

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

1. TRANSACTION CODE

A A = Add
C = Change
D = Delete

Amendment Number

DOCUMENT CODE

3

2. COUNTRY/ENTITY

BURUNDI

4. BUREAU/OFFICE

Africa

06

3. PROJECT NUMBER

695-0112

5. PROJECT TITLE (maximum 40 characters)

Rural Road II

6. PROJECT ASSISTANCE COMPLETION DATE (PACD)

MM DD YY
09 30 85

7. ESTIMATED DATE OF OBLIGATION
(Under 'B' below, enter 1, 2, 3, or 4)

A. Initial FY 83

B. Quarter 3

C. Final FY 83

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	399	442	841	399	442	841
(Grant)	(399)	(442)	(841)	(399)	(442)	(841)
(Loan)	()	()	()	()	()	()
Other U.S.	1.					
	2.					
Host Country		360	360		360	360
Other Donor(s)						
TOTALS	247.5	802	1,448.5	247.5	802	1,448.5
	646.5			646.5		

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) FN	130	061		-		841		841	
(2)									
(3)									
(4)									
TOTALS									

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each)

11. SECONDARY PURPOSE CODE

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code
B. Amount

LAB

13. PROJECT PURPOSE (maximum 480 characters)

(1) to reconstruct the Rumonge-Miyama road using labor intensive construction methods, which through the reconstruction process reinforces GRB institutional capacity to implement labor intensive road construction projects;
(2) to provide all-weather access to markets for agricultural products in the project area, including a connection to markets on Lake Tanganyika and in Bujumbura.

14. SCHEDULED EVALUATIONS

Interim MM YY MM YY Final MM YY
0 8 8 5

15. SOURCE/ORIGIN OF GOODS AND SERVICES

000 941 Local Other (Specify)

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a _____ page PP Amendment.)

17. APPROVED BY

Signature

Title

Date Signed MM DD YY

18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION

MM DD YY

MAP OF PROJECT AREA

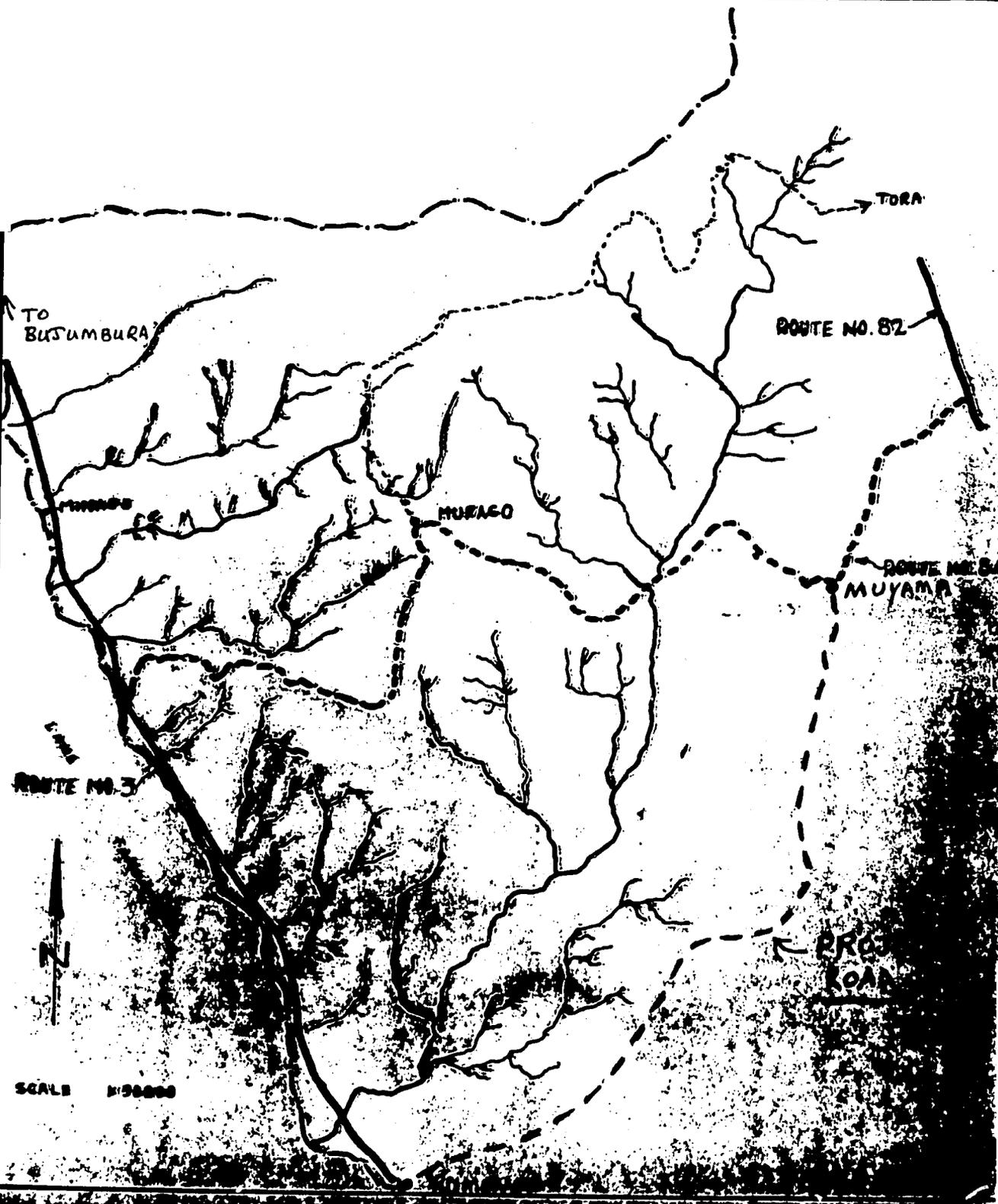


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2. Project Description

The Rumonge-Muyama road is a 30 km direct link between Rumonge, an important town on RN 3 at kilometer 75, and Muyama, Provincial headquarters of Burambi, on RP 84 and from there to RP 82 and RIG 7.

The entire route follows an existing alignment from the plains of Rumonge (depressed road) around the cultivated fields, along a side hill to the crest of hills in an ever-ascending incline to other hills which increase in height practically to Muyama. The route is generally four to five meters wide except at its entrances to Rumonge and Muyama where it decreases to 2-1/2 to 3 meters.

Construction should be relatively simple except for the need to bring sand and stone from Rumonge and the lake area. Main construction will start from Muyama RP 84 and proceed toward Rumonge.

3. Project Rationale and Description

A. Rationale

Internal transport in Burundi depends almost exclusively on highways. Although the 5,500 kms of road (including village maintained tracks) reach most parts of the country, road conditions are usually inadequate for year-round transport, owing mainly to poor construction standards and inadequate maintenance. This situation is aggravated by the mountainous terrain which increases both construction and maintenance costs.

Most provincial roads in good repair can take light trucks such as the ubiquitous Toyota Stout. Communal roads are often rough tracks which even four wheel drive vehicles may not be able to use. There were about 1.3 vehicles per 1,000 people in 1979 indicating a low density of vehicles. Marketing bulk food crops is an expensive proposition when there are few vehicles and very high fuel costs. It should be noted that we have observed a marked increase in internal traffic circulation in the past three years, particularly of the microbus-pickup truck variety.

Partially because of the lack of adequate roads, a very small percentage of food crop production is marketed in Burundi. There are regional surpluses and deficiencies which can become acute in dry years. As food production gradually increases, a higher percentage of food production must be stored and marketed. This requires road transport.

The area of the R.P. 84 and the new project is south of Bujumbura, where the West Rift escarpment climbs from Lake Tanganyika up over the Zaire/Nile Crest. The area, in northwestern Bururi province, is potentially a rich agricultural zone, but it has difficult terrain and has suffered from the lack of road access. As the evaluation shows, the still incomplected R.P. 84 project is already having an economic impact in the project area.

The road traverses three ecological zones, the main one in the project area being the Central Plateau. Crops produced there include bananas, beans, maize, sweet potatoes, cassava and coffee. Rice and oil palms grow below 1,300 meters altitude near Rumonge along with a similar range of food crops, although banana, bean and cassava production is lower than in the Central Plateau area. Fish from Lake Tanganyika is a prize product of the Rumonge area. The markets exhibit a high demand for bananas, beans and cassava products. As a result, the proposed second road project provides connection between regions with complementary production systems.

As stated in the 1983 CDSS, AAO/Burundi's ultimate objective in food production is the eventual implementation of specific food crop production programs to improve both food availability and nutrition for the rural poor, and, where possible, in clearly defined geographic areas. Before food crop programs can be implemented successfully, key components and services must be made available. Included in these are relevant results from applied agricultural research, reliable supplies of seeds and other agricultural inputs, trained extension staff, farm to market roads and improved food storage and marketing capabilities.

The 1983 CDSS, in its strategy section, states that AID may, "if funds are available, and the Route 84 experiment proved successful, decide to implement an additional employment generating road program that provides a key link into an area where the FED extension project is becoming active and which will use seeds produced under the BFC project mentioned above."

Overall, the GRB's transport investments and policies respond to the objectives of the third five-year plan (1978-82) and generally to the needs of the economy by aiming at:

- (a) improving the existing internal road network to support the productive sectors and to facilitate decentralization;
- (b) improving alternative external connections to reduce the country's dependence on the unreliable lake/rail connection to Dar-es-Salaam; and
- (c) building up a road transport industry for domestic and international transport.

Burundi, with its high population density and rural underemployment, has a way out of the dilemma of rapidly increasing recurrent costs by using labor intensive rehabilitation and maintenance of secondary and local roads. The GRB is also concerned about obtaining a reasonable rate of return for building the secondary and local roads so important for rural and agricultural development. In addition, the MTPEM estimates maintenance of a paved mountainous road, over a decade, would cost the government nearly three times as much as an improved dirt road.

The Director General of Highways has also stressed in public statements his belief that capital intensive infrastructure projects had their disadvantages, particularly where serious concern existed about increasing rural purchasing power in an overwhelmingly subsistence economy with its high rates of underemployment. Besides avoiding some of these problems, labor intensive road construction also has relatively low foreign exchange costs when compared to more capital equipment intensive road construction projects.

The GRB has repeatedly stressed its interest in developing a labor intensive road construction program in addition to traditional road improvement activities. Such an expression of interest in institution building is consistent with A.I.D.'s policy focus in the same area. There are two ongoing labor intensive projects in Burundi, a Belgian-financed road in the tea growing area and USAID's Rural Road project (R.P. 84). The GRB regards the Route 84 project as a model approach to labor intensive road construction.

B. Project Objectives

The project goal is to increase incomes and social welfare of the rural poor in the project area of Northwest Bururi province.

The purpose of the project is:

(1) To reconstruct the Rumonge/Muyama road using labor intensive construction methods, which through the reconstruction process reinforces GRB institutional capacity to implement labor intensive road construction projects;

(2) To provide all weather access to markets for agricultural products in the project area, including a connection to markets on Lake Tanganyika and in Bujumbura.

The expected outputs are:

(1) Completed Reconstruction of a 30 Kilometer Long Road to All Weather Standards

The road will provide access to an agricultural belt of some five kilometers to the south and five to ten kilometers to the north where it eventually merges with the zone of influence of R.P. 84. The road runs along the crest of the hills in a direct line to Rumonge without crossing a river. It will give market access at an economical construction cost and will also facilitate access to social, health and educational facilities between Rumonge and Muyama and points east of Muyama along R.P. 84.

(2) Upgrade Institutional Capacity Within the GRB's Directorate-General for Highways of a System for Labor Intensive Rural Road Construction

The project will provide a means to complete the institutionalization within the GRB's Ministry of Public Works of a system for planning, supervising, managing and administering labor intensive road construction projects as an extension of the R.P. 84 project. These skills will be developed within the headquarters and in the field. The management techniques will be further demonstrated and taught to Burundi Government personnel on the job by IBRD technicians through various construction activities; planning techniques will be communicated through involvement of Government personnel on the design team for the Rural Road II project (as they were previously involved in the design of R.P. 84) and on the preparation of technical and socio-economic analyses of additional road projects. By the end of the project, the GRB will have a completed road and the groundwork laid for additional projects which may be funded from a variety of donors (possibly AID) or GRB sources. The mission anticipates that the institution process to which this project is contributing, will be basically complete by the end of project activities. It is possible that high level expatriate assistance may be required as labor intensive road activities proliferate geographically.

(3) A Trained Cadre of Skilled Workers (Foremen, Masons, Drivers) and Administrative Personnel for Work on Other Road Projects and in the Private Sector

The R.P. 84 project began an apprenticeship training program which is designed to strengthen not only the Ministry of Public

Works labor intensive roadbuilding program, but also train people to work as journeyman masons, other construction trades and even as small scale contractors in the private sector.

The UNDP/ILO will continue an expanded special training program for administrative staff, foremen, skilled workers and communal staff.

(4) Studies Completed for Additional Roads

A fixed amount of the project budget has been set aside for road studies, the GRB's priority listing of roads to be studied is shown:

- (A) R.P. 82 (Kumuyange-Rumeza-Nyakikuko), Burundi Province, 54 km.
- (B) R.P. 45 (Gakungwe-Mubone-Karinzi-Gakara-Ruhororo), Bujumbura Province, 57 km.
- (C) Route Communale Buhonga-Karinzi, Bujumbura Province, 28 km.
- (D) Route Communale Mutumba-Muhuta-Rutongo, Bujumbura Province, 34 km.
- (E) Route Rutongo-Tora, Bujumbura and Bururi Province, 40 km
- (F) Route communale Kigwena-Vyanda-Kibimba, Bururi Province, 71 km.

The performance of these studies will greatly improve the capability of the GRB MTPM to perform feasibility studies of similar labor intensive road projects. AID expects the GRB to continue to solicit other donor funding for implementation of such road construction. Nevertheless, AID should be prepared to consider funding additional labor intensive road activities upon completion of the present portfolio.

(5) Increased Income Levels among Families of Construction Workers

There is widespread underemployment among Burundi men and the road project will bring in income. The extra wages often go for higher quality food (fish) and other essential goods. The road will have an average of the equivalent of 400 laborers given 20% absenteeism, (perhaps 800 might be involved at some point).

(6) Increased Agricultural Production and Marketing at Less Cost and Wastage

The project area has a rich potential, but because goods must be headloaded to the main road, relatively little is produced for sale. Even the partial completion of Route 84 has permitted increases in coffee plantings and foodcrop production for sale.

C. Project Elements

The Rural Road II project will be implemented as an integral part of the Ministry of Public Works, Energy and Mines road program. The Roads and Bridges Department will execute the project and provide administrative, supervisory engineering and supply management support. The necessary supervision can be provided by extending the personnel now assigned to the R.P. 84 project as a part of the IBRD/IDA financed road maintenance team.

The U.S. Development Assistance funded contribution includes payment of cash wages to laborers, materials such as cement and steel, miscellaneous handtools, emergency spare parts, POL, technical assistance for new roads study, baseline study, evaluation costs and contingency/inflation. (See Section 4 below.)

The GRB contribution will include administrative/supervisory personnel, road and culverting materials, dynamite, the use of equipment (trucks, compressor, compactor, vehicles and POL for TA and Barundi counterparts), housing for TA counterparts and contingency/inflation.

The IBRD/IDA will be requested by the GRB to provide two engineering professionals. Under this project, one technician will work on a full time basis, and one half-time (See Section 4 below.) IBRD deliberations on its next highway project are underway, and it has taken into consideration the TA requirement for the project for the full life of project period.

Peace Corps will supply two volunteers; one to serve as a mechanic to keep the trucks and other road building equipment operational, and the other volunteer to work with the road supervisors. (See section 7.E below)

The labor force will be recruited from the local population and trained personnel from the R.P. 84 road project with an average

workforce on paper of 500. The project supervision ratio will be one to ten. Roller, dump trucks, power shovel, compressor and jackhammer will be used for gravel paving, rock excavation and transportation of supplies, road, and culvert materials.

The tempo of project implementation is laid out in the implementation plan. (See Section 5 below). The beneficiaries of this project (further discussed in Section 7.D. below and in the Social Soundness Analysis (Annex E)) include, at various levels of incidence, (a) the entire population of 26,000 living in the road's zone of influence, (b) the workers on the road, (c) the Ministry of Public Works, and (d) the women of the zone of influence. Participation of the beneficiaries is obtained by utilizing local labor for road construction.

At one point in the development of this project, it was intended to include a food supplement for distribution to the road workers. Such a procedure has been used on RP 84. Based on discussions between the AAO, CRS/Burundi, and the GRB, the concept of providing food has been eliminated. The following reasons have played a role in that decision:

- (1) relative ease of road construction by comparison with RP 84 where food was considered to be an incentive to do physically hard labor;
- (2) regularization of the minimum wage at 88 FBu for all work in rural areas (formerly road workers got 50 FBu while other rural workers got 88 FBu);
- (3) establishment of task payment rather than day wages which will permit the motivated worker to earn 20 - 75% above the minimum wage;
- (4) a belief (especially by the GRB) that the zone of influence of the road does not include a shortage of food supplies (rather the opposite) and as such, food provision would serve little incentive;
- (5) overall cost of food to USG;
- (6) Logistical problems which tie one badly needed truck to food deliveries which could be more effectively used on road construction;
- (7) lack of adequate control on food distribution with the result that some food is suspected to have been sold by laborers rather than consumed; and

(8) skewing and stretching of CRS/Burundi program away from MCH and nutritional and short-term (3 month) FFW activities.

Balanced against these considerations is the fact that during the evaluation of R.P. 84 that food provided by FFP was found to be greatly appreciated by the wives and families of the road workers. There was evidence that these beneficiaries believed that their nutritional status had been upgraded. Nevertheless, it is considered that the best way to address improved nutritional status would be to undertake a small nutrition education or MCH feeding program in the area under CRS or other PVO auspices.

4. Cost Estimate and Financing

The total cost of this project is \$1,448,500 broken down as follows:

Breakdown of AID and GRB contribution

A. AID Development Assistance Grant	841,000	70%
B. GRB contribution goods/services	360,000	30%
C. IBRD (non-add)	247,500	
D. PCVs (non-add)		

TOTAL	<u>1,448,500</u>	
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The U.S. costs are further broken down below by category:

A. Local labor	300,000
B. Materials, cement, steel	160,000
C. Handtools/misc.	59,000
D. Emergency spare parts	30,000
E. POL	80,000
F. Roads study	70,000
G. Baseline study	15,000
H. Evaluation	15,000
I. Housing renovation for PCV	10,000
J. Utility vehicle	12,000
Contingency/inflation (15%) (A thru E)	<u>90,000</u>
	841,000

The overall breakdown of the GRB contribution is shown below, followed by a detailed presentation of how those costs were derived.

Breakdown of GRB contribution

A. Personnel, administration, etc.	64,000
B. Materials, including handtools	62,000
C. Equipment	187,000
D. Contingency/inflation (15%)	47,000
TOTAL	<u>360,000</u>

GRB equipment list (includes maintenance but not POL and operators)

1 power shovel	180 days at \$120	= 21,600
4 operating trucks plus 1 spare	162,000 km at \$0.60	= 97,200
1 roller	270 days at \$90	= 24,300
1 air compressor with 4 jackhammers	100 days at \$30	= 30,000
1 rock crusher	270 days at \$50	= 13,500
Total		<u>= 186,600</u>

GRB personnel

Central Office overhead (2% of 300,000)	= 6,000
Job supervision and Admin. overhead 10%	= 36,000
Engineering 4%	= 12,000
Training	= 10,000
Total	<u>= 64,000</u>

Finally, the IBRD provision of 1.5 persons of technical assistance for 1.5 years is valued at \$247,500.

A further analysis of project costs as they relate to road construction (the majority of the project) is shown below by task and by source of funding in percentage.

AID	GRB		U.S.\$
80	20	Earthwork in soil	cbm 186,000 @ 1.56 = 290,196
80	20	Earthwork in rock	cbm 8,000 @ 3.0 = 24,800
40	60	Transport of fill by truck	cbm 3,000 @ 10.00 = 30,000
82	18	Ditches in soil	lm 28,000 @ 0.90 = 25,200
30	70	Ditches in rock	lm 1,500 @ 7.80 = 11,700
60	40	Roadway formation	sgm 206,500 @ 0.20 = 41,300
60	40	Roadway pavt 10 cm gravel	cbm 18,500 @ 12.00 = 222,000
80	20	Shoulder drain	cbm 750 @ 0.70 = 525
60	40	Pipe Culverts (120 cm)	ea. 12 @ 2,600 = 31,200
60	40	Pipe Culverts (60/80 cm)	ea. 40 @ 2,300 = 92,000
60	40	Pipe Culverts (45 cm)	ea. 10 @ 1,500 = 15,000
70	30	Box culverts	ea. 5 @ 6,000 = 30,000
75	25	Filter or rock drain	ea. 50 @ 670 = 33,500
60	40	Double Bituminous Surface Treatment	1 km

	@ 15,000 (in a few locations where conditions warrant it)		
30	70 Mobilization	L.S.	= 15,000
	Subtotal		= 50,000
	*Inflation & contingencies 15 percent		= 912,385
	Total		= 136,860
	*National Wage Increase (first in 5 years) occurred in May 1982		1,049,245
	Fuel remains static, materials only increase.		

The project costs for USAID in terms of foreign exchange costs and Burundi franc costs are broken down as follows:

	\$'000 <u>FX</u>	\$'000 equivalent <u>LC</u>
Local labor		300
Materials, cement, steel	160	
Handtools, misc.	59	
Emergency spare parts	30	
POL	80	
Roads study		70
Baseline study		15
Evaluation	15	
Housing renovation		10
Utility vehicle	<u>12</u>	
Subtotal	<u>356</u>	395
% of contingency	<u>43</u>	<u>47</u>
Total	<u>399</u>	<u>442</u>

The anticipated disbursement schedule for the USAID funds is as follows:

	\$000
FY 83	<u>67</u>
FY 84	387
FY 85	<u>385</u>
	841

The relation of inputs to outputs is presented below. Note that two projected outputs are included which have no direct input costs associated with them. In these cases, the output achieved will be on a secondary basis as related to the inputs.

Costing of inputs/outputs (\$000)

Inputs

<u>USAID</u>	1	2	3	4
	<u>Rd. Const.</u>	<u>Inst. Capab</u>	<u>Training</u>	<u>Studies</u>
A. Local labor	300		(300)	
B. Materials, cement, steel	160			
C. Handtools, misc.	59		(59)	
D. Emergency spare parts	30			
E. POL	80			
F. Roads study		(70)		70
G. Baseline study		(15)		15
H. Evaluation		15		(15)
I. Housing renovation		10		
J. Utility vehicle	12			
<u>GRB</u>				
A. Personnel, Admin.	34	14	6	10
B. Materials, incl. handtools	62			
C. Equipment	187			
TOTAL	<u>924</u>	<u>39 (85)</u>	<u>6 (359)</u>	<u>95 (15)</u>
%	86.8%	3.7%	.06%	8.9%

Footnotes: Contingency is unallocated
Bracketed figures are double associations

GRB Budget Analysis and Recurrent Costs

The GRB's actual contribution of \$360,000 over 2 years should be considered in light of the fact that its total national budget in 1983 is only \$227 million. Yet this contribution is considered quite solid, as it represents for the most part the services of staff already employed by the Highway Department and use of equipment and materials already in its possession.

The relative budgetary position of road construction, road maintenance and the totality of public works, with respect to the Burundi national budget can best be illustrated by the following chart, which shows a year by year trend from 1977 to 1983.

National Budgets of Burundi 1977-1983 (\$'000)

	1977	1978	1979	1980	1981	1982	1983
National Budget	89,118	133,130	138,530	174,106	190,949	206,928	227,032
Budget for Public Works	12,093	21,063	16,491	24,202	23,245	27,550	29,596
Budget for Roads & Bridges Division	3,826	3,062	4,427	5,474	5,970	4,085	4,419
Part Reserved for road maintenance	1,275	2,298	3,357	4,503	5,337	3,206	3,567
Percentage of National Budget reserve for road maintenance	1.4%	1.7%	2.4%	2.6%	2.8%	1.5%	1.6%

Despite this improvement in road maintenance operations and budget, the Highway Department estimates that complete maintenance of the total road system would cost somewhat more than the existing maintenance budget. Average maintenance costs for these roads maintained by the National budget (excluding village tracks) are summarized in the following:

	<u>Kms. now in use</u>	<u>Average annual maintenance cost p/km (including all costs)</u>	<u>Total cost p/a \$000</u>
National paved roads	771	2,680	2,066
Interconnecting secondary roads	1,011	1,100	1,112
Provincial earth roads	<u>1,297</u> 3,079	<u>300</u>	<u>389</u> 3,567

The above amount of \$3.57 million is a hypothetical figure extrapolated from GRB data. It is less than the \$5.34 million in 1981 but exceeds the \$3.21 million in 1982. Road maintenance, however, is very labor-intensive and the largest single cost component is workers' salaries. The \$3.57 million figure is based on maintenance contracts wherein all workers are paid at the legal minimum wage or better, depending on the area. The GRB's principal solution to reduce the shortfall is the use of unpaid labor through local community participation. This system of one day or half day per week of donated labor has been used successfully in Burundi and other neighboring countries for road maintenance and the upkeep of other community services.

In the next decade, the GRB plans through new construction to expand its national and provincial road network from the present 3079 km to 4048 km, an increase 31% in ten years. On the other hand, the road maintenance budget, which has increased an average of 19% per year since 1977 would have to increase only about 5% per year from 1983 to 1989 to maintain the same cost/km ratio it now has with the present road network. An annual increase of a relatively modest 10% would produce a maintenance budget of \$6.3 million by the end of the next decade, 75% above the present level. Thus even with the expansion of the road network and anticipated inflation, the road maintenance program and budget can reasonably be expected to greatly exceed present standards in the next decade, given the GRB's determination in this area demonstrated over the last few years. Maintenance costs on this type of road currently run slightly less than \$400 per km per year or \$11,000 annually for the project road as a whole. As a low cost provincial road, this will represent only .003% of the total road maintenance budget in 1983, even though it constitutes .01% of the country's total road network.

5. Implementation Schedule

The proposed construction schedule shown below was prepared by the DPW and the design team engineer. Each category of work (embankment, roadway, ditches, culverts, etc.) is indicated by time frame. It is the hope of the GRB to mobilize early in CY 1984 in conjunction with the final paving of the contiguous portion of Route 84.

Implementation and Procurement Plan

<u>Project Month</u>	<u>Action</u>	<u>Agent</u>
1	Grant Agreement signed	GRB/AAO
3	Conditions precedent met	GRB
3	PIO/C issued for handtools, POL, cement, steel, etc.	AAO
3	Contract for baseline study	GRB
4-5	Baseline study	Contractor
7	GRB provides 2 trucks Rumonge/Muyama	GRB
7	Mobilization, storage sheds, quarