	0	0	30	0	30	30	0	45	0	30	0	30	0	30	0	225	0	225	
II. Local Hire Personnel																			
-procurement					4	4	4	4	4	4	4	4	4	4	2				
-chauffeurs (2)				0	0	0	3	3	3	3	3	3	3	2	0	14	14		
Subtotal	0	0	0	0	0	0	3	0	3	0	3	0	3	0	2	0	14	14	
III. Training																			
1. US-based							5	5	5	5	5	5	5	5	0	0			
2. In-country							5	5	5	5	5	5	5	3	0	23	23		
Subtotal	0	0	0	0	0	0	5	0	5	0	5	0	5	0	3	0	23	23	
IV. Commodities																			
1. Vehicles					30	0	0	0	0	0	0	0	0	0	50	0	50		
-Trucks					0	0	10	0	0	0	0	0	0	0	0	18	18		
-Land Rovers					0	0	15	0	15	0	15	0	15	0	0	68	68		
2. Fuel					0	10	0	10	0	40	0	60	0	75	0	38	0	233	
3. Village Silos			0	0	0	0	0	0	0	0	0	0	0	0	0	0	233		
Subtotal	0	0	0	0	30	10	0	43	0	55	0	75	0	90	0	46	50	319	369
V. Operating Budget																			
1. Vehicle Maintenance			0	0	0	0	10	0	10	0	10	0	10	0	6	0	46	46	
2. Travel/per diem				0	5	0	10	0	10	0	10	0	10	0	5	0	50	50	
Subtotal	0	0	0	0	5	0	20	0	20	0	20	0	20	0	11	0	96	96	
Totals	0	0	30	0	80	15	30	71	45	83	30	103	30	118	30	62	275	452	727
Cont. & Inflation	0	0	2	0	0	2	5	11	10	18	8	28	10	40	10	21	53	120	173
Totals	0	0	32	0	88	17	35	82	55	101	38	131	40	158	40	83	328	572	900
GRAND TOTAL	0		32		105		117		154		170		198		123		900		

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Annex 10

Technical Analysis

The Information Office

A. Rationale

As part of the project management unit, an Information Office will be established to carry out various data collection and analysis activities required for monitoring and evaluating the first phase of the project, and for informing future design work for subsequent phases. The need for a separate office responsible for the data-related activities for the project is partially due to the strategy of conducting a variety of focused, small scale studies and surveys rather than one or two broad, comprehensive surveys. For these activities to provide useful information to the project, they will have to be properly designed, managed, and supported by individuals who have the necessary technical skills and experience with applied research in development projects. In this regard, this project's approach will require that more attention be given to the information component than is typical of A.I.D. projects.

This project's Information Office differs from the approach A.I.D. commonly uses to meet project information requirements. Typically, project resources for data collection and analysis are channeled into a single line Ministry which has the principal responsibility for project implementation. Staff training, technical advisors, computers, and other equipment are provided to build the institutional capacities of the Ministry for data collection and analysis. For this project, however, a standard-institution building approach is not appropriate. The project will not be implemented by a lead GOZ Ministry; the components of the project cross sectoral divisions (e.g. agriculture and roads) and the effects of the project are of potential concern to various GOZ Ministries as well as regional authorities. This suggests that the data the project will collect should be "public property," accessible to any GOZ agency or other institution that can use it. Locating the Office in one Ministry would greatly complicate and perhaps defeat this objective.

Moreover, the current capabilities of the GOZ Ministries in Shaba are simply too weak to manage the substantial information requirements of the project. Strengthening those capabilities to an adequate level will be a long-term process. As worthwhile as that effort might be, the amount of time it would require is inconsistent with the project's immediate needs for information. The information component of the project is critical for assessing on a frequent and timely basis the effectiveness of the project's interventions.

Though the standard institution building approach is not appropriate in this case, an objective of the Information Office is to strengthen local capabilities for data collection and analysis, and improve the quality and coverage of available data in Shaba. This will result from collaborating with interested GOZ Ministries and local research institutions on data collection and analysis for project monitoring and evaluation. Both formal (i.e., secondment of staff) and informal working relationships will be established with GOZ agencies. Other local institutions (e.g. the University of Lubumbashi, the Statistics Institute) may participate through contractual work for the project. Furthermore, the types of data the project will collect will have utility for the Ministry of Plan, the Regional Studies and Planning Office (BEAU), the Ministry of Agriculture, and possibly the Ministry of Public Health. Moreover, while GOZ analysts working with the project's long- and short-term technical advisors will improve their skills, simply having the opportunity and resources to use the skills they presently possess will contribute to their capabilities. Therefore, even though the Office will be part of the project management unit, the information activities can involve the interested GOZ agencies and local research institutions in a way which builds local capabilities.

B. Functions and Responsibilities

1. Support data collection and analysis for project monitoring and evaluation. The primary purpose of the Information Office is to support all data-related activities needed for project monitoring and evaluation. The Office will have the technical expertise, computer systems, and funds necessary for the required studies, surveys, and data collection systems.

2. Provide technical assistance and/or management oversight for all project data-related activities. In some cases, Office staff will be directly involved in study design, field work, and analysis. When time constraints or lack of expertise in a substantive area preclude such direct involvement, the Office will be responsible for contract arrangements, including developing scopes of work, supervising of work, and assisting the contract team when necessary.

3. Provide technical assistance and training to GOZ staff seconded to or working with the Information Office. Staff from regional offices of GOZ Ministries will be encouraged to participate in project data collection activities which are relevant to their planning or reporting responsibilities. In this regard, the Office will function as a center where analysts from GOZ agencies and local research institutions will be able to work together on topics of mutual interest. Their role in these activities will depend on their technical skills and substantive knowledge. The technical advisor and other Office staff will work with GOZ staff on methodological, analytic, or computer-related tasks, to help them learn skills useful to their permanent job assignments. Technical short courses and seminars will be offered to the seconded staff.

4. Provide computer support for data management and analysis. The Information Office will be equipped with four micro-computers and appropriate software capable of handling the data processing, management, and analysis for all of the studies, surveys, and monitoring systems supported by the project. In this regard, the Office will serve as a means of transferring an increasingly important technology to GOZ and other local analysts working with the Office.

5. Fund and provide technical assistance for additional studies relevant to project monitoring, evaluation, or future design work. As the data collection and analysis activities get underway, findings from this work should identify additional topics which need to be better understood for improving project implementation or for clarifying design issues for the second phase of the project. Alternatively, GOZ agencies or local research institutions might propose studies which would be useful to the project as well as to their own work. The Office will have the responsibility for managing these additional activities.

C. Staffing

1. Permanent staff. The permanent staffing for the Information Office will be kept to a minimum. One long-term technical advisor will be hired to function as the Senior Research Specialist for the project. This individual will be responsible for managing the office and designing and supervising the data collection and analysis activities. This person should have an extensive background in data collection and analysis for development projects, be an experienced trainer and educator, have the ability to speak French at the FSI 4/4 level, and know how to employ micro-computers for data management and analysis.

The Senior Research Specialist will be aided by two Zairian nationals who possess at least M.A.-level training in survey research methods, statistical analysis, and micro-computer applications. The two statisticians will be responsible for maintaining the project's data bank, and assisting the Senior Research Specialist in the preparation of monitoring studies and internal evaluation reports and supervision of field operations as needed. Other permanent office staff will include a secretary and two drivers.

2. GOZ seconded staff. As described above, GOZ Ministries will be encouraged to work on the data-related activities of the project. Because the objective of this collaborative approach is to strengthen local technical and analytic capabilities, staff working with the Office should be individuals who are permanently assigned to Lubumbashi. Bringing in staff temporarily from Kinshasa, for example, would defeat the purpose of building local capabilities.

There are only a limited number of GOZ staff in Plan, BEAU, INSS and Agriculture with analytic skills and/or planning responsibilities who could be seconded temporarily to the project Information Office. The major problems these professionals currently confront are a poor work environment and a lack of resources. Discussions with regional office directors and central Ministry officials indicates there is strong support for this type of arrangement. The Office would provide transportation and per diem required for any field work performed. No supplementary salary payments will be made by the project.

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Although GOZ officials expressed interest in the possibility of working with the project Information Office, there are very definite limits to seconding staff. Each office has only a few individuals with research skills or experience. For those who have such skills, their jobs include administrative duties. Understaffing is also a serious problem. For example, the regional office of the Planning Ministry currently has a staff of only four, although the official staffing plan specifies sixteen. Secondment of staff to the project Information Office, therefore, could interfere with the normal operation of the Ministry. This is a particularly important concern where a senior person in the regional Ministry is to be seconded.

Secondment of GOZ staff must be done in such a way that it would not interfere with Ministry responsibilities. Ideally, the seconded staff person would be working on a study which is directly relevant to his home Ministry. Some staff might work on a part-time basis, which would allow them to perform other administrative duties. In other cases, it might be necessary for the central Ministry in Kinshasa to provide a temporary replacement for seconded staff. Alternatively, informal work arrangements not involving actual secondment of staff might be possible. In short, the potential impact of drawing GOZ staff away from their routine work will be assessed on a case-by-case basis.

3. Contract Staff. Additional staff will be obtained as needed through short-term contracting. It is anticipated that during its initial years, the Project Information Office will have need of short-term technical assistance in the design of its data collection system, in the identification of appropriate survey methodologies, and in the training of seconded staff. Six months of technical assistance from a micro-computer specialist have been programmed into the budget. Similarly, five months for an agricultural economist and one and a half months each for a demographer and a regional planner have been scheduled. It is felt that these specialists will play a vital role in both the design of the data collection system and the preparation of the training seminars.

It may prove desirable and feasible to contract out some of the Office's data analyses and special studies to local research institutions such as the University of Lubumbashi and the Institut Supérieur de Statistique. Discussions with representatives from these two institutions indicate that contracting for such services is feasible and that there is an expressed interest on their part in working with the project.

D. Sustainability

The Information Office will be located in Lubumbashi and function as a part of the project management unit. At the end of the project, the Information Office will be disbanded and the seconded GOZ staff returned to their home agencies, better trained and able to serve these agencies in carrying out their regional development responsibilities. While not anticipated in the project, there is nothing to preclude the regional government from maintaining the data bank created by the project Information Office or from continuing some of the annual surveys conducted by the Office should it so decide to do so.

E. Equipment

The Information Office will require the following equipment in order to carry out its functions.

- 2 Four-wheel drive vehicles
- 4 IBM-compatible micro-computers with 640K RAM and internal 20MB hard disk
- 2 Dot matrix printers with good graphics capability
- 2 Letter-quality printers
- 1 Photocopy machine
- 4 Computer tables and printer stands
- 12 Office desks and chairs
- 5 File cabinets
- 1 Drafting table and stool
- 1 Conference Table (12' long)
- 20 Chairs for conference table.
- A variety of word processing, graphics, spreadsheet, and statistical analysis software for the micro-computers
- Miscellaneous office supplies (paper, pens, printer ribbons, etc.)

F. Implementation Schedule (Assumes Project Implementation Starts 3/87)

March 1988	First process evaluation
September 1988	Senior Research Specialist arrives in Lubumbashi
October 1988	Senior Research Specialist begins survey of existing data sources. Initial contacts made with concerned regional agencies regarding their participation.
November 1988	Recruitment begins of regional government staff to be seconded to Information Office. Permanent staff hired. Short-term micro-computer specialist arrives to assist in the design of the data processing system.
December 1988	Design of data processing system completed. Micro-computer specialist departs. Senior Research Specialist prepares materials for first training

January 1989	Recruitment of seconded staff completed. First in-country training course begins.
February 1989	Information Office operational.
March 1989	First external evaluation
May 1989	Second in-country training course for GOZ seconded staff. Arrival of short-term specialists in micro-computer applications and social science research. Formulation and design of field surveys and in-depth studies.
June 1989	Information Office begins data collection in project area. Short-term specialists depart. First village-level survey conducted for baseline data.
July 1989	Two GOZ seconded staff depart for USA to attend 4-6 week technical short course.
November 1989	Third in-country training course for GOZ staff seconded to project. Arrival of short-term specialists in agricultural economics and micro-computers if needed.
December 1989	Short-term specialists depart.
March 1990	Fourth in-country training course for GOZ seconded to project. Second process evaluation.
April 1990	Additional village surveys and studies for project monitoring and evaluation.
July 1990	Two GOZ seconded staff depart for USA to attend 4 - 6 technical short course in development management and micro-computer applications.
August 1990	Office staff prepares materials for use by external evaluation team.
November 1990	Fifth in-country training course for GOZ staff seconded to project. Arrival of short-term consultants in agricultural economics, micro-computers, demographics, and regional planning.
December 1990	Departure of short-term consultants.
March 1991	Sixth in-country training course for GOZ staff seconded to project.
July 1991	Two GOZ seconded staff depart for USA to attend 4-6 week technical short course.

September 1991	Second external evaluation.
November 1991	Seventh in-country course for GOZ staff seconded to project. Arrival of short-term consultants in agricultural economics and micro-computers.
December 1991	Departure of short-term consultants.
March 1992	Eighth in-country training course for GOZ staff seconded to project. Third process evaluation.
July 1992	Two GOZ seconded staff depart for USA to attend 4-6 technical short course.
August 1992	Office prepares materials for use by external evaluation team. Arrival of external evaluation team.
November 1992	Ninth in-country training course for GOZ staff seconded to project. Arrival of short-term consultants in agricultural economics and micro-computers.
December 1992	Departure of short-term consultants.
March 1993	Tenth and final in-country course for GOZ staff seconded to project. Arrival of short-term consultants in agricultural economics and micro-computers.
April 1993	Departure of short-term consultants. Preparation begins of final reports, for project management.
April-June 1993	End of project evaluation.
May 1993	GOZ staff seconded to project return to home agencies.
June 1993	Information Office closed. Departure of Senior Research Specialist.

G. Scope of Work: Senior Research Specialist

1. Responsibilities. The Senior Research Specialist will be the operational director of the Information Office of the Central Shaba Agricultural Development Project. He will report directly to the Chief of Party and will supervise the activities of the Office staff. He will be responsible for the design, implementation, and management of the project's data collection system and data bank. He will design and direct the in-country training courses to be offered to the GOZ staff seconded to the Office. Finally, the Senior Research Specialist will function as the project's computer specialist.

2. Qualifications. The Senior Research Specialist position requires a Ph.D. in agricultural economics, regional planning, rural sociology, anthropology, or another development-related discipline. The individual should have a strong background in conducting data analyses, field surveys, and research studies for large-scale rural development projects, preferably in sub-Saharan Africa. He must have a good understanding of micro-computer applications for monitoring and evaluation studies as well as for project management. As the individual filling this position will be required to design and direct a training program, he must have extensive experience as a trainer or university-level educator. A French language ability of at least a FSI 4/4 level is mandatory. The individual also must have a demonstrated ability to work with and train nationals in social science methods and micro-computer applications.

3. Work Location. The Senior Research Specialist will be based in Lubumbashi where the project headquarters will be located. A considerable amount of time, however, will be spent in the project area.

Budget Item	PROJECT INFORMATION OFFICE (4000) EXPENDITURES																Sub Total	Total		
	FY 86	L/C	FY 87	L/C	FY 88	L/C	FY 89	L/C	Fy 90	L/C	Fy 91	L/C	Fy 92	L/C	Fy 93	L/C			\$	L/C
I. Technical Assistance																				
1. Long Term Personnel					70	10	150	10	150	10	150	10	150	10	75	5	745	55	800	
-Sr. Research Spec	0	0	0	0																
2. TDY																				
-Demographer				0	15		8										23	0	23	
-Ag Economist					30		15		15		15		15		8		98	0	98	
-Regional Planner					15		8										23	0	23	
-Micro computer Spec					30		15		15		15		15		8		98	0	98	
Subtotal	0	0	0	0	160	10	196	10	180	10	180	10	180	10	91	5	987	55	1,042	
II. Local Hire Personnel																				
-Statisticians(2)				0		2		4		4		4		4		2	0	20	20	
-Secretary				0		1		2		2		2		2		1	0	10	10	
-Chauffers(2)				0		1		2		2		2		2		1	0	10	10	
Subtotal	0	0	0	0	0	4	0	8	0	8	0	8	0	8	0	4	0	40	40	
III. Training																				
1. US-based			0	0	0		0		0		26		26				52	0	52	
2. In-country			0	0		12		24		24		24		24		12	6	120	120	
Subtotal	0	0	0	0	0	12	0	24	0	24	26	24	26	24	0	12	52	120	172	
IV. Commodities																				
1. Office Equipment					17												17	0	17	
2. Micro-computers(2)					10		10										20	0	20	
3. Land Rovers(2)					0	18	0	18	0								0	36	36	
4. Office Supplies						11		11		11		11		11		6	6	61	61	
Subtotal	0	0	0	0	27	29	10	29	0	11	0	11	0	11	0	6	37	97	134	
V. Operating Budget																				
1. Vehicle Maintenance					0	4	0	8	0	8	0	8	0	8	0	4	0	40	40	
2. Computer Servicing						1		4		4		4		4		2	0	19	19	
3. Office Equip Service						1		1		1		1		1		1	0	6	6	
4. Seminars						3		5		5		5		5		3	0	26	26	
5. Travel/per diem						10		26		26		26		26		13	0	127	127	
6. Mon & Eval Studies					20	10	20	10	20	10	20	10	20	10	5	110	55	165	165	
7. Video Filming					0				150				0				150	0	150	
Subtotal	0	0	0	0	20	29	20	54	170	54	20	54	20	54	10	28	260	273	533	
Totals	0	0	0	0	207	84	226	125	350	107	226	187	226	107	101	55	1,336	585	1,921	
Cont. & Inflation	0	0	0	0	21	9	36	20	75	23	62	30	77	36	34	19	306	136	442	
Totals	0	0	0	0	228	93	262	145	425	130	288	137	303	143	135	74	1,642	721	2,363	
GRAND TOTAL	0	0	0	0	321		406		555		425		446		209		2,363			

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APPENDIX TO ANNEX 10

Example of a Community-Level Questionnaire for Central Shaba

Market Town QuestionnaireSection 1: Checklist

- A) Number of
- shops and marketplaces
 - corn and manioc mills
 - storage facilities for corn and manioc
 - agricultural processing facilities for other crops
 - restaurants, bars, hospitals/clinics, post office, schools
 - churches
- B) Utilities:
- presence of electricity
 - presence of piped water

Section 2: Questions for local shopkeeper

The objective is to collect data on the commercial activities of the town.

- A) Verify the inventory of establishments (checklist) of the town.
- B) Artisan and Repair Shops
- Are there residents who provide the following services:
bicycle repair or supplier of bicycle spare parts;
blacksmiths who make or repair farm tools;
radio repairmen;
chariot (pushcart) builder or supplier.

Village QuestionnaireSection 1: Checklist

- A. Housing quality:
- total number of houses
 - number of houses with: a) thatched roofs, b) metal roofs, and c) framed doors and/or window shutter
- B. Services and Utilities:
- Have the roads near the village been improved?
 - Source of water
 - Source of lighting
 - Presence/absence of: a) church (what denomination?)
b) health clinic
c) other facilities

C. Off-farm Employment:

- Number of stalls/stands selling: charcoal, palm wine, fruits, woven baskets, and other agricultural products
- Number of service or retail establishments: food stores, stalls selling a small range of consumer goods - e.g. sugar, salt, soap, candles, canned food and cigarettes.

Section 2: Questions for Village Informants:A. Demographic Characteristics

(From Collectivity Chiefs)

- Population of village (note: not groupement de villages).
- For the first survey, note population in the years (up to five) preceding Project Year 1.

(From village informants)

- Have more than five families moved into or out of the village?
- Are there many retirees from the mines? How many live in houses with metal roofs? Were they given metal roofs for their houses as a retirement present? (Note number in checklist against the total number of houses with metal roofs in the village.)
- Do non-Baluba families live in the village?
- Are there many Christian families? Which denomination (rank by size of following)?

B. Farming Practices

- How many fields do most families cultivate per year?
- What crops do they grow?
- Does an extension agent come to the village?
- Do farmers use improved varieties of corn?
- How much does the seed cost?
- Has the price of seed increased?
- Do farmers buy fertilizer for corn production?
- Has the price of fertilizer increased?
- Is more corn being produced?
- Is more corn being sold?
- How many sacks did most farmers sell last year?
- Have farmers reduced the amount of manioc they grow?
- Have farmers reduced the amount of other crops they grow - e.g. peanuts, tomatoes, potatoes, beans, rice, etc.
- How long do farmers store corn?
- Are farmers delaying their sales of corn until later in the year?
- Is the corn sold:
 - to a merchant who come to the village
 - along the road
 - to merchants at a collection point
 - in the nearby market town
 - by hiring villagers with bicycles?

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- What price did the farmers receive for the corn during the last buying campaign?
- Is the price higher or lower than the previous year?
- Did those farmers who sold their corn later in the season receive a better price (what price)?
- How far do villagers travel to get their corn milled?
- Do most villagers consume all the corn flour they have milled?
- Do villagers buy corn flour? Why?

C. Socio-Economic Conditions:

- Over the past year, are there many (more than five) families who have:
 - built new houses
 - enlarged their houses
 - replaced the roofs on their houses (thatch or metal?)
 - bought new doors, windows, etc.
- Are there villagers who have built storage sheds or second homes near their corn fields? (Many, few, none)
- Have road improvements:
 - a) facilitated farm-to-market travel;
 - b) enabled commercants to reach the village when previously they did not come to the village
- Do villagers help maintain the road?
- Are there many villagers who own bicycles that work?
- Are there more bicycles now than a year ago?
- Repeat the above questions for radios.
- Are there villagers who own "chariots" (push-carts)?

D. Equity of Benefits

(from village women)

- How much time do women usually spend working in the fields each day during (a) dry (harvest) season; and (b) wet season?
- Does cultivating the new corn variety require women to work longer in the fields? Do their husbands help with this increased work?
- Are women milling more corn for corn flour? If not, why not?
- Are they using more corn flour for making fufu?
- Are children eating more corn (e.g. roasted corn or corn flour)?
- Are women able to travel to the local market town more often?
- Are women able to buy more medicines for themselves or their families?
- Are women buying more food and clothing?
- Are more children going to school - primary or secondary - than a year ago?
- If there are stalls in or near this village which sell provisions such as sugar, salt, matches, cigarettes, etc., have they increased in number over the past year?
- Are women engaging in more types of activities to earn money other than farming? What types of activities?

Annex 11

Financial Analysis

There are three major financial feasibility issues within the Central Shaba Agricultural Development Project that require examination:

First, will the project's principal target group, the small farmers in the project zone, be able or willing to finance their expected participation?

Second, the project foresees a seed enterprise. Is this enterprise financially viable?

Third, the project projects an increase in road maintenance and rehabilitation expenditure by the Office des Routes (O.R.) in Shaba and in the project area. Is this a financially feasible assumption?

Small Farmer Analysis

The project does not require or assume any future project-induced increases in small farmer acreage. The various analyses have taken a minimal annual increment in planted acreage of 3% as a given, one that will exist with or without the project, purely as a result of the region's continued population growth. Land is not a constraint on local farmers, but labor for land preparation is. It will be lifted pari pasu with population growth in this area where men and women work side by side in the fields.

The major interventions that will impact directly on the small farmers are improved, open-pollinated corn seeds and information. The latter will encompass new cultural practices that, used in tandem with improved seed, will yield significant increases in per acre production. (Improvements in yield from the seed are not dependent upon the adoption of improved practices, but their synergism yields a significantly greater return. In the economic analysis, it is conservatively estimated that adoption of new cultural practices will not normally be much in advance of new seed adoption, if at all, on the basis of Project North Shaba experience. But this could and might change, since the new practices are financially costless to the farmer.) Information also covers new immediate post-harvest handling, cleaning, and storage practices. These involve a progressively higher farmer investment, although not prohibitive at any point.

Improved seed does represent an investment by the farmer of 25 zaires per kilo. Approximately 20 kilos are needed to sow one hectare. For the average corn holding of 0.8 hectares, the farmer's net investment is 336 zaires ($20 \times 0.8 \times (25-4)$).

The farmer's return on his 336 zaire investment is 1460 zaires or about 4.5:1. A common rule of thumb is that a return of 3:1 is required to induce farmers to make an innovative investment. As the use of the improved new seeds becomes more widespread, the return required for adoption drops (the investment no longer being as innovative).

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Little is known about the availability, cost, and use of credit among the smallholders in Shaba. If and when it is used, a 25% interest rate would not be surprising; this leads to a discounted net return on new seed paid for by informal market credit of 1400 zaires. This is still over 3:1.

The use of improved seed, even at a price of 25 zaires per kilo (more than the price currently charged in northern Shaba), is clearly financially feasible for the small farmer.

The project also includes simple storage improvements to be adopted by smallholders and village groups at no cost. These are also financially viable.

The time value of corn storage is very high. The farmgate price of a small farmer's shelled but uncleaned corn (adulterated) reportedly climbs from 4 zaires in April to 10 zaires in September. This is a return to storage of 1.5 zaires per month.

The cost to the villages of the simple storage units is minimal, at not more than a thousand zaires per ton or one zaire per kilo of capacity. Even given the high likely cost of money in Shaba's informal village credit markets (25%), the discounted value of storage investment is high and generates a discounted return of over 5 to 1 in the first year if all the capacity is used. If only part of the new farm or village storage capacity is used, the returns drop proportionately, i.e., fifty percent usage in the first year will drop first year returns to 2.5 to 1 on the one zaire per kilo investment.

At the same time, this analysis assumes the investment will be entirely paid for in the first year. Even without maintenance, it has a useful life of 3 to 5 years, and its returns in the second and subsequent years become very high.

Seed Enterprise

The seed enterprise can take any number of technically feasible forms. Whatever organizational form it takes, there will be a basic cost for preparing the cropland for seed production at a required standard which is higher than that required for smallholder production and will increase the price that must be paid to contract growers.

The seed enterprise will likely be growing and selling both hybrid and open-pollinated seed, and the following analysis is based on the most likely possibility: an open-pollinated seed production operation added to more sophisticated hybrid seed production.

The costs of production of corn on carefully prepared land, under fertilized and cultivated conditions, using modern cultural practices, and able to give the grower a good return have been carefully calculated by a World Bank team to be 7 to 8 zaires per kilo.

To this grower cost the seed enterprise must add a premium paid to the grower for the additional care and attention needed for high quality open-pollinated seed. Even if it operates its own farm rather than contracts for seed, it must allow for the premium.

In addition to the premium, careful supervision of the growing operation will be required, and this entails a further cost.

This World Bank analysis (prepared for South Shaba), and the technical analysis of seed production prepared during the design of this project when a seed farm enterprise begun de novo was being considered, give us two alternative models for examining the financial viability of the seed enterprise.

	Costs (in zaires) per kilo of seed	
	Seed Farm	Seed enterprise
Cost per kilo of seed (net production 499,000 kilos)	3.425	7.5
Annual supervision total cost Z 1.08 million, or z2.7 per kilo (400 tons)	included	2.7
Storage costs (including a 10% loss and a 15% finance carrying charge)	1.253	1.253
Total cost of seed to selling organization at warehouse	4.678	11.453
Transport to sales point or distributor (including 2% loss)	6.250	6.250
Cost c.f. distributor	10.928	17.703
Margin to seed enterprise	5.000	5.000
Distributor purchase price	16.000	23.000
Farmer price	27.000	27.000

This rough analysis gives local distributors a 4 zaire per kilo margin on seed sales, and the enterprise an additional margin of 5 zaires per kilo. (If it does some or all of its own detailed marketing, it will add the 4 zaire margin on "retail" sales to its own margin.)

This analysis assumes a 15% finance or carrying cost throughout, including a 10% loss of seed in inventories and 5% in transportation.

Since the farmer analysis showed the 25 zaire per kilo price advantageous to the farmer even on an annual seed replacement basis, this is clearly a feasible proposition.

The real incentive to a seed enterprise is that the operation is feasible even without USAID grant equipment and technical assistance. When this is added to the equation, the potential returns become very great.

As seed demand grows, the potential returns become very good indeed.

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Road Maintenance: Office des Routes

The Shaba regional Office des Routes (O.R.) will have several significant tasks if the project's benefits are to be captured, both initially and through the outyears. Since O.R.'s revenue sources were moved from the GOZ's ordinary budget to an off-budget fuel tax in 1982, its financial position has been strong, particularly when compared with other non-revenue-generating agencies. The IBRD-supervised highway projects have included significant technical assistance components that have encompassed financial management as well as other aspects of O.R. operations.

O.R.'s total budget for rehabilitation and maintenance of the national network of 40,000 kilometers is \$100 million. Of this, the Shaba region receives \$6 million for salaries and local purchases, and about another \$8 million in equipment and technical assistance. The cost of maintenance of the 2,000 kilometers of link and O.R. feeder roads is approximately \$1.35 million, or 10% of the regional office's total annual budget. The net addition to O.R.'s mandated network is between 0 (if only 1,000 kilometers of feeder road are rehabilitated) and 1,000 (if O.R. agrees to assume responsibility for an additional 1,000 kilometers). In addition, O.R. already maintains at least 1,000 kilometers of the deteriorated project roads, and at a cost that is approximately 50% higher than the cost of maintaining rehabilitated road. The total additional financial burden on O.R. is therefore estimated at \$500,000 or 3.3% of the present annual budget. There is every reason to be sanguine that O.R. will pick up this marginal additional cost.

O.R. will continue to receive the bulk of its local financing from the fuel tax, which is collected by the petroleum distributors and deposited by them directly in O.R.'s account. This system has worked (kept pace with inflation and resisted fraud) for four years and there is every reason to believe that it will continue to do so.

The road savings on existing traffic and its natural growth will approach \$1.9 million by the PACD. Traffic creation savings by that time will be over a million. By the time road maintenance expenditures are critical (about year 12) benefits from these two transport sources alone will be over \$6 million annually, providing a clearly related incremental tax base to meet the needed annual maintenance cost.

Overall Financial Analysis

The project's overall cost, including continuing maintenance cost, will be over \$93 million equivalent. Of this total, \$28 million will be met by USAID, and some \$3.5 million directly by the private sector as investment.

Calculated on a conservative basis, benefits will total over \$331 million. This is a simple benefit-to-cost ratio of three to one.

By year eight, the project will be contributing \$3.7 in direct foreign savings annually in the form of incremental corn production solely ascribable to the project. By year 25, these foreign exchange savings alone will be over \$8 million annually. The cumulative foreign-exchange benefits to foreign-exchange cost ratio will be over 2.5 to 1 (approximately \$140 million to \$55 million).

Annex 12

Economic Analysis

The economic justification for this project rests on i) Zaire's continued need for resource transfers to maintain economic stability and continue its program of economic reform and rationalization; ii) the benefits of this project in increased political and social stability and equitable distribution of income; iii) its attractiveness relative to alternative investments; and iv) its consistency with USAID strategy in Zaire.

The continued economic stabilization and development of Zaïre will require more resource transfers than are now firmly obligated by either bilateral or multilateral donors. The section below on Zaire's economic framework briefly examines this overall need. Wisely invested, the additional transfers needed will pay dividends in increased real income for Zaïre's economy, better distribution of that income through productive employment, long-term balance of payments support, the establishment and strengthening of the institutions needed for further development based on free enterprise, and political stability. The last has a real economic value not only to Zaïre but to the world economy, Zaïre's major bilateral donors, and the economy's trading partners (the U.S. is prominent among them). The last section of this annex examines the central Shaba project as an investment.

USAID development strategy, as spelled out in the CDSS and other documentation, is to concentrate its production projects on limited geographical areas. This project will be located in the Shaba region, one of the two identified for concentration in the May 1985 CDSS update.

USAID's strategy and this project are consistent with the regional development plan for Shaba. The plan has as a principal objective the elimination of the region's dependency upon imports of basic foodstuffs, particularly corn. The region is not densely settled, although the area in which the project is to operate has a rural population of over 600,000 (approximately 17 % of the region's total population of about 4.1 million) and is more densely settled than many rural areas.

Mining is the most economically important activity in Shaba and the region provides more than four-fifths of Zaïre's exports. It ranks first in the world for cobalt production and sixth for high grade copper. Zinc, silver, cadmium, lead, germanium, tin, coal, and platinum are all exploited, while deposits of manganese are known but no longer exploited since the closing of the Angolan railway.

The urban population of Shaba is substantial (over 900,000) and due to the mining industry offers a ready market for foodstuffs.

Much of the road network outside the urban area is poor, and the rail line determines the location of the main trading centers. Commerce is sparse and seasonal, especially away from main communications routes. In many areas farmers reportedly have reduced their production to the minimum because poor roads mean they must "headload" or carry out cash crops sack by sack with human bearers.

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The average family in the project area currently cultivates about 0.8 hectares of corn. Four-fifths of the land cultivated is in forest cleared by burning and the rest is savannah. In the forest, corn yields average 1.7 tons per hectare; in the savannah yields are less than half that: 0.7 tons per hectare.

These yields are very skimpy compared with those obtained in southern Shaba by commercial farms using improved hybrid seeds, chemical fertilizers and other modern inputs: their yields exceed four tons per hectare. Even using composite non-hybrid seeds, the IBRD staff have projected production of over 3 tons per hectare in Shaba. These estimates and results illustrate what is possible in the region.

This project will directly improve the welfare of the target population, while providing direct stabilization support in the form of foreign exchange savings to Zaïre's macro economy. Concentration upon increasing output from small farms and stimulation of the private sector to increase its importance in the growth of the trade and distribution net are other major USAID objectives in this project.

The following sections examine how this project will meet all of these criteria. First the overall need of Zaïre's economy for aid is briefly outlined. Then the Central Shaba Agricultural Development Project is examined as an investment creating income and foreign exchange savings for the Zairian economy, and the sensitivity of the resulting projected internal rate of return of about 14% to varying assumptions is examined. Finally, because of the importance of the market for Shaba corn to the analysis, Annex 13 examines the dynamic factors shifting the supply and demand situation in that market.

ZAIRE : ECONOMIC FRAMEWORK

Zaïre began implementing a new economic reform plan in 1983, although an Extended Fund Facility (EFF) with the IMF had been canceled the previous June when the government of Zaïre's inability to bring the economy into conformity with its terms became evident. New capital transfers from the World Bank Group had been suspended along with the Fund agreement, and other multilateral and bilateral donors were giving Zaïre an increasingly cold shoulder. Nonetheless, Zaïre remained stable.

The new economic reforms were defined largely in an informal "shadow" agreement reached with the Fund early in 1983, and a formal national stabilization program was announced in September 1983. Government expenditures were sharply cut. Legal controls on prices and private economic activity were relaxed and often eliminated. Imports were liberalized simultaneously with the imposition of tight demand management implemented through fiscal and monetary measures. Most important of all, the Government corrected long-standing fundamental flaws, and applied organizational and operating changes to public enterprises that made them more profit-oriented and responsive to market signals. A wider and wider range of such units were improved as the year progressed.

By 1985 the Zairian government's budget deficit turned into a surplus estimated by the World Bank Group (in its April 1986 report to the Consultative Group for Zaïre) at about 1 percent of gross domestic product. Inflation reportedly shrank to less than 30 percent in 1985; the 1983 rate had been 76 percent.

Zaïre's debt service commitments are a major factor in the country's foreign exchange problem. These commitments will continue to be very heavy (equal to more than 25 per cent of exports over the next few years) and additional payments for recent relief, arrears, and short-term credits will increase the burden. Aid is increasingly concessional and private sector activity is moving toward investment rather than loan form, but this only keeps the debt service from becoming totally unmanageable; it does not improve it.

Additional spare parts and supplemental capital investment imports are critical to improved capacity utilization throughout the economy (except perhaps, and fortunately, the mining sector), while intermediate goods imports are essential to production increase.

The Public Investment Program of the government covers only a portion of this indispensable demand for capital goods. Even if this demand is met, the country may achieve only a marginal (0.8-0.9 %) rate of per capita income growth. Long-run improvement will require accelerated structural adjustment, over an extended period; an adjustment costly in investment finance, but paying high dividends in higher income, better distribution, and political stability in Zaïre.

Zaïre's likely small but continuing surpluses in the merchandise account of its balance of payments masks the economy's serious problem of debt service. The capital accounts and particularly debt repayments not only will offset the merchandise export surplus but create a substantial need for assistance to make possible the essential and continued restructuring.

World Bank estimates presented to the Consultative Group for Zaïre show how large a balance-of-payments gap will remain even with disbursements of new (multilateral and bilateral) aid commitments increasing steadily each year to \$603 million in 1990.

Zaïre : Foreign Exchange Aid Needs

	(\$ million)					
	1985	1986	1987	1988	1989	1990
Anticipated aid disbursements (new)	169	252	410	498	559	603
Debt rescheduling (net)	413	353	281	223	175	32
Remaining B/P gap	0	197	262	475	599	739

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The resource need estimates are part of the larger balance of payments picture:

Zaire : Projected Balance of Payments

	(Millions of US \$)					
	1985	1986	1987	1988	1989	1990
Exports Goods and Factor						
Services	1900	2058	2155	2338	2595	2833
Non factor service 1*	143	158	173	191	210	232
Private transfers	-61	-54	-62	-66	-71	-76
Imports	1611	1764	1936	2158	2418	2678
Non factor services 2*	447	497	555	623	703	782
Trade balance	-76	-99	-225	-318	-387	-471
Direct investments	5	8	10	40	40	60
Debt Service 3*	982	997	1019	1089	1044	950
Changes in Reserves	-2	34	39	51	60	59
Foreign resource gap	-1051	-1122	-1273	-1418	-1451	-1420
Errors and Omissions 4*	734	x	x	x	x	x
Committed aid disbursement	148	82	215	204	138	100
IMF purchases of zaire	169	x	x	x	x	x

1* Including disbursements on previous commercial commitments and short term commercial credit.

2* Includes short term and trade credit payments

3* Medium and long term debts contracted prior to 1986.

4* Including capital transfers not included elsewhere.

x : Not known

Source : IBRD staff estimates and reports, and consultant estimates.

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Although no sound predictions for the provision of the additional resources needed can be made now, continuing rationalization of the economy makes the following sources likely:

IMF resources, increased private investment, DAC aid, OPEC, additional private rescheduling, non DAC donor rescheduling, declining interest rates, improving commodity prices, and multilateral development aid.

A closed loop exists in which the success of the economic reforms largely depends upon additional resources being found. These will be available, if at all, only with the increasing success and international awareness of the economic reforms.

THE CENTRAL SHABA AGRICULTURAL DEVELOPMENT PROJECT AS AN INVESTMENT

(ECONOMIC RATE OF RETURN ANALYSIS)

The project has considerable value as a political gesture since it is a sizeable investment in Zaïre and in Shaba. As a show of confidence it has essentially unquantifiable benefits as a contribution to economic and political stability.

It also has demonstrable development benefits that show it is a prudent investment for Zaïre's economy at this time. When the benefits and resources used (American or Zaïrian, private, public, or other) are all measured in the same units and account is taken of the years in which they are used (i.e., costs are paid) or received (benefits), the return on the investment represented by the costs will be 14%, a return that compares favorably with alternative investments. Given its uncounted, unevaluated benefits, it is very good.

Overall project benefits

The project is not a traditional integrated rural development activity but has many of the traits of such a project. Chief among them is the synergy of its components. Most of these individual components can be implemented and analyzed as stand-alone investments (exceptions are the project information office, and to a lesser extent the project management office). The elements are mutually reinforcing: implementing them in isolation would result in a much lower total payoff to the economy of Zaïre. The time ordering of the activities heavily influences the kind and quantity of the resulting benefits to Zaïre's economy. Some activities would increase sharply in cost if the functional link to other activities were broken, or their benefits would decline rapidly. Technically, the benefit production function for the project as a whole is non-linear, non-additive and discontinuous.

The analysis of project benefits and costs has been carried through 25 years. Both the financial and economic analysis include maintenance, essential replacements, and continued operational cost in the outyears. After 25 years, with a rate of return of over 15%, benefits have a discounted present value of only .05 times their nominal value or less, and the analysis was cut at that point. Benefits from the project, however, will continue to accrue.

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The project was first analyzed as designed: the benefits defined as objectives in the logical framework (annex 2) were quantified and priced.

a) Objective one: Increased corn production and availability in Shaba and reduced international corn imports into Zaire.

Increased corn production will result from:

- i) the use of improved seed, produced and marketed as a project activity;
- ii) the adoption of new cultural and harvesting practices introduced and popularised through the project extension activities and largely tied to the use of new seeds;
- iii) a larger total acreage used for corn in central Shaba as the labor constraint on bringing land into cultivation is lifted by population growth.

Only the first two of the above factors are unambiguously project results and counted as project benefits. They increase per-acre corn yields by 40% and 25% respectively. The increase in total acreage is not a project result although the resulting larger potential base multiplies the impact of project-created improvements and, in fact, the population growth does owe something to the project: The better nutrition and higher farmer incomes it makes possible are positive factors in the population increase. This is one example of the benefits that have not been explicitly counted. There are others as well and the resulting understatement of total investment returns must be kept in mind when judgments based on the analysis are made.

Reduced corn imports will result not only from increased yields, but also from reduced post-harvest losses. These last increase the supply available for consumption as surely as increased yields. There are several sources of such reduced post-harvest losses located at different places along the "corn chain" or marketing network leading from the farmer's field to the mill. Reduction of the losses at each of these points has a set of investment and operating costs associated with it, some of which fortunately overlap and need to be met only once. Loss reductions at any given point on the corn chain were counted and valued as benefits in this analysis whenever the necessary associated costs have also been provided for in the project plan or analysis. Budget constraints cause the project to miss capturing some significant potential savings, although necessary preconditions for their capture by future investments will be created. This change in the investment environment results in benefits that were not evaluated or included in the calculation of the project's return but are nonetheless real and must be weighted into project decisions.

The following constraints on increases in corn yields were considered in the analysis both as limiting factors and as sources of costs (investment and operating):

<u>Limiting Factors</u>	<u>Sources of Costs</u>
Constraints on incremental yields from new seeds	Constraints on incremental yields from new cultural practices
Seed availability (production or procurement)	Use of new seed
Extension (village contact and demonstration)	Extension (village contact and demonstration)
Transport availability (farm feeder roads)	Transport availability (farm feeder roads)

Operating costs for these activities were assumed to continue to exist through all the outyears of the analysis, i.e., for 25 years, and included as negative benefits.

The value of the incremental corn production was set a \$155 per metric ton, or the border price of corn at Sakania. Use of this price assumes that any further transport or processing of such imported corn would be equivalent to the costs involved in making the incremental Zairian corn available to the market and is a more conservative valuation (50% less) than that used by World Bank analysts in preliminary appraisals of the proposed South Shaba Agricultural Development project. (However, the central Shaba project being less dependent upon imported inputs of fertilizer, chemicals, and machinery has less risk and is therefore feasible at a lower rate of return.)

(b) Objective two: Increased incomes to smallholder farm families in central and northern Shaba.

Operators of small farms will be the major beneficiaries from the incremental production created by the use of improved seeds and cultural practices. These benefits will average a net of over 6,000 zaires yearly for participating farm families (e.g using seeds, new cultural practices, and better post-harvest practices). Even farm families who do not actively participate will realize increasing benefits by the end of the analytical period. Particularly important are the reduced on-farm losses due to minimal storage arrangements and drier corn. The overall project benefit analysis already counts these benefits and they are not used again in the economic analysis. But they will be distributed among the families of the small farmers in the project area, because they arise as value-added on those farms.

Families in the project area and elsewhere also will share in benefits arising from other components of the project, such as transport cost savings (including those accruing because of traffic creation), better quality corn

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marketing, and improved storage. The distribution of these benefits between the small farm operators' families and the entrepreneurs and middlemen in the market towns and cities is, however, sensitive to less predictable factors as well as to the continued evolution of relative degrees of market power between these groups. Rehabilitation of the farm marketing road network and its resultant cost savings will create a market framework much more favorable to the small farmers. The lower transport costs and a lower capital investment requirement for transport operations resulting from the project's road rehabilitation investment will combine with a larger market scale and external influences to increase the farmers' market power. The external influences include the project conditions the World Bank Group is requiring of the government of Zaire such as active liberalization of inter-regional sales, and the investments the Bank is making in public dissemination of market information (e.g. by radio). The resulting increase in the transparency of market transactions will improve farmers' ability to capture a share of the value added by transport cost savings, storage, improved corn quality, and the entire panoply of economic activity that increased productivity in the area will engender.

Larger or better storage facilities and corn cleaning facilities are especially advantageous to farmers. The time value of stored corn is very high, the difference between farmgate corn prices in March and September being 6 to 10 zaires per kilo. Because it is not certain how much of project-added storage will result in increased total corn availability and how much will simply shift storage locations, the corn stored in project-introduced facilities was valued only at its likely gross incremental return to the farmer, 4 zaires per kilo, or \$74/ton. Capturing the higher value of cleaned corn (about 4 zaires per kilo of value are added) may be more difficult for the farmers, so that substantial gains here will have to await further investments; but a real possibility exists.

(c) Objective three: Changes in Shaba's corn production and marketing system (through the introduction of innovations) that support the two previous objectives and themselves create incomes and are self-sustaining.

The project's road maintenance component is a major contributor to this objective. The savings per kilometer that the initial road rehabilitation and continued maintenance provide to the "average" vehicle operating on the project area road has been estimated at \$0.71. These savings will result for the traffic in each year of the project. That traffic is projected as equal to the level in 1986, plus an annual growth factor carried forward to the current year to account for normal growth. New traffic on the improved roads that incremental corn production will generate is also estimated. The savings for both these categories (old and new traffic) are added to the benefits of the project. They have been estimated on the same basis as for the IBRD road project, in cooperation with the Shaba area Office des Routes (the highway maintenance entity of the government of Zaire). At an expected \$0.71 per kilometer for the average vehicle (a heavy truck in the project area), they are conservative.

Analysis of the road component in the absence of the agricultural components means reducing expected traffic. Nonetheless, even on this basis, transportation cost-savings very nearly defray rehabilitation and maintenance costs. The real economic justification for the road components includes not just extra traffic, however, but the fact that the roads contribute to producing the increased output of corn.

SUMMARY OF ECONOMIC ANALYSIS

- The project has an internal rate of return on the original budget and work schedule of 14.5%.
- If original cost estimates are low and a 10% cost overrun is encountered, the return drops to 13.0%.
- If implementation lags a year behind schedule the IRR falls to 12.4%.

Analysis of the road rehabilitation's contribution to the remainder of the project's returns as a scalar multiplier of their returns was not attempted. The value of this multiplier would, however, be very high. The poor current condition of the link roads and the virtual non-existence of feeder roads are an almost total constraint to effective economic investment in the project area on a large scale.

In a similar way, the strengthening of the extension services through the use of Peace Corps volunteers, training, and capital investments is essential to the creation of the value added from incremental production and reduced post-harvest losses. No separate, added evaluation of the benefits from the extension expenditure was made, therefore. The extension effort's impact is as a multiplier of the potential investments embodied in other components of the project. Its contribution without them would be almost entirely potential -- it would be a multiplier with nothing to multiply. Its value as a multiplier is roughly the difference in the project's return with extension and without it; indicated by about 80 million dollars.

Throughout the analysis, constant 1986 prices and exchange rates (\$1 to 54 zaires) have been used. Inflation has a scalar impact on the analysis: the nominal value of costs and benefits in the outyears will increase together, leaving the ratios unchanged.

Costs not counted in the project budget or the financial analysis, such as the salaries and maintenance of the Peace Corps volunteers working on extension were incorporated into the analysis budget. Road and storage maintenance, continued extension efforts, and a seed farm cost were included in each of the outyears. No explicit shadow pricing was used.

The sensitivity of project benefits to a variety of changing circumstances was tested. The results for a 10% cost overrun; a drop in the value of the benefits, a one and a two year lag in implementation are presented below. Internal rates of return to the Zairean economy from the total invested in CSP by all sources were calculated for each of these circumstances. It compares favorably with alternatives in each case, although returns do drop. Even with a two-year implementation lag, however, returns are 10%.

Economic Analysis Summary
(Millions of U.S. Dollars)

<u>Year:</u>	0	1	7	25	<u>Total</u>
<u>Costs:</u>	0.2	12.0	4.5	—	93.6
of which USAID:	0.2	7.9	0.5	0	24.6
<u>Benefits:</u>					
of which:					
incremental corn:	0	0	2.6	8.1	133.1
transport savings:	0	0.1	2.8	15.3	88.4
other:	0	0	0.9	3.5	42.5

The net benefits to the economy of Zaire over 25 years therefore reach over \$170.4 million on very conservative assumptions. This is a simple benefit-to-cost ratio of over 1.8 to 1.

Annex 13

The Shaba Corn Market

A. General

This annex describes the corn market in the Shaba region and puts the project in context. It also examines a major assumption central to the project: that there is now, and will continue to be, a market for the incremental corn production that is the most important source of project benefits.

The project assumes constant or increasing demand for corn produced in Shaba. It also assumes that farmgate prices of corn in Shaba will not drop. These will lead to a major project goal: increased incomes and improved quality of life for Shaba's project-aided farmers as a result of their rising productivity, and also will provide the incentives and means for the farm investments that are the ultimate criteria of project success. Simultaneously, the increased domestic production will contribute to another project goal for Zaire's economy: reduced foreign exchange outlays for corn imports. These assumptions are realistic, given the current state of the corn market in Shaba and the various exogenous factors affecting the corn market.

Design research has revealed that a minimum farmgate price of 4 zaires/kilo for shelled corn sold by the sack will give each individual farmer a reasonable return on his investment of time and resources. This price and the profit it provides is also competitive with feasible alternative uses of family labor in the project area. (4 zaires/kilo is also the farmgate price for small farmer sales assumed by World Bank Group staff in their appraisal of the proposed South Shaba Agricultural Project, hereafter referred to as SSAD. Since that project is predominantly aimed at larger farms and those using mechanical land preparation, prices of 8-10 zaires/kilo will be required for it to be financially feasible.)

As and if prices climb above this 4 zaire/kilo minimum, there may be incentives to use modern inputs, such as chemical fertilizers, which might become available to small farmers as an unintended spinoff of the SSAD. Nonetheless, no part of the analysis of the project depends upon or uses these inputs.

B. Market Overview

1985 and 1986 farmgate prices for corn have been reported between 3.2 and 10 zaires/kilo, with the higher prices reflecting the normal pattern associated with end-of-season purchases. (Although legal restrictions on bulk purchases by buyers outside the region were removed by the national reforms of 1983, custom still restricts such purchases to limited periods during the year. It will be an IBRD required condition for funding SSAD that the Government of Zaire see to the complete removals of these restrictions; this is also a covenant to the present project.) Higher prices also are paid to farmers producing corn (on a long-term, established basis) specifically for large organizations (e.g. Gecamines). In these cases the higher prices follow not just because of the established nature of the arrangements, but because corn quality is generally higher (i.e., properly cleaned and dried). Lower

prices are associated with sack purchases in the interior, with each sack nominally holding 100 kilos of corn, but adulterated with up to 25% of extraneous material. Frequently, the corn is wet as well, therefore requiring additional drying to prevent spoilage. The actual price received by the farmer for corn of standard grade is therefore 4 zaires or more per kilo.

Prices paid to commercants or collecteurs at the mill gate for "cleaned" corn (i.e., without significant quantities of extraneous material) were reported by a World Bank appraisal team to be 8.4 zaires/kilo plus the cost of bags, fuel, and working capital. This price was paid from early in the season. The high margin to the collecteurs is made possible by the lack of transparency in the market, an opaqueness in part created by poor roads and the resulting high cost of transport.

On-farm carryover stocks exist only minimally in Shaba, and major storage facilities exist only at the mills and in a few large towns. Losses are therefore high at every point or level along the "corn chain." There also are sizeable losses in the field which are statistically evident only as reduced per-acre yields. On-farm losses, losses during transport, and losses in large-scale commercial storage, taken together, may approach 20%, although statistics only report 10% losses after the corn leaves the farmgate.

C. The Zambian Supply

Shaba has imported much of its corn in recent years from Zambia, both legally and illegally. The Zambian supply situation is changing drastically. Zambia's President Kaunda stated in late May 1986 that exports to Zaire (which were costing the subsidy-paying Zambian government dearly) would stop. The governments of Zambia and Zaire have recently met and reportedly agreed in principle upon measures to implement Kaunda's decision. It is unclear whether Zambia will try to stop all exports, or only the "illicit" ones, but several key steps to rationalize the Zambian economy already have been taken which will have an impact on the corn supply in Shaba. In November 1985 the prices of Zambian corn rose 36%, and the direct subsidy on corn was cut to about \$6.61 a ton. More importantly, on January 28, 1986, Zambia cut its fertilizer subsidy sharply, resulting in a fertilizer price increase of 80%.

The effects of these subsidy corrections will be felt gradually in the Zairian markets. Zambian farmers are known to have bought substantial quantities of fertilizer at the subsidized price in anticipation of the price increase. Earlier studies estimated the price elasticity of fertilizer in Zambia at upwards of -0.65: this means that future fertilizer use by corn farmers in Zambia will be cut by over three-quarters in response to the price rise. Some subsidies and attendant market distortions still exist, so further fertilizer price increases in Zambia are likely as the economy struggles to get its prices right. The net result will be a continuing cycle of increases in the price of Zambia corn imported (legally or illegally) into Zaire, and a sharp cutback in available quantities. The supply of Zambian corn in the Shaba and Kasai markets will be sharply reduced.

Another more subtle factor also exists. An earlier Zairian requirement that all fuel had to be imported via Matadi on the Atlantic coast has recently been corrected (in part under IBRD urging). This reform had positive impact on the corn-producing Shaba region. First, it removed an important incentive to Zambian imports of corn (into Shaba, and beyond to Kasai) because corn and fuel were a joint import product in many cases. Trucks bringing corn imports also carried fuel -- nominally their own supply, but in the frequent periods of shortage more -- to be sold illegally. The importance of this fuel smuggling has sharply declined, and as Zambian subsidies continue to be cut, will drop further. Secondly, fuel, while still scarce, is more available than before. Greater fuel stocks permit collecteurs to fill their important marketing function more easily.

D. Current Balance

The corn "balance sheet" consists of local production plus imports minus exports to the Kasais. Sketchy and unreliable information exists for all categories, but perhaps the most unreliable are the corn export figures. For this analysis, the figure of zero is used. Any corn exported would therefore effectively reduce the overall supply, and increase the likelihood that the corn price would increase in favor of the small corn farmer. Other figures come from the recent World Bank appraisal team.

The World Bank team made an estimate of the current corn shortfall in Shaba in preparing and appraising the proposed SSAD. They calculate corn needs in Shaba during 1986 at 472,000 tons exclusive of losses and shipments to Kasai. (Astoundingly, they estimate losses at a mere 4.5% of the total.) Although their per capita demand levels may have been criticized as high (they were based on nutritional norms despite the low modal income of the region), they perhaps are not unrealistically high. The estimates also are based on historical (1958) consumption patterns which show a high level of cassava consumption; it is known that these patterns have changed importantly from cassava toward corn in many areas of the region. The bottom line of the World Bank analysis is that the demand estimate in 1985 demonstrates a shortfall of 150,000 metric tons.

The Bank's SSAD project, working with sophisticated farmers utilizing hybrid seeds, substantial quantities of chemical fertilizer and mechanical land preparation is targeted to increase available production of corn with a break even price of 7 zaires per kilo or more by 80,000 tons. The Central Shaba project area will see increases of over 30 thousand tons over current levels by 1992. Project generated growth will continue after that date, and output should reach about 69,000 tons by 1998. If both projects are as successful as planned, and if corn demand grows with population, the shortfall projected (and therefore excess demand) for Shaba in 1998 will be approximately 90,000 metric tons. That level of demand in excess of domestically-produced supplies will more than keep the price stable; it will increase it.

Given the outlook for the future cost and availability of imports, as well as the almost certain growth of demand northwest of Shaba, this conclusion is inescapable. The changes exogenous to the project that have already occurred establish it.

E. Smallholders in Shaba

The difference between the minimum price for corn required to make this project viable and that required to make the SSAD project viable (4 zaires/kilo vs. 9 zaires/kilo) can be attributed to a number of factors. First, the smallholders' market, although it is characterized by monopsonistic buyers and a classically elastic (flat) demand curve, trades a somewhat different product from that of the large farmers' market it only imperfectly reflects. Secondly, the distance to market is greater for this project than for the SSAD project; part of the price difference reflects the greater transportation costs required for the central Shaba corn.

How is the product different? In the small farmers' market the corn traded has a high rate of adulteration (perhaps as high as 25%), high moisture content, and considerable spoilage. It must be cleaned and processed before being milled and is therefore different from the SSAD project output. Although nominally traded by weight, this smallholder corn is in fact traded by volume, generally in 100 kilo sacks. The high rate of adulteration and spoilage not only makes it necessary to clean the material before it is milled, but makes its transport more expensive, and creates preferences for imported or commercially-grown corn all along the marketing system or "corn chain," a preference specifically noted by Lubumbashi millers, and evidenced by their willingness to pay additional amounts for higher quality corn.

This product and its market can change radically during project implementation. The improvements in rural transport this project will bring about (link and feeder road rehabilitation) will lower the cost of transport and increase the returns of the collecteurs sufficiently to create a sharp increase in the competitiveness of the market for smallholder corn. As transportation costs decrease, competition can be expected to increase as more collecteurs vie for available corn.

In addition to project activities affecting the market, there are such important events as the elimination of the requirement that all legal truck fuel be imported through Matadi. Elimination of this regulation removes a condition that created a regular cycle of fuel shortages, which sharply restricted transport operation, further increased costs, and was a major barrier to entry into the transport business. Monitoring of the fuel situation will be a major external contribution to the USAID project from the World Bank's proposed SSAD. As the number of truckers increases in response to these lower costs and higher profits, part of the cost savings will be captured by the farmers.

A new transparency will enter the market. While barriers to market entry are being lowered, the World Bank SSAD project will introduce regular local radio price and supply reports designed to inform illiterate farmers in remote villages of price and market developments. This will reinforce the openness that larger numbers of collecteurs, all competing to buy the same product, will introduce. The better-maintained roads give farmers options that make them less dependent upon the arrival of the collecteurs in their village. They may use bicycles and pushcarts or even hired transport. With better roads, any feasible transport alternative will be implemented by villagers.

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Increased competition also fosters marginal differentiation among buyers. This in turn gives the selling farmers a new awareness and access to the premiums paid for better quality (i.e., less adulterated) corn. The project's few village storage and drying facilities will serve as a model of how farmers can increase the available supply of premium corn, and create a demand for it. If this idea spreads to many villages it will transform the market.

At the same time, the higher productivity of improved seeds (increments of 25-40% are expected) and new cultural practices, plus the accompanying reduced field losses, will increase family incomes. Local corn consumption will increase, thereby improving general health.

F. The Market at the Miller's Gate

The demand the farmer faces will still continue to be largely a derived one, an imperfect mapping of the demand in the larger millgate market. The millgate market is where a substantial premium is paid for unadulterated corn. World Bank staff studies cite 8.4 Z/kg (plus bags, gasoline, and working capital) as the price paid to collecteurs at Lubumbashi. The studies identified 14 large commercial millers in the region, including the two largest, Gecamines' Minoshua and Tarica, who buy at depots. Gecamines pays 10.5 zaires/kilo for corn simply delivered at its depot, without any allowance for expenses. This gives an excellent estimate of the market's judgment of the cost of fuel, bags, and working capital: 2.1 zaires/kilo.

The millers on their side have both a substantial urban and semi-urban market and one outside the region, principally in the Kasais. In both markets their principal competition has been Zambian imports, legal and illegal.

G. The Aggregate Market

As noted, the World Bank estimated demand exceeded the supply of domestic corn in Shaba by some 150,000 tons. To this must be added the Zairian demand curve's small but steady drift to the right. The drift will come partly from population growth of about 3% yearly -- equivalent to an incremental demand of 14,000 tons annually. Income improvements and the impact of mealybug attacks on the cassava crop will shift corn demand also, as corn is increasingly substituted for cassava. The World Bank study actually states that cassava has already disappeared from the diet in southern Shaba -- one need not make this extreme assumption to recognize that this consumption good will be increasingly displaced.

The World Bank project is intended to push the supply of Shaban corn outward by 80,000 tons by 1992. It is unlikely to be fully successful but its inputs of information, fertilizer, and credit institution building will be substantial. The spill-over effects into central Shaba may be sizeable, and will multiply the impact of the project. The project will shift supply to the right by some 40-50,000 tons.

At the same time, the removal of fuel bottlenecks referred to above will have an impact on Shaba's Kasai trade. Shipments of Shaban corn to the Kasais should increase with decreasing transport costs, even as the price and delivery cost of competing imported Zambian corn flour rises in relative terms.

Taking all these factors together, there seems no reason to doubt that demand will maintain a price of 4 zaires/kilo at the farmgate in Shaba. There is every reason to expect the price to move higher.

Social Soundness Analysis

A. Introduction

Farmers in central Shaba recognize full well the consequences of a deteriorated road system and of fluctuations in corn production and marketing on their well-being. The Central Shaba Agricultural Development Project aims to increase small-hold farmer incomes by rehabilitating agricultural roads and by increasing corn production through the introduction of improved corn seed, the provision of technical advice, and the development of village-level storage facilities. These activities, most of which have been undertaken successfully in the neighboring North Shaba Rural Development Project (PNS) area, can significantly improve the quality of life for the majority of small-hold farmers in the central Shaba area.

B. Socio-Cultural Feasibility

1. Socio-economic characteristics. Central Shaba covers the agricultural area of the subregion of Haut Lomami west of the Zaire River. The area includes the entire Zone of Kabongo (Kabongo, Kayamba, and Nord-Baluba collectives), the western part of the Zone of Malemba Nkulu (Nkulu, Mwanza, and Badia collectives), and the northern part of the Zone of Bukama (Kikondja, Kapamai, and Kabondo Dianda collectives). In addition, the project area encompasses the Zone of Kabalo (Lukuswa and Luella Luvungu collectives) in the subregion of Tanganyika, thus integrating geographically the central Shaba project area with that of PNS. Almost the entire population of central Shaba is Baluba; limited ethnic diversity occurs in the Kabalo zone, where there is one enclave of 5,000 Basonge in western Munga groupement and some 1,000 pygmies scattered throughout the eastern half of the zone.

Central Shaba is overwhelmingly agricultural. Rural population densities are low, averaging six persons per square kilometer throughout the region. (Rural densities range from 3.6 p/km² in Kabalo to 12-13 p/km² in Kabongo and Malemba.) The people live in villages that average 500-1,000 inhabitants. In or near the forest, villages average 500 inhabitants and are spaced about five kilometers apart; on the savannah, villages are larger, about 1,000 inhabitants, but more widely spaced, about 10 kilometers apart. Villages are sited along a road or a major river. In the last 25 years, many villages in the interior have disappeared -- in some areas as many as a third of the interior villages no longer exist. The population has either moved en masse to a new location on the road or dispersed among related villages that were already along the road, rail line, or river.

Cropping patterns and production activities are similar throughout the region in that families grow manioc for consumption, corn for sale, and a number of secondary crops -- peanuts, beans, rice, palm oil -- for either consumption or sale. (The staple food in the countryside is manioc. Corn consumption is low because it takes far more time for a woman to process dried

corn kernels than manioc chips. Corn consumption does rise, however, when small milling facilities are made available.) Farm families also keep goats, pigs, and poultry, but no large animals. Most villages have a few part-time artisans, though craft production is limited because most people can make many of these items themselves; many villages also have a former driver or mechanic. Along the major rivers, many villagers are fishermen, who exchange some of their catch for foodstuffs from farmers.

Agricultural production is a family responsibility among the Baluba. Each family typically has both savannah and forest lands under cultivation. The savannah field is intercropped with manioc, corn, and peanuts or beans. All but the manioc is harvested at the end of the rainy season; the manioc is left to mature and is harvested piecemeal in the second and third years of production. Depending upon the soils, the field may be replanted at the end of the cycle, but it is more common to open up a new or fallow field each year. By contrast, the forest field is invariably planted to corn, even though there is variation in cropping pattern throughout the project zone. In Kabongo, farmers plant corn, sometimes in association with other annual crops, for each of three or four successive years, that is, until production declines because of lowered soil fertility or unmanageable weed infestation. In Malemba Nkulu, farmers intercrop forest corn with manioc, so that corn is produced only in alternate years. In both areas, farmers open up a forest field of somewhat less than one hectare, using customary slash-and-burn techniques. A farmer usually cultivates under two hectares in any year: 0.8 hectares of corn yielding 1.5 t/ha in the forest or 0.7 t/ha on savannah lands and 0.3 hectares of manioc (in two plots) yielding about 9 t/ha of fresh tubers.

Although land quality varies, there is no serious demographic pressure on agricultural land, except for areas immediately surrounding large towns. By customary practice, the village domain is demarcated by natural features on the landscape, and is controlled by the local customary chief. Within that domain, each family has its own fields, which are known and inherited from one generation to the next. (Women inherit fields from their fathers only under exceptional circumstances.) If a family -- or a stranger to the village -- requires additional land, he applies to the village chief, who will allocate an unclaimed area. Alternatively, outsiders may petition zonal authorities for a block of land. There is at present sufficient land that such requests are rarely denied, and land tenure is comparatively equitable.

Despite its agricultural base, nearly a quarter of the population of central Shaba lives in large quasi-urban centers along the rail line or the river. There are seven centers; four (Kabalo, Malemba-Nkulu, Kikondja, and Bukama) have a population of approximately 20,000 each, while three (Kitenge, Kabondo Dianda, and Mangi Ngom) have a population of approximately 10,000 each. Kitenge, Kabalo, and Kabondo Dianda are on the rail line; the other centers are along the river. The townspeople work in government services (15%), marketing (30%), and agriculture or fishing.

While commerce is centered in town, the organization of trade in central Shaba very much depends upon the transport system. Commercial activity is most intense along the rail line, where villages boast both a local marketplace and a number of petty traders, who have their own small shops. These traders work either independently or in association with larger traders who open local establishments during the official agricultural marketing season only. Away from the rail line, commerce is sparse and seasonal. In the northern part of the project zone, where there are no periodic markets, producers must await the arrival of traders from Kabongo or Kamina and, later, Kasai. Commerce in these areas begins with the opening of the corn buying season in May and effectively ends with the start of the rainy season four months later. The Malemba Nkulu area, which is even more disadvantaged by its eastern location away from the demand areas, is dominated by two large merchants, each of whom has a network of interior stores for wholesale bulking and retail sale. Producers in these areas have no influence over the price offered them by traders. Worse, growers in the more remote parts of all these areas must themselves contact buyers to make arrangements for the purchase and transport of their produce. In these cases the trader not only sets the farmgate price, he also charges a fee for evacuating the production. In the farthest areas, where traders refuse to go with their trucks, producers have reduced their cash-crop production because their production must be headloaded out, sack by sack. These topological monopolies clearly discourage producers.

The commercial system in central Shaba exhibits a classic dendritic pattern. Merchants, who perform both the wholesale bulk buying of corn and the retail sale of merchandise, strive to maintain primacy in particular areas. In theory, merchants are free to buy corn only once the season officially opens, usually on May 15. In fact, the larger merchants work through networks of petty traders to distribute sacks to farmers before the season begins. Acceptance of the sacks constitutes a contract with that merchant by a farmer, who may at that time receive an advance or merchandise against future delivery. Once the official buying season begins, the merchant will come to the village to pick up those stocks, buy others, and to sell merchandise. The local need for cash is so great that few farmers can withhold their stocks until later in the year when prices are seasonally higher. Nor can farmers significantly affect the wholesale buying price, which until 1985 was established by the minimum buying price set by the government.

In summary, agricultural production is in the hands of small-hold farmers who work in family units with rudimentary equipment and no technical assistance. The farm family strives to assure its food supply for the year and to obtain cash for other needs, and they do so most often by making labor investments. The major commercial crop at present -- and for the future -- is corn, which has replaced cotton in recent years. Corn marketing, however, exhibits a series of imperfections, including topological monopolies in the peripheral areas. In consequence, small-hold farmers, who have taken advantage of changing regional markets, remain greatly disadvantaged by the transport and commercial system.

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2. Organizational structures. Central Shaba is endowed with both traditional and administrative structures, as well as a system of church missions.

The Baluba live in family units organized by patrilineal clanship into villages. The larger villages typically have six to eight clans, with the more numerous clans each occupying its own section in the village and the smaller clans either concentrated in one or two sections or dispersed throughout the village. (Farm fields display a similar spatial patterning.) The head of the founding clan in each village is the local chef de terre or chef coutumier. These local hereditary chiefs used to have much greater authority than they enjoy today. Even so, the hereditary chiefs, especially in the northern half of the project zone, command great respect; they still resolve disputes between people, and they have the authority to convoke people for general assemblies. Finally, the traditional system of local chiefs culminates in a grand chef. Each of the seven project-area grand chefs presides over an area nearly coterminous with either a collectivity or zone, and he performs both traditional and administrative duties.

The government administrative system divides the region (Shaba) into subregions (Haut Lomami), zones (Bukama, Kabongo, Malemba Nkulu), collectivities (urban centers or groupings of rural villages, such as Kabongo, Kayamba, and Nord Baluba in the Kabongo zone), and localities (villages). Thus there is often both an administrative chef de poste and a hereditary chef coutumier in any village or town. The Ministry of Agriculture replicates this administrative system, with an agronome at the zonal and collectivity level, and a moniteur agricole for many localities. In the past, the Ministry enforced the cultivation of industrial crops; today, it serves as an agricultural statistics service, despite a lack of skilled personnel and facilities. The Ministry provides few technical services to small-hold farmers, although it does collect a small agricultural tax from each cultivator. The religious missions arguably represent the most effective and active development institution in the region. Though there is a plethora of small sects, three denominations claim the allegiance of most people in central Shaba. The Catholic church has missions throughout the area and holds a majority of believers in all but Kayamba. The Methodists are strongest in Kabongo (30% of the population), and the Pentacostal Community of Zaire (CPZ) in Kayamba (70% of the population). Although the missions emphasize parochial work, each has also undertaken to some degree agricultural development activities. The Catholics work through their network of village catechists; the Methodists and CPZ through their networks of local pastors. In other words, the several denominations already have in place a system of local-level religious workers, who are charged with pastoral duties but who also undertake agricultural activities.

In view of the experience of small-hold producers in the region, the project proposes to work through the traditional leadership and the religious networks in order to reach the small farmer. This approach promises wide areal coverage without creating an extensive project-supported staff. At the same time, project management must be sensitive to denominational antagonisms that could delay project implementation slightly in some villages.

3. Agricultural production and the allocation of time. Preparations for the agricultural season begin in the dry season (June and July) with the cleaning of underbrush and the felling of trees in forest fields. Planting occurs with the onset of the rains in September or October. Weeding may be done once during the growing season, but there are no fertilizations or other treatments. Harvesting begins in the new calendar year, with beans and peanuts. Corn, which matures at about the same time, is not harvested until several months later, April and May, once the ears have dried in the field. The crops are headloaded into the family granary at harvest, whereupon the cycle begins anew. There is relatively little labor migration out of the area in the slack agricultural season.

The gender division of labor in central Shaba is more equitable than in other parts of Zaire, where women do most of the agricultural work. In central Shaba, men clear and burn the fields; men, often with the help of their wives or older children, then plant and weed the fields. Harvesting is also often a joint task. Only transport of the crop from the fields to the family granary is exclusively a woman's job. At home, the men shell the corn, whereupon the women reserve a year's stocks for the family larder. The men then sell the remaining production.

In a sense, women's work is never done. Every day or two a woman must bring in a supply of manioc for her family. In addition, once the corn has dried in the field, she must headload that production to the family compound. Because the manioc fields are usually several kilometers from the village in order to avoid the ravages of domesticated animals, and the corn fields are even farther away, depending upon the distance to the forest, bringing home the harvest represents a major task for women, who also collect firewood and haul water. Inasmuch as the work load of both men and women will increase with the gains in production and the reduction of field losses expected under the project, the comparative workload in the farm family will require close monitoring to determine whether, and if so, when, a field-to-village trails, push carts, or other such program might be warranted to address this problem.

4. Motivation to participate. Experience with agricultural development in neighboring northern Shaba indicates that even the most distant farmers spontaneously increase production (by extending cultivated areas) when roads are improved so that merchants can enter readily. Further, farmers do buy improved seed and follow recommended cultural practices once it is demonstrated that these significantly improve yields. To be sure, farmers may be unconvinced at first, but they will in time accept results demonstrated by people they know. And, finally, farmers in some villages in the PNS area have now formed pre-cooperative groups in order to build appropriately-scaled silos for the storage of grain.

Farmers in central Shaba voice many of the concerns that were current in the north before the beginning of PNS. They are most acutely aware of the marketing consequences of a deteriorated road system. Indeed, farmers have already attempted certain actions to alleviate these difficulties. In some villages of Malemba Nkulu, farmers have petitioned administrative officials to

ban the purchase of corn below the minimum price. Though ineffective, the petitions represent an attempt by farmers to counteract monopolistic pricing. In Kabongo, villagers have joined together to form cooperatives. The majority of these (18 of 20) are production cooperatives: the cooperative petitions for, and receives, a large plot that is farmed in common, with the proceeds used to buy consumer goods in bulk for the members. (The cooperative field is in addition to the members' own individual holdings.) The other two cooperatives have evolved into marketing coops by swapping one year's communal production with a merchant for a truck. These villages now transport their own production to Kamina and Mbuji-Mayi, where they retail the produce in the urban markets. Thus, instead of getting Z500 for a 50-kilo sack of peanuts from a merchant visiting the village, the villagers recoup Z3,000 (minus their transport costs). Furthermore, they are able to buy consumer goods in bulk for resale to the cooperative members at significantly lower prices. In brief, farmers in parts of the region are already taking action to improve their marketing position.

Second, farmers pride themselves on the quantity of their production: a good farmer is one who produces lots, even though in rare instances this may involve hired labor. Farmers already want to increase production, and they seek out relevant information from family and friends. For farm families, who are poor and whose family expenses are very limited, corn is the major cash crop and the hope for greater income. A family with one hectare of corn in forest lands might bag 15 100-kilo sacks, which at the 1985 buying price of Z400 per hundredweight would return Z6,000 (about \$100 US). From this the farmer must meet his basic expenses for medicines, school supplies, household needs (salt, soap, sugar), and clothing over the course of the coming year. (Systematic village-level studies document that the heads of household control family expenses and that adult women with children head less than five percent of all households in the project area. Indeed, over half of all married women are unaware of the extent of the family's annual income.) If the head of household makes a large purchase, it is apt to be a bicycle or a radio. These are, however, expensive items -- a used bicycle costs the equivalent of 10-14 sacks of corn and a radio can cost the equivalent of 40 sacks -- so that while the ownership of these consumer goods is increasing, the number of people who own them is still quite limited. In villages along the most trafficked routes, some 30 percent of all families own bicycles and 40 percent own radios; in more isolated villages, less than half that number own these items. Greater production will enable heads of households to better meet the needs of their family.

The project offers farmers several ways of increasing production and income, without greatly increasing cash outlays. As demonstrated by PNS, improved seed and cultural advice can raise yields by over half, doubling farmer incomes from 22,800 to 25,600. Improved cultural practices can further increase yields by a third, raising average family income from 25,600 to 28,000. And, village storage facilities can enable farmers to take advantage

of the doubling of farmgate prices paid by buyers later in the season. Importantly, because farm incomes are so low, the storage component assumes that farmers will sell the same quantity at harvest as they do at present (700 kg) and that only the increment of increased production (1,250 kg) will be stored. Nonetheless, average farmer income under these assumptions could rise from 28,000 to 211,900. In all, the combination of project interventions promises a four-fold increase in farm family income, which is significant.

5. Minimum participant profile. Project participation requires a minimum of resources, skills, and education. The typical farmer in central Shaba has land, labor (average family size: 6), and basic agricultural equipment (machete, hoe). The major requirement is that he be a corn farmer and that he want to increase corn production by buying improved seed at regular intervals. To take advantage of the storage program, farmers must also be willing to cooperate with other villagers in the construction and operation of village silos. Literacy might be helpful, but is not imperative. (More people are literate in KILuba -- 30% -- because of bible classes than in either Swahili -- 20% -- or French.) In short, the project presumes no financial or other obstacle that would debar small farmers from participation.

Limited project resources mean, however, that all farmers cannot be served to the same extent. Over four-fifths of the 50,000 farmers in central Shaba now grow corn. This represents almost the entire rural population of Kabongo and Malemba zones, one-half of the population of Kabalo zone, and one-third of the population of Bukama zone. This population resides in some 400 villages throughout the project area. (There are another 100 villages in the project area that grow no corn.) The routing of agricultural roads through the region connects 75 per cent (that is, 300) of the corn-producing villages to existing bulking centers. Thus over 50 per cent of all villages in central Shaba can benefit directly from both roads and agricultural assistance. Of these, one-third -- 105 villages -- will also receive assistance in storage techniques. Meanwhile the 100 corn-producing villages that lie off the proposed agricultural roads will not be completely bypassed. The agricultural extension system will work through local farmer-agents in at least half these villages. Thus, even peripheral villages can benefit from the introduction of improved corn seed and the provision of technical advice. Even those villages that now grow no corn may benefit in the future, once additional crops are added to the project inventory.

6. Communications strategies. This project must reach many, scattered small farmers, if the interventions are to be effected at the local level. To this end, the project proposes working through traditional and local leaders when establishing initial contact in a village. Subsequently, the project agricultural extension system will work in close collaboration with these leaders and other villagers, both men and women. Although the nature, sequencing, and frequency of information can be detailed only with project implementation, the PNS experience shows that close personal contact between farmers and project staff goes far in bridging the gap between project expectations and actual performance. Nonetheless, given the large area to be serviced, the project might consider the use of mass media (such as radio) for the diffusion of its messages.

C. Spread Effects

The central Shaba project is premised on two levels of diffusion. First, the project will focus in the beginning on one area, Kabongo, and extend its activities to other areas in subsequent years. In this way, project management can refine appropriate intervention strategies. Second, within an area, the project will work in full cooperation with local leaders and other opinion makers. In these ways, the project will diffuse its interventions among the population in the most efficacious manner possible.

1. Leadership and authority. As already mentioned, the Baluba are organized into patrilineal clans that culminate in a territorial chief. Thus, the project will enlist the support of the grand chef to convene a meeting of the local chiefs. Once the local chiefs are informed of the project's aims and processes, project staff will hold an informative village meeting, under the aegis of each local chief, to explain the project and to introduce project staff and the local farmer-agent. It is hoped that in this way the farmer-agents, who have been nominated by local or religious authorities, will gain wider credibility. Further, by working through farmer-agents who are respected men and women in their villages, the project aims to speed the acceptance of recommended practices in each project area.

2. Patterns of mobility. Patterns of rural mobility differ in the north and the south. In the south, where there are weekly markets, villagers go to market several times a month. In the north, where there are no markets, people travel much less frequently to commercial centers. In both areas, however, people have social ties to surrounding villages. Because Baluba marriage is invariably clan, and often village, exogamous, villagers typically have relatives by marriage within a 40-kilometer radius. In the case of PNS, not only information but also improved seed and cultural practices were often diffused through these circuits.

Project personnel will visit participating villages with varying frequency. Farmer-agents, who already live in their villages, will leave only for short training sessions or to visit other demonstration plots. Agricultural supervisors will cover a larger area. At the outset, when a fair amount of time is necessary to introduce the project, solicit local support, and get the program underway, each Peace Corps Volunteer working with the project will be involved in extension activities in 20 villages. In subsequent years, as the effective project area is extended, the span of activity of the PCVs will increase: by year five of the project each will be covering 40 villages. The geographic scope of the nationals who will be employed temporarily as extension agents will similarly increase, from four villages per agent in year two to eight villages per agent in year five. All these staff must be fluent in the languages spoken locally.

3. Project innovations to be diffused. The project proposes a number of distinct agricultural innovations. The basic intervention is the introduction of improved corn seed. Allied with this is a series of cultural practices that further enhance production: planting on time in rows, with proper

spacing, and timely weeding. Third, the project will introduce a series of techniques for harvest, cleaning, drying and storage. Finally, during the later years of the project, improved material and cultural practices for other crops may be introduced.

4. The learning process. The PNS experience provides relevant guidelines on the feasibility of project interventions and the rate of adoption of particular recommendations because all the village-level activities in this project have already been implemented successfully in northern Shaba. Nonetheless, some interventions are adopted more readily than others. In northern Shaba, almost all farmers now have improved seed, although the periodicity of seed renewal is not always optimal. In fact, 90 percent of the corn fields in northern Shaba are now -- after ten years of project activity, but after only three years of improved seed production -- planted with improved seed. Similarly, some cultural practices have diffused more rapidly than others. In particular, two-thirds of the farmers in that area now plant in rows with the recommended densities and do not burn their fields in order to harvest. Fewer farmers, however, follow other recommended practices, such as for thinning and weeding, which require more labor. Importantly, the adoption rate for project recommendations falls off with distance from the project center: more farmers buy and use improved seed and follow recommended practices near the project seed farm than in more outlying areas. Finally, the village storage component began only late in the project due to the organizational activities that must be undertaken.

The sequencing and approach of the present project draws heavily upon this experience. The project takes advantage of the fact that some innovations are diffused more quickly than others. The easier innovations, such as the introduction of improved seed, can be diffused through the system of local farmer-agents. Subsequently, improved cultural practices can be demonstrated by these agents, in collaboration with the extension staff. Finally, the organization of farmer groups for storage facilities will be undertaken by the extension staff in collaboration with existing cooperative and other local leaders. Undoubtedly, unforeseen obstacles will arise during project implementation, but the example of PNS provides the assurance that project interventions are appropriately designed.

D. Social Consequences and Benefit Incidence

The project contemplates a series of actions to redress present day obstacles to sustained development in central Shaba. Specifically, the project will rehabilitate about 1000 kilometers of main link roads and another 2000 kilometers of one-lane agricultural feeder roads; it will establish a seed enterprise that can provide 1000 tons of improved seed when at full production; it will foster the construction of village storage facilities; and it will provide technical advice on cultural practices through local agricultural extension services. Each of these activities has different consequences and benefits for the population of central Shaba, and is therefore taken up separately.

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1. Road rehabilitation and maintenance. Roads most directly benefit transporters, whose costs in travel time and repairs will be greatly reduced. At present, the larger merchants spend much of their time during the buying season trying to keep their trucks rolling. They insist on additional transport payments from farmers at the fringe of their limited marketing areas, and they refuse to even enter the farthestmost parts of the project area. Road rehabilitation can increase the range of these traders, by reducing travel times by a half or more and by reducing vehicle down time lost to repairs. The increased range of traders can foster greater competition among them, ultimately breaking the spatial monopolies that exist in some areas of the project zone.

Road rehabilitation will also directly benefit villages along the proposed routes in two important ways. First, more peripheral areas will be brought into the market economy as traders extend their areas of operation, thus encouraging greater production in those areas. Second, the extension of trader circuits throughout the project zone will increase the extent of merchant competition for small-holder stocks of corn, which can increase farmgate prices. At the same time, however, a quarter of the villages in the project zone are off these roads. Most of these villages lie in distant areas of poor potential for commercial production. Given the propensity of villagers to relocate for better access, road rehabilitation could spark a limited demographic shift within the project area that might increase the pressure on the more productive forest lands, with a resulting increase in deforestation. Further, more outsiders might petition zonal authorities for additional blocks of forest land. Together, these trends could stress local land tenure arrangements, causing intra-village or inter-village conflict, as has happened in a few places in northern Shaba.

2. Improved seed from a private business. The proposed seed enterprise promises several advantages. The wider effect of the seed enterprise is to improve the genetic stock of seed corn available to farmers. While farmers may not as yet recognize the effect of improved seed on yields, they do quickly appreciate its importance when improved varieties are planted next to local varieties in demonstration plots. It will be important to monitor who adopts this innovation first and at what cost, so that later extension activities can be refined.

Furthermore, if the seed enterprise sets up a seed production farm in the project area (e.g. Niembo), the farm itself will employ a small number of local people (15-20). In addition, the contract growing operation will guarantee sales for up to 300 farmers within a 20-kilometer radius of the farm. Importantly, the PNS experience indicates that the more efficient farmers will participate in this program, that the farm staff will monitor and control production to ensure good seed, and that contract farmers will distribute or sell some of their production to friends and relatives, as well as to outsiders. Conversely, as many as 40 farmers presently using lands that legally belong to the Niembo farm site will lose their usufruct; a land-use survey in the area will be necessary to determine the actual number of farmers affected.

Distribution of seed to farmers will likely involve several channels, so that problems of differential access to seed should be minimized. The seed enterprise itself can sell seed to farmers and other interested parties. The proposed agricultural extension system could, especially in the beginning, undertake part of the task of demonstrating the improved varieties. In addition, merchants and religious missions could buy stocks for distribution to their clients and parishioners, and others. While there may be inequalities in the distribution of seed stocks in the first years of the project, there should be adequate means to supply all farmers who desire the improved seed. To the extent this proves not to be the case, the proposed monitoring system for project feedback will identify blockages, so that project implementors can take appropriate actions on a timely basis.

3. Agricultural extension. This project proposes working directly through a system of local farmer-agents. As has been demonstrated in the PNS project, demonstration plots that are properly tended are a most effective tool for assisting farmers. Inasmuch as they will conduct these plots under the supervision of the extension staff, local farmer-agents will benefit immediately. The extension system will eventually reach villages that lie off the proposed agricultural roads, although, because these villages are more distant and scattered, assistance to them will be provided only once closer-in villages have been served.

The proposed extension system poses two interpersonal considerations. First, some villagers may be reluctant at first to participate in the program because of denominational differences. (Conversely, also, some denominations may not wish to work as closely with individuals of other faiths.) Organizing village participation through the traditional authorities should help minimize such objections. Manifest reluctance may still be met by naming several agents of different denominations and clans. (It is also often the case that farmers do not allow such rivalries to interfere long with agricultural production.) Second, project staff at all levels must be sensitive to farmers' problems, have at least a working knowledge of local languages, and be able to adjust to cultural differences, if they are to work effectively with the farming population.

4. Corn Storage Facilities. Not only are corn yields low, but field and post-harvest losses cost small-hold producers dearly. If farmers were able to store even part of their harvest in order to take advantage of the seasonal price differences, they could increase their cash incomes by at least a third, even at present yields.

The village storage program will require much work by the extensionists to overcome certain existing handicaps. In contrast to the traditional practice of storing the ears in a covered crib, the recommended program entails careful drying and improved cribs or new silos; villagers do not know these techniques as yet. Moreover, Baluba production is strongly individual, so that communal storage may be feasible at present only in certain instances.

It is only in villages where small groups of farmers see it in their economic interest to store grain collectively that the staple dryer and silo system can be introduced. Importantly, the system is within the technical and financial reach of small farmers. Nevertheless, careful instruction and close follow-up will be necessary, if farmers are to be expected to carry out the unfamiliar operations successfully. The organizational considerations, in contrast to the technical ones, are critical: silo operation requires strong local management so that participants receive their proportional rewards. The village silo program will, therefore, be initiated on a pilot basis in villages that already possess a functioning cooperative in order to reduce the organizational difficulties usually encountered with such undertakings at the outset.

Improvements in railhead storage promise to revolutionize the entire corn marketing system. Railhead silos are large structures that probably can be operated only by the millers or the largest merchants. Were the millers to enter the wholesale corn trade directly, a series of fundamental changes might ensue. First, many smaller independent traders would either have to work for silo operators or go out of business. Second, the millers, who can already exert strong influence on prices, could introduce price differentials according to quality, a key innovation in the present wholesale buying system. As it is, traders buy by volume, often without inspection of the corn. Farmers consequently find that they can sell their entire production, regardless of quality, although admittedly sale prices may be low. Reduction in the marketing chain and introduction of price differentials could lead to higher effective farmgate prices, especially for those producers who properly handled their harvest.

Finally, the elimination of small corn buyers from the wholesale trade could be paralleled by an expansion in retail trade. At present, the few weekly marketplaces in the southern part of the project area proffer mostly foodstuffs. If farmer incomes were to increase -- in part because of higher prices, in part because of a longer selling period made possible through improved storage facilities -- effective demand for consumer goods in the countryside would increase. Greater demand, in the context of an improved transport network, typically gives rise within a few years to a system of rural periodic markets staffed by small traders who reside in the regional centers. Thus, rationalization of the corn buying trade need not increase unemployment in the regional centers. This point requires close monitoring (number of traders, size and type of investment, geographic scope, barriers to entry, collusion within and between levels).

5. Socio-economic monitoring and evaluation. Whereas the component activities of this project -- roads, improved seed, better storage, and agricultural extension -- all are designed to accord with the present-day realities of central Shaba, it must be recognized that this coordinated program can create important changes that may or may not redound to the benefit of the region's many small farmers. The questions that may arise are

many: whether greater corn production without technological change will cause a shift out of subsistence crops and dangerously expose the small farmer; whether increased commercial production will change the present gender division of labor (possibly relegating women to subsistence crops only or increasing their work load); whether improvements in the transport and storage systems will suppress the lowest levels of trader, many of whom are also farmers. Though the experience in PNS indicates that the worst outcomes are unlikely, it is nonetheless incumbent on the project to monitor project impacts to detect such developments. Moreover, the overall objective of increasing agricultural production and the standard of living of small farmers in central Shaba through the private sector and with minimal government involvement requires innovative and experimental approaches for key project components. The performance, impact, and sustainability of these interventions must be carefully and thoroughly assessed. To enable project management to monitor and evaluate these activities adequately, the project incorporates an innovative monitoring system designed for feeding back pertinent information for project management on a timely basis, thus better ensuring the equitable development of the region.

Annex 15

Administrative Analysis

The implementation of the Central Shaba Agricultural Development Project will involve USAID, the Government of Zaire, private voluntary organizations (both local and international), and private sector firms from both within and without Zaire.

A. USAID

Within USAID, responsibility for the management of the project will be divided between the Capital Projects Office and the Agriculture and Rural Development Office. The Capital Projects Office will oversee the road rehabilitation and maintenance component of the project. A PSC Project Officer and a PSC Engineer will be funded from this component's budget. These will be based in Kinshasa to permit close collaboration with the National Roads Bureau's central administration. Both the Project Officer and the Engineer will make regular trips to Shaba to monitor progress. In addition, the PSC Project Officer already on board in Lubumbashi (who is responsible for the Mission's three refugee projects in Shaba) will provide on-site monitoring as required.

The Agriculture and Rural Development Office also will fund a full-time PSC Project Officer under the project. This individual will be based in Kinshasa for approximately one year after project authorization, to initiate procurement of commodities and services. Once the management contract has been awarded, the ARD Project Officer will move to Lubumbashi for the life of the project.

A management committee will be set up within USAID to oversee project implementation and to ensure coordination between the agricultural and roads components. This committee will meet quarterly (or more often as required) and will be chaired by the Chief of the Agriculture and Rural Development Office.

B. GOZ

GOZ direct involvement in project implementation will be greatest in the road construction and maintenance element. This will be the responsibility of the Shaba regional Roads Bureau (O.R.), which will have the responsibility for supervising road rehabilitation contracts as well as undertaking rehabilitation of certain project roads by force account. Annex 6 addresses the issue of O.R.'s capabilities, indicating its problems and strengths. The proposed inputs of eight expatriate technicians, equipment, and training programs as detailed in the Technical Analysis are designed to extend O.R.'s existing capabilities to meet the expanded responsibilities that will result from this project. The project will pay most of the road rehabilitation costs (including TA and equipment), while O.R. will contribute significantly to the materials and fuel for the rehabilitation work, as well as continue to finance all its operating costs during the life of the project.

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The GOZ also will be directly involved in the Information Office. Staff from several COZ offices will be seconded to this unit for the life of the project. The GOZ will continue to pay their salaries as part of its contribution to the project.

The GOZ will play a significant role in project oversight through participation on an oversight committee. This committee will meet twice a year to review project progress and to examine any problems which may arise during implementation. The committee will be composed of representatives of the Shaba Governor's office, the Ministries of Agriculture and Plan, the Roads Bureau, other agencies as appropriate, and USAID.

C. PVOs and Other Local Organizations

Initially it was anticipated that local PVOs and cooperative-like organizations already in place in the project area would be the base for the extension services required for the project. Closer examination has indicated that only a few now have the capacity to permit them to play such a role, and these are too sparse to undertake this activity effectively on a wide basis. The initial role of these local organizations, therefore, will be to help select village leaders, encourage the adoption of new practices, and distribute simple pamphlets. This is within their present capability and will involve no costs to them. Later, with assistance they receive during the life of the project, more of these local organizations will be able to take a larger role in implementation of the extension and storage activities.

To supplement the efforts of the local PVOs, USAID has requested that the Peace Corps augment the number of its agricultural volunteers (PCVs) to undertake extension work under the technical supervision of the project management team. The skills required are similar to those that PCVs have demonstrated elsewhere. These activities fit within the African Food Systems Initiative that the Peace Corps is now pursuing in Zaire.

D. Private Firms

A basic objective of this project is to induce the private sector to participate in economically viable and sustainable project activities. Road rehabilitation, for example, will be carried out in part by private firms on contract. Such contracts enhance the region's private sector capability in construction work by expanding equipment pools and technical experience and capabilities.

In the case of the seed enterprise, the project will contract with a local private firm to provide improved seed to small farmers in the project area. The firm will establish a distribution system for the improved seed it supplies. The local firm, experienced in working in Zaire, will presumably subcontract for the seed-specific technical and managerial assistance it requires; a waiver is requested to permit the company to obtain such TA from experienced sources in other African countries.

USAID will encourage local businesses (e.g. millers) to build railhead storage facilities by providing access to credit at reasonable terms through USAID-funded programs. The success of this element in encouraging such investment will have a significant impact on the way corn is marketed in Shaba, which will begin to shift from ungraded bulk purchases to purchases based on quality classification. Discussions with local entrepreneurs indicate that if credit and foreign exchange are available these investments will be made.

E. Contract Management Teams

Two major contracts will be let for the implementation of the project. The first will be a contract with the American ORT Federation to provide technical assistance and manage the road component of the project; the second will be with a firm to provide technical assistance and manage the agricultural and information elements.

Some of the technical assistants will be headquartered in Lubumbashi, while others will be stationed up-country. The position description for the Chief of Party of the TA team for the agricultural and information components is provided below. Position descriptions for the other technical assistants appear in the relevant technical analyses.

In addition, considerable short-term TA is budgeted for the life of the project in contracting/procurement and technical areas.

F. Chief of Party: Position Description

The contractor selected to field the technical assistance team to manage the agricultural and information components of the project will provide a Chief of Party to oversee the implementation of these project activities. The Chief of Party should have extensive Third World (preferably including Sub-Saharan African) experience in the management of multifaceted development projects with emphasis on agriculture. The ability to manage a diverse staff (expatriate and national) covering a number of technical activities is an essential requirement. Equally important is the ability to keep in mind the objectives of the project as a whole, so as to guide and as necessary adapt the implementation of individual components to achieve the project goals. Skilled management of project monitoring and on-going evaluation will be an important element of the Chief of Party's assignment.

The incumbent will have an important on-going liaison role with regional and local Zairian officials and the private sector. He will be the major channel for communication with and guidance from USAID. A knowledge of A.I.D. operations, policies, and procedures would be extremely useful in the Chief of Party.

The incumbent should have a graduate degree in economics, agricultural development, or management. While the Chief of Party cannot be expected to have technical skills in all the areas he will supervise, he must possess sufficient knowledge to judge performance and know when to request technical input. The incumbent must be fluent in French (FSI-tested 3+ level - reading and speaking - minimum).

Budget Item	FY 86		FY 87		FY 88		FY 89		FY 90		FY 91		FY 92		FY 93		Sub Total		Total	
	\$	L/C	\$	L/C	\$	L/C	\$	L/C	\$	L/C	\$	L/C	\$	L/C	\$	L/C	\$	L/C	Cost \$	
I. Technical Assistance																				
1. Long Term Personnel																				
-Chief of Party	0	0	0		70	5	150	10	150	10	150	10	150	10	75	5	745	50	795	
-Admin Officer	0	0	30	0	65	10	65	10	65	10	65	10	65	10	33	5	300	63	451	
-ASST Pro. Off.	0	0	80	20	80	20	80	20	80	20	80	20	80	20	40	10	520	130	650	
2. ITI																				
-Contract and Procur.			60		30		15		15		0		0		0		120	0	120	
-Disc TA			6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3. Evaluations																				
-Annual			0		50		100		50		100	0	0		0		300	0	300	
-End of Project									4		0		0		150		150	0	150	
-Audits							30	5									30	5	35	
Subtotal	0	0	170	20	295	35	440	45	366	40	375	40	295	40	290	20	2,253	240	2,501	
II. Local Hire Personnel																				
-Expel Secretary(I)			7		15		15		15		15		15		7		87	0	87	
-Social Secretary				1		1		2		2		2		2		1	0	10	10	
-Dish boy				0		1		1		1		1		1		1	0	6	6	
-Cook keeper				1		2		2		2		2		2		1	0	13	13	
-Cashier				1		2		2		2		2		2		1	0	10	10	
-Purchasing agent				1		2		2		2		2		2		1	0	10	10	
-Admin. Aide				1		2		2		2		2		2		1	0	10	10	
-Radio Operator				1		1		1		1		1		1		1	0	0	0	
-Chauffeur(2)				1		2		2		2		2		2		1	0	13	13	
-Janitor				1		1		1		1		1		1		1	0	7	7	
-Guards(4)				3		3		3		3		3		3		1	0	19	19	
Subtotal	0	0	7	11	15	11	15	16	15	16	15	16	15	16	7	10	87	103	192	
III. Training																				
Subtotal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
IV. Commodities																				
1. Office Equipment				24													0	20	20	
2. Micro-computers (2)			30		10		0										20	0	20	
3. Office Supplies				12		12		12		12		12		12		6	0	78	78	
4. Land Rovers (2)			0		0	36		0	24		0	24		0		0	36	36		
5. Fuel			0	12	0	24	0	24	0	24	0	24	0	24	0	12	0	144	144	
6. Radio			6		10												10	0	10	
Subtotal	0	0	36	44	26	72	0	36	0	36	0	36	0	36	0	10	30	278	300	
V. Operating Budget																				
1. Office Rental				30		30		30		30		30		30		15	0	195	195	
2. Utilities				6		6		6		6		6		6		3	0	39	39	
3. Computer servicing				2		4		4		4		4		4		2	0	24	24	
4. Office Equip Service				1		1		1		1		1		1		1	0	6	6	
5. Vehicle Maintenance			0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6. Passenger Air Charter				10		50		50		50		50		50		25	0	285	285	
7. Int'l Air Fare			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8. Radio maintenance				1		1		1		1		1		1		1	0	7	7	
Subtotal	0	0	0	51	0	100	0	51	0	602	602									
Totals	0	0	187	137	330	223	655	197	375	192	410	192	310	172	305	97	2,372	1,231	3,603	
Cont. & Inflation	0	0	0	7	34	23	72	31	81	41	113	53	105	65	104	34	510	251	772	

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Annex 16

Procurement and Contracting Plan for Commodities and Services

I. Overview

Procurement of goods and services will be from A.I.D. Geographic Code 000 (U.S. only) except where waivers are authorized in accordance with Handbook 11-3 and Handbook 1B, Chapter 18.

The procurement of services will be effected in several ways. For the roads component, procurement will take place under host country contracting by the National Roads Bureau (Office des Routes, O.R.). The project's management contract for the agricultural component will be advertised by USAID and executed with a U.S. contractor following A.I.D. direct contract procedures (Handbook 14), will be awarded under full and open competition, and will establish a management team that will be responsible for overseeing the project's agricultural components.

Various types of contracts and agreements to implement project activities will be executed, including:

- a host-country contract with a private company to rehabilitate the southern part of the link road in the central Shaba project area;
- a contract with a private firm to operate the seed enterprise;
- an assistance agreement with the USAID-financed Applied Agricultural Research and Outreach Project (660-0091, RAV) to provide technical services to both the extension and the seed production activities;
- maintenance contracts with local firms for equipment servicing; and
- personal services contracts for certain expatriate employees.

Procurement of U.S.-source commodities for the project management team and the grain storage and extension components of the project will follow A.I.D. direct contract procedures (F.A.R., AID HB 14). For these procurement actions, the services of an 8(a) PSA firm, Business Promotion Consultants (BPC), will be obtained. Use of BPC, which already has a PSA IQC with the Mission, will contribute to USAID's compliance with the Gray Amendment. Local procurement for all components other than roads (which will fall under O.R. host country contracts) will follow shelf item procurement procedures (Handbook 1B, Chapter 18), which also apply to procurement from nearby code 941 countries (e.g. Zimbabwe).

For other procurement actions, several waivers and/or special authorizations will be required:

- Surface shipment port of entry designation
- single-source proprietary procurement for heavy equipment;
- Code 935 source-origin procurement;
- single source procurement for technical services.
- Code 941 nationality for seed enterprise

Details are contained in Section H of this annex.

REDSO/WCA will continue to provide procurement and contracting guidance and assistance as required to this project.

B. Road Rehabilitation and Maintenance

The road rehabilitation component of the project is designated for host country contracting and procurement. It will be assigned by the Government of Zaire (GOZ) to the National Roads Bureau (Office des Routes, O.R.), which will carry out approximately \$18 million of project procurement.

Procurement by O.R. will be authorized by a Project Implementation Letter (PIL), which will be signed by USAID and by O.R. representing the GOZ. The PIL will include, by reference, the terms and conditions set forth in the Project Agreement; attached to it will be several initial procurement documents, including detailed equipment specifications to be set forth in an Invitation for Bids (IFB), a draft PIO/C for U.S. procurement action under an IQC PSA, and the waivers and procedures for single-source proprietary and local procurements authorized by A.I.D.

A short-term procurement specialist will help O.R. to refine the detailed technical specifications of the heavy equipment and other commodities to be procured for the roads component of the project; this preliminary procurement work will begin even before the project agreement is executed.

1. Host country contracting under HB 11, Ch. 3. O.R. will procure approximately \$10.3 million of road building equipment, heavy duty vehicles, and repair shop equipment. Since O.R. is a non-revenue-producing public sector entity, A.I.D. and the GOZ have agreed that dollar procurement by O.R. will not require counterpart fund generation. In specific cases of in-country purchases, the shelf item procurement rules of Handbook 1B, Chapter 18 will apply.

Under the project, O.R. will contract with a private Zairian company to rehabilitate the southern part of the link road, at a cost of approximately \$6 million. This contract will be advertised by O.R. after specifications have been determined by O.R. and USAID engineers, and will be awarded under full and open competition. The bidding and awarding of that contract will follow procurement regulations of both O.R. and A.I.D.

2. Proprietary procurement of equipment and technical services. Based on O.R.'s standardization plan and the requirement for after-sale service, authorization of single-source proprietary procurement is requested. These will be for Caterpillar bulldozers and loaders (\$1.5 million), Champion graders (\$1.6 million), Ingersoll-Rand compactors (\$370,000), and Mack heavy-duty trucks (\$2 million), for an estimated combined CIF value, including spare parts, of \$5.47 million. Orders will be placed by O.R. directly with these four American manufacturers. O.R. will be the consignee, and dollar payments will be effected under four separate Direct Letters of Commitment to be issued by USAID to the manufacturers.

In addition, authorization of a single-source waiver for the procurement of technical services from the American ORT Federation is requested. O.R. has had long and satisfactory experience in contracting for technical services with American ORT Federation; the President and General Director of O.R. has requested that O.R. be allowed to contract for required technical assistance solely with American ORT.

3. Informal competitive procurement of all-terrain vehicles. Because spare parts and in-country maintenance facilities are not available for U.S.-made light utility vehicles, authorization is requested for a source/origin waiver for 18 all-terrain station wagons. These will probably be either Toyota or Landrover vehicles, since these have adequate spare parts and service facilities in Lubumbashi. The final selection will be made by O.R., with USAID's approval, based on price and evidence of adequate after-sale services. Payment will be made by USAID directly to the local distributor.

4. U.S.-source procurement through a PSA. Approximately \$1.7 million is earmarked for the procurement from the U.S. of some 14 line items, including skid-mounted cisterns, mobile maintenance trailers, truck-mounted mobile workshop, mobile housing units, compressors, pumps, generators, etc. Procurement will be conducted on behalf of O.R. by USAID's IQC PSA, Business Promotion Consultants (BPC). BPC is an 8(a) firm, and this procurement will therefore contribute to USAID's compliance with the Gray Amendment under this project.

Standard procedures are in place at USAID and AID/W for issuing the necessary implementation documents to BPC, i.e., PIO/C, Work Order, L/COMs, etc. USAID will provide the services of an experienced procurement specialist to assist O.R. in developing the equipment specifications, terms, and conditions for this procurement, thereby ensuring that the equipment procured reflects O.R.'s requirements.

C. Seed Enterprise

This component of the project will be implemented through two A.I.D. direct contracts with private firms; host country contracting is not an alternative since the GOZ will not be directly involved in this activity.

Contract 1 - Legal Services. The Mission will contract with a law firm having offices in Zaire to furnish legal counsel and drafting assistance and to assist in negotiation of Contract 2. The law firm will, in consultation with the A.I.D. Regional Legal Advisor, counsel and assist the Mission and draft and supervise execution of the required legal documents.

Contract 2 - Seed Enterprise. The Mission will contract with a Zairian commercial firm to implement the seed component of the project. The contractor will, with the objective of developing a commercially-viable seed business, procure or produce, sell, and distribute high-quality open-pollinated seed to project area farmers. The contractor will obtain, to A.I.D.'s satisfaction, technical assistance from an established seed company having substantial experience in Africa.

The contractor will undertake whatever steps it deems necessary, singly or by joint venture, to establish the business and make it profitable. Although it will be the contractor's responsibility to determine its requirements, it is assumed that it will entail development of (a) a source of supply of appropriate seeds, (b) a marketing and distribution scheme and (c) a management/administrative/logistics regime.

In the Request for Technical Proposals (RFTP), the project will offer inducements to potential contractors, some of which will be fixed and others optional for the contractor. The contract will be awarded to the responsive and responsible offeror who submits the most cost effective proposal, taking into consideration the value of the offeror's investment and the cost to the United States Government (USG) of the inducements chosen.

Fixed inducements include:

- Improved road network in the project area.
- Extension services for village cultivators.
- Improvements in crop storage and milling facilities in villages and at railheads.

Optional inducements include:

- A financial grant or loan to the contractor to help defray initial technical assistance, plant and equipment acquisition, sales promotion, and other startup costs.
- Provision of stocks of foundation seeds for improved seed varieties, together with certain elements of coordination and quality control for the seed enterprise, through an assistance agreement under the Applied Agricultural Research and Outreach Project (RAV 660-0091).
- Guarantee of a certain minimum level of seed purchase during a prescribed period of time. This can be done indirectly through subsidization of marketing costs.
- Facilitation of relations with the Government of Zaire, as required, e.g. negotiation of establishment agreement, obtaining of governmental licenses and approvals, and arranging land acquisition.

A waiver to open eligibility to Code 941 countries is being requested because the seed enterprise as proposed requires extensive experience in the seed business in Africa. and limiting the RFTP to Code 000 and Zaire is unlikely to yield sufficient or acceptable responses. The local firms proposing for this contract presumably will subcontract with experienced seed companies from another African country to provide the technical and managerial assistance needed to begin seed operations. The partner firm will do its own procurement for commodities it might require to fulfill the terms of the contract, making use of USAID's Commodity Import Programs where appropriate.

The estimated value of these contracts, technical assistance, and commodities is \$2.24 million.

Oversight of the seed company contract will rest initially with USAID, and will pass to the project management contractor once that team is on board. Since the contract will require the seed company to provide specified quantities of quality seed and establish a distribution system, contract management will include technical oversight of the distribution network.

D. Extension Services

Extension services will be coordinated by an Extension Specialist provided as part of the project's technical assistance and management contract. Field implementation will involve U.S. Peace Corps Volunteers and local agents identified by project-area organizations and funded initially by the project.

The estimated cost of U.S.-source and local procurement for commodities for this component is \$100,000. BPC, the IQC PSA, will follow U.S.-source procurement rules applicable to A.I.D. direct contracting under the FAR. Local shelf item procurement will be in accordance with Handbook 1B, Chapter 18.

E. Village Grain Storage

The village storage component envisages the construction of basic drying and storage units in some 68 selected villages. Each participating village will provide the necessary land and labor, and the project will make a grant of the necessary construction materials (cement, gravel, poles, corrugated roofing, etc.) and building tools. These materials will be procured locally by the project management team under the shelf item rules of HB 1B, Chapter 18. The value of each commodity grant is estimated to be the local currency equivalent of approximately \$2,500. Informal agreements about the construction of each village storage unit will be made between the extension service and the village.

Some village groups or rural missions may choose to purchase equipment for corn storage and processing (such equipment might include shelling and cleaning machinery, hammer mills, weighing machines, etc.). Such procurement could be handled through the Mission's existing Commodity Import Programs.

F. The Project Management Team

The management team for the project will oversee and coordinate all agricultural activities, including the seed enterprise, village grain storage, extension services, and the information office. The team will include a Chief of Party, a Research Specialist, an Extension Specialist, and an Administrative Officer. The contract for this team will be advertised by USAID and executed with a U.S. contractor; it will follow A.I.D. direct contract procedures, and will be awarded under full and open competition.

1. Logistics and equipment. Members of the project management team will be based in Lubumbashi, except for the Extension Specialist, who will be posted in the project area. Office facilities and housing for the management

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team personnel will be required, with all the attendant furniture, equipment, furnishings, and appliances. Recruiting for local-hire secretarial, clerical, office maintenance, motor pool, and security services also will be required.

Although office machines, radio/telex communications equipment, photocopiers, etc., will be designated for procurement from Code 000, proprietary procurement will be required to ensure that the commodities have replacement parts and after-sale service available in Lubumbashi. Most of the low-volume, sensitive, high-cost items are recommended for air freight shipment.

Because of the geographical location of the project area, and the resulting high costs of surface transportation and servicing of household appliances, authorization of a source/origin waiver and negotiated competitive procurement is requested for the purchase of vehicles, furniture, furnishings, and appliances required for the management team.

Detailed technical specifications will be refined by the project management team before they are incorporated into PIO/Cs or other purchase documents. U.S.-source procurement rules to be followed by BPC, the IQC PSA, will be those applicable to A.I.D. direct contracting under the FAR.

Various contractual agreements will be required for negotiating and leasing office space and housing for management personnel. These will include service/maintenance contracts for equipment, as well as liability insurance coverage in accordance with A.I.D. regulations. The insurance is required for all local-hire personnel at the management headquarters, and for field-based local-hire employees (e.g. extension agents) who will be driving or handling project-titled vehicles and equipment. Unless the Peace Corps, PVO, and RAV agreements cover their staff with their own liability insurance, they also will have to come under management contract responsibility.

2. Information Office. The management unit will coordinate project monitoring and evaluation for the life of the project. It will also provide in-service and third-country short-term training to the GOZ staff seconded to the Information Office. The management unit will negotiate and execute contractual agreements as required for the training of GOZ trainees. In addition, for special studies to be undertaken by the Information Office, short-term contracts will be executed with local research organizations (e.g. the University of Lubumbashi) and individuals.

3. Administrative assistance. In view of the many logistical responsibilities required for the management team personnel, offices, and housing, both in Lubumbashi and in the project area, an administrative officer is included on the team. This staff member will assure efficient administrative and logistical support. A suggested scope of work for this position follows.

General: The Administrative Officer will serve in the Shaba region of Zaire to support administrative and logistic needs of the project management team for the Central Shaba Agricultural Development Project.

Specific: Under the direct supervision of the Chief of Party, the administrative officer's duties will include, but not be limited to:

- hiring and management of local hire personnel;
- providing for administrative, logistics, and communications assistance and support to project visitors;
- preparing responses to messages and other correspondence, as directed;
- developing a recommendation for office staffing, and based on the approved staffing pattern, contracting for the required services;
- directing and supervising the staff;
- procuring and maintaining office facilities, furnishings and equipment;
- directing the motor pool and air transportation arrangements;
- providing for furnishing and maintenance and support of residential quarters for team personnel and their families;
- procuring local office and housing supplies, maintaining warehouse and inventory, accounting for stock and equipment, and managing office finances;
- directing all general services and related functions for the project management office;
- administering project office service contracts for equipment and vehicles.

Qualifications:

- minimum BA level college degree, with preferred major in Business Administration;
- minimum three years previous experience in field office administration or general support services in Africa;
- substantial degree of coordinating ability to maintain and manage a variety of actions simultaneously;
- proven ability to exercise mature judgment in dealing with local-hire employees, and to take full responsibility for actions taken in maintaining an efficient operation;
- proven effectiveness in adhering to schedules and to established procedures and regulations applicable to a USAID project office, and in directing office operations with a minimum of detailed supervision.
- full professional proficiency in French language (FSI 3/3 level).
- able to obtain required security clearance and to be certified physically fit to live and work in remote areas of Zaire.

Note: Should this individual be required to manage or hold substantial amounts of USG funds, dollars or local currency, bonding of the employee should be considered.

G. Commodity Shipping

1. Transportation. A review was made of past shipping experiences of commodities similar to those required for this project. Special consideration was given to the various shipping routes and facilities available, delivery

time, arrival condition, pilferage, and CIF Lubumbashi costs. Zaire's National Route from its ocean port of Matadi involves numerous transshipments and craneage fees. Shipment begins from Matadi by rail to Kinshasa, is transhipped to continue by river to Ilebo, and transhipped again to rail for the remainder of the trip to Lubumbashi. Each of these movements adds craneage and stevedoring costs, delays shipment, and adds to damage and pilferage. The average time for shipment from Matadi to Lubumbashi is three months.

Based on investigations by the PP design team's Procurement/Contract Specialist (also see March 1986 memorandum by REDSO/WCA RCMO), the quickest, most efficient, and least costly route for surface shipment delivery to Lubumbashi is through South African ports. Since the closing of the railroad to the port of Lobito, Angola (the shortest and once the most important export and import pathway for Lubumbashi), goods to Shaba now come primarily through South Africa. Currently the rail and road links between Shaba and the South African ports provide most of the imports needed by the regional economy.

2. Basis of shipment. It is recommended that high volume commodities be shipped CIF Sakania/Lubumbashi on a through Bill-of-Lading via ports in South Africa. The use of CIF Sakania/Lubumbashi is to meet terms that A.I.D. finance surface shipment to the cooperating country's first port of entry. Although Sakania is about 100 miles from Lubumbashi, the actual receipt and customs clearance of commodities would occur in Lubumbashi. USAID has been assured that commodities destined for this project will not be held up or inspected at Sakania. (USAID has had satisfactory experience with this procedure under the 1984 P.L.480 Title II Emergency Program.) Authorization is requested for indirect surface shipment via ports in South Africa.

3. U.S. flag carriers. Shipment of commodities will be by U.S. flag carrier (Code 000) and cargo preference will have to be met. If U.S. flag carriers are not available, authorization for use of other than U.S. flag will be requested from AID/W. In no case will commodities be shipped on other than Code 935 flag carriers. The project may want to inquire about obtaining a special project freight rate for sea shipments through AID/W.

4. Clearing and forwarding agent, South Africa. Shipments via South Africa will require the services of a freight forwarding agent in South Africa. Special inland rail and road rates should be negotiated to obtain the most advantageous rate, in view of the volume of project commodities being shipped.

5. Marine insurance. Procurement budgets should include the ocean transportation, marine insurance, inland transportation, and inland insurance costs to CIF Sakania/Lubumbashi. Marine insurance will be placed in A.I.D. Geographic Code 000 (U.S. only). Inland insurance from FAS ports in South Africa to FOB Lubumbashi may be placed in code 935 if U.S. insurance cannot cover the inland shipment segment (ref. HB 11-3, N-9).

6. PSA fees. Where an IQC PSA is used, the PSA's fixed fee will be based upon a percentage of the commodity FAS port of embarkation costs. This fee will be negotiated by AID/W.

7. Air freight. For low-volume, high-value commodities, shipment will be via air freight from FAS port of embarkation on a through Airwaybill to CIF Lubumbashi. Air shipment would be by U.S. flag carrier (Code 000) as far as possible, with final onward shipment by Code 935 carriers which serve Zaire. Currently, there are U.S. flag carriers to Brussels, and Air Zaire and Scibe flights direct to Lubumbashi via Kinshasa; this routing should be considered. Types of items to be considered for this category of shipment are computers, telecommunications equipment, sensitive measuring devices, etc.

H. Waivers

A.I.D. Geographic Code 000 will apply for all commodity procurement including local shelf-item procurement and transportation, except where waivers are authorized to meet local conditions and project objectives. A summary of the waivers requested follows.

Waiver 1: - Single source, proprietary procurement for O.R. to negotiate and purchase Mack Trucks for road rehabilitation and maintenance.

(Note: The grain storage component of the project also will require two Mack Trucks. It is anticipated that these two additional vehicles will be obtained from the same supplier with specifications and the award conforming to the O.R. award for Mack Trucks.)

Waiver 2: - Single source, proprietary procurement for O.R. to negotiate and purchase Caterpillar equipment for road rehabilitation and maintenance.

Waiver 3: - Single source, proprietary procurement for O.R. to negotiate and purchase Champion equipment for road rehabilitation and maintenance.

Waiver 4: - Geographic Code 941 and 935 source/origin procurement for all-terrain pickups and station wagons (Landrover and Toyota), 125-cc motorbikes, and bicycles, from local firms with sales and service capabilities in Lubumbashi, Zaire. All such procurement will follow HB 11-3, 2.2.3, using informal competitive procedures.

(Note: A General Blanket Waiver for 125-cc motorbikes was authorized on March 7 1986 by the A.I.D. Administrator (State cable 086441). Para 2(C) of that cable limited the waiver to one year from the authorization date.)

Waiver 5: - Indirect surface shipment routing of commodities via ports in South Africa, instead of via Matadi, Zaire.

Waiver 6: - Single-source procurement of technical services, authorizing O.R. to negotiate and contract solely with the American ORT Federation for the road rehabilitation and training component of the project.

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The following procurement waivers have been approved by the Acting Mission Director and are attached to this annex:

- Single source, proprietary procurement for O.R. to negotiate and purchase Ingersoll-Rand equipment for road rehabilitation and maintenance.
- Geographic Code 941 nationality for seed business subcontract, to provide requisite technical and management expertise to the seed company.

ACTION MEMORANDUM FOR THE ACTING MISSION DIRECTOR

SUBJECT: Justification for Single Source Waiver for Proprietary Procurement of Ingersoll-Rand Compactors for the Central Shaba Agricultural Development Project (660-0105)

FROM: DEO

Waiver Control Number 660-86-023

1. Problem

Your approval is required to allow the Government of Zaire's National Roads Bureau (Office des Routes, (O.R.) to procure Ingersoll-Rand compactors from Ingersoll-Rand World Trade Limited, to be used for the roads rehabilitation work to be carried out by the Central Shaba Agricultural Development Project (660-0105).

- | | | |
|----------------------------------|---|---|
| A. Cooperating Country | : | Zaire |
| B. Nature of Funding | : | ESF Grant |
| C. Project | : | Central Shaba Agricultural Development (660-0105) |
| D. Description of Goods/Services | : | <u>Ingersoll-Rand:</u>
4-SP56 vibratory compactors |
| E. Approximate Value | : | \$250,000 FOB |
| F. Source/Origin | : | Code 000 (United States) |

2. Discussion

O.R. has requested (letter attached) that the project standardize on American-made heavy equipment already belonging to O.R./Shaba, which has already purchased Ingersoll-Rand equipment through competitive procedures and owns no other current models of American compactors. USAID supports this request for the following reasons:

- a. O.R. is already overburdened by the many different types of equipment of various origins which it presently maintains;
- b. significant economies in spare parts stocks will result from standardization;

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- c. the efficiency of the equipment purchased will be enhanced because O.R. mechanics and operators in Shaba are familiar with it and standardization will permit development of a specialization program for Ingersoll-Rand compactor mechanics and operators;
- d. the equipment requested is supported for parts and service in Zaire by a competent dealer.
- e. the Mission non-competitive review board has approved this action by signing below.

3. Recommendation

Proprietary procurement of Ingersoll-Rand compactors is recommended in order to standardize on compactors already purchased by O.R. for Shaba. Single source procurement from Ingersoll-Rand World Trade Limited is recommended because Ingersoll-Rand's sole representative in Zaire, Chanimat, which has garages in both Lubumbashi and Kinshasa, will guarantee service only for compactors purchased from the parent company.

You have authority under A.I.D. Handbook 1, Supplement B, Chapter 12C4 to waive competition and authorize negotiations with a single source if "(a) special design or operational requirements, such as equipment standardization, require a product or service available from only one source." This is, as explained above, the case here.

Approved: _____

Arthur S. Levin
 Arthur S. Levin
 Acting Mission Director
 and Chairman, Non-Competitive
 Review Board

Disapproved: _____

Date: July 1, 1986

Attached: Letter (reference OR/DG/000/0401/86) from O.R. President-Director General to USAID/Zaire Mission Director.

Mission Non-Competitive Review Board:

 D.Erickson, RLA

 M.Trott, MGT

 F.Awantang, Project Officer not concerned with this procurement

English Translation of the Original French

Kinshasa, 9 June 1986
No. OR/DG/000/0401/86

A.P./k.nd.

Subject: Project 105 Central Shaba

Dear Director:

Based on the discussions we have had with USAID about the project in reference, it appears that USAID is leaning towards a program to rehabilitate a major portion of the North-South axis road in Shaba, with the work to be carried out by force account by the Office des Routes.

Without prejudicing the conclusions of the Project Paper, the project will probably fund a large amount of both equipment and technical assistance.

To guarantee the success of this project, it seems essential to us that we be able to acquire the same type of equipment as that which we already have. This would provide us with a better supply of spare parts and more effective drivers and mechanics, who would already be familiar with the equipment.

As regards the technical assistance, in light of the particularly difficult working conditions, we need to use the services of a consultant who has already successfully carried out similar projects with the Office des Routes.

We therefore request that you authorize us to:

1. Buy equipment of the same brands as that of Project 115, namely:

- MACK	trucks
- CATERPILLAR	bulldozers and loaders
- CHAMPION	graders
- INGERSOLL	compactors
- ONAN	electric generators.

2. Conclude a technical assistance contract with American ORT, which is already working with us, and to our satisfaction, on several projects financed by USAID.

Yours sincerely,

Office des Routes
Direction General

SHAFALI BUSIKU
Administrative Director

J. BAUDOIN
President-Director General

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ACTION MEMORANDUM FOR THE ACTING MISSION DIRECTOR

Subject: Justification for Nationality Waiver for Technical Assistance/Joint Venture Subcontract

From: DEO

Waiver Control No. 660-86-024

1. Problem

Your approval is required to allow the prospective Seed Enterprise contractor to subcontract for technical assistance/joint venture with an experienced seed company which meets privately-owned commercial supplier criteria under AID Geographic Code 941.

- A. Cooperating Country : Zaire
- B. Nature of Funding: : ESF Grant
- C. Nature of Project: : Central Sh
Development (660-0105)
- D. Description of Service: : Technical Assistance including the areas of (a) seed production management, (b) contract seed grower management, and (c) seed packaging/marketing/-distribution; and possible joint venture in seed farm/seed marketing development.
- E. Approximate Value: : \$1,000,000
- F. Nationality: : Code 941

2. Discussion

Under the seed enterprise component of this project, a private firm is expected to subcontract for technical assistance from an established seed company having substantial experience carrying on operations in Africa, and/or to joint venture with such an established seed company. There is little chance of locating a seed company with A.I.D. Geographic Code 000 or Zairian nationality which meets these criteria, while successful private seed businesses do exist in neighboring African countries.

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Under AID Handbook 1, Supplement B, Chapter 5D.10.a.(1)(b), a waiver to authorize a different geographic code may be issued where no suppliers from countries or areas included in the authorized geographic code are able to provide the required services. Under AID Handbook 1, Supplement B Chapter 5Dc, incorporating Chapter 5B4c, you may grant such a waiver if the value does not exceed \$1 million.

3. Recommendation

That you authorize the prospective seed enterprise contractor to subcontract for technical assistance/joint venture with a seed company of A.I.D. Geographic Code 941 nationality.

Approved: _____


Arthur S. Lezka
Acting Mission Director

Disapproved: _____

Date: July 1, 1986

Clearance:

RLA AE

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Annex 17

Implementation Schedules

EXTENSION SERVICES IMPLEMENTATION SCHEDULE

1986 1987 1988 1989 1990 1991 1992 1993
 ASONDJFRANJJASONBJFRANJJASONBJFRANJJASONBJFRANJJASONBJFRANJJASONBJFRANJJAS

ACTIVITY

TECH ASSISTANCE

PP APPROVED 11
 PRO AG SIGNED 1111
 EXTEN SPECIALIST
 2 CROP SPECIALIST'S
 2 AGRI. CROP SPEC

.....

PCU'S

TRAINING
 6 IN PLACE
 TRAINING
 4 IN PLACE
 TRAINING
 5 IN PLACE
 TRAINING
 4 IN PLACE

.....

EXTENSION AGENTS

RECRUIT/TRAIN
 10 IN PLACE
 RECRUIT/TRAIN
 15 IN PLACE
 RECRUIT/TRAIN
 15 IN PLACE
 RECRUIT/TRAIN
 10 IN PLACE

.....

FARM LEADERS

SELECTION
 150 IN PLACE
 200 IN PLACE
 200 IN PLACE
 200 IN PLACE

.....

CONSTRUCTION

RENOV. EXTEN HOUSES
 RENOV. OFFICE SPACE

.....

DEVELOPMENT

DEVELOP EXTENSION
 MATERIALS

.....

TRAINING

TRAINING AT
 CAMPATRA

.....

17-4

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GRAIN STORAGE IMPLEMENTATION SCHEDULE

1986 1987 1988 1989 1990 1991 1992 1993
 ASONDJFNANJJASONDJFNANJJASONDJFNANJJASONDJFNANJJASONDJFNANJJASONDJFNANJJAS

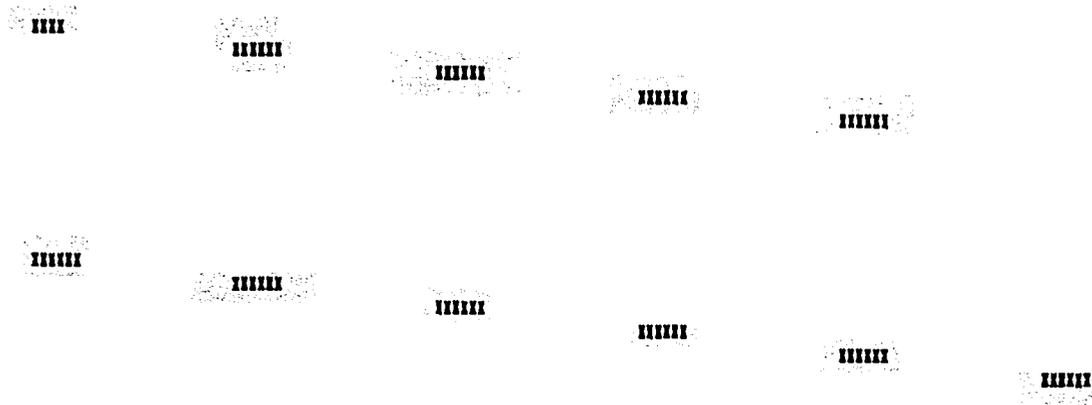
ACTIVITY

TECH ASSISTANCE

PP APPROVED XX
 PRO AG SIGNED XXX
 TRY STORAGE EXPERTS
 1ST VISIT XXX
 2ND
 3RD
 4TH
 5TH
 6TH

CONSTRUCTION

BUILD VILLAGE SILOS
 3 BUILT
 3 BUILT
 3 BUILT
 12 BUILT
 20 BUILT
 27 BUILT



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Central Shaba Project Current Date: 06-23-86

PROJECT: Central Shaba

NODE#	WBS CODE	JOB NAME	DURA
1	0001	1st Planting Season 1	5
2	0002	2nd Planting Season 1	4
3	0003	1st Planting Season 2	5
4	0004	2nd Planting Season 2	4
5	0005	1st Planting Season 3	5
6	0006	2nd Planting Season 3	4
7	0007	1st Planting Season 4	5
8	0008	2nd Planting Season 4	4
9	0009	1st Planting Season 5	5
10	0010	2nd Planting Season 5	4
11	0011	1st Planting Season 6	5
12	0012	2nd Planting Season 6	5
13	0013	1st Planting Season 7	5
14	0014	2nd Planting Season 7	4
15	1000	Project Paper Approved	0
16	2000	Roads	0
17	2050	Pro Ag (Roads) signed	1
18	2205	Contract w/PRE - OR	1
19	2215	Construction Kongolo-Katshi	24
20	2220	Northern Ag Feeder Roads	24
21	2230	Construction of Kamungu Base	7
22	2260	Construction Katshi-Musao	30
23	2262	Central Ag Feeder Roads	24
24	2265	Tech Spec for Musao-Luena Rd	4
25	2268	IFB Musao-Luena Road	3
26	2270	OR contr road w/private firm	6
27	2275	Construction Musao-Luena	27
28	2280	Southern Ag Feeder Roads	24
29	2300	ORT Technical Assistance	0
30	2305	TA Contract w/ORT signed	1
31	2310	1st TA Team in place	24
32	2330	Training Advisor in place	60
33	2333	Regional Tech Dir in place	60
34	2335	Civil Engineer in place	18
35	2340	2nd TA team in place	40
36	2345	3rd TA team in place	24
37	2410	1st procurement order	1
38	2415	Arrival of 1st equip order	9
39	2420	IFB additional equipment	3
40	2425	Arrival of additional equip	16
41	3000	PMU	0
42	3010	Pro Ag (Agriculture) signed	2
43	3015	Recruit/hire PSC proj manger	1
44	3020	PSC Project Manager in place	83
45	3025	Admin Officer in place	82
46	3050	Hire local staff	3
47	3055	Local staff in place	71
48	3100	PIO/T.prep and signed	3
49	3110	RFTP Agriculture	5
50	3120	Contractor selected	2
51	3150	Contractor mobilization	6
52	3200	Chief of Party in place	60
53	4000	Seeds	0
54	4100	Lawyers hired negotiate contract	1

Central Shaba Project - Current Date: 06-23-86

PROJECT: Central Shaba

NODE#	WBS CODE	JOB NAME	DURA
55	4150	Seed proposal prepared	1
56	4175	Proposals solicited	1
57	4180	Proposal accepted/negotiated	1
58	4200	Contract for Seed Enterprise	72
59	4210	Determine demand of first crop	4
60	4305	Contract for foundation seed	5
61	4400	Establish distribution system	16
62	4410	Prepare marketing program	16
63	4415	Market first seed crop	3
64	4420	Market second seed crop	3
65	4425	Market third seed crop	3
66	4430	Market fourth seed crop	3
67	4435	Market fifth seed crop	3
68	4440	Market sixth seed crop	3
69	4610	3rd country training seed tech	24
70	4620	Incountry training seed tech	36
71	4910	2 PSC Seed Spec at NGaba	24
72	5000	Extension	0
73	5050	Rehab extension houses	9
74	5070	Rehab office space	9
75	5100	Expat Exten Special arrives	1
76	5150	Exten Spec. moves proj area	64
77	5160	2 crop specialist in place	67
78	5170	2 Crops specialist in place	32
79	5200	Devel exten materials & prog	6
80	5300	6 PCV's start training	4
81	5310	6 PCV's in place	20
82	5320	4 PCV's start training	4
83	5325	4 PCV's in place	20
84	5330	6 PCV's start training	4
85	5335	6 PCV's in place	20
86	5340	6 PCV's start training	4
87	5345	6 PCV's in place	20
88	5405	Recruit/train 10 exten agents	3
89	5410	10 Extension agents in place	57
90	5415	Recruit/train 15 exten agents	3
91	5420	15 Extension agents in place	45
92	5425	Recruit/train 15 exten agents	3
93	5435	15 Extension agents in place	33
94	5440	Recruit/train 10 exten agents	3
95	5445	10 extension agents in place	21
96	5600	Training at Gandajika	1
97	5610	Training at Ganadajika	1
98	5615	Training at Ganadajika	1
99	5620	Training at Ganadajika	1
100	5625	Training at Ganadajika	1
101	5630	Training at Ganadajika	1
102	5635	Training at Ganadajika	1
103	5640	Training at Ganadajika	1
104	5645	Training at Ganadajika	1
105	5650	Training at Ganadajika	1
106	5655	Training at Ganadajika	1
107	5700	Arrange w/PVOs selection F	12
108	5710	150 farm leaders in place	57

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Central Shaba Project - Current Date: 06-23-86

PROJECT: Central Shaba

NODE#	WBS CODE	JOB NAME	DURA
109	5715	200 farm leaders in place	45
110	5720	200 farm leaders in place	33
111	5725	200 farm leaders in place	21
112	6000	Storage	0
113	6100	TDY Grain Storage expert 1	2
114	6110	TDY Grain Storage expert 2	2
115	6115	TDY Grain Storage expert 3	3
116	6120	TDY Grain Storage expert 4	3
117	6125	TDY Grain Storage expert 5	3
118	6130	TDY Grain storage expert 6	3
119	6210	Build Village Silos (3)	3
120	6215	Build Village Silos (3)	3
121	6220	Build Village Silos (3)	3
122	6225	Build Village Silos (12)	3
123	6230	Build Village Silos (20)	3
124	6235	Build Village Silos (27)	3
125	7000	Monitoring Unit	0
126	7050	Senior Reseach Spec in place	64
127	7100	Secondment of GOZ staff	57
128	7200	Incountry training	1
129	7210	Incountry training	1
130	7215	Incountry training	1
131	7220	Incountry training	1
132	7225	Incountry training	1
133	7230	Incountry training	1
134	7235	Incountry training	1
135	7240	Incountry training	1
136	7245	Incountry training	1
137	7310	TDY computer specialist	2
138	7315	TDY Computer/Soc Sci Spec.	2
139	7320	TDY Ag econ/computer spec	2
140	7325	TDY Ag econ/demographic spec	2
141	7330	TDY Ag econ/computer spec	2
142	7335	TDy Ag econ/computer spec	2
143	8110	First internal evaluation	1
144	8120	Second internal evaluation	1
145	8210	First process evaluation	1
146	8220	Second process evaluation	1
147	8230	Third process evaluation	1
148	8900	End of Project evaluation	2

JH

Annex 18

Appendices to the Project Paper

As part of the project design, several reports were prepared which provide detail on certain technical aspects or which summarize design research. These are available for reference from the USAID Mission or from AFR/PD/CCWAP.

1. Central Shaba Institutional Inventory
2. Road Rehabilitation and Maintenance
3. Report on Grain Storage and Processing in Central Shaba
4. Background on a Seed Enterprise for Central Shaba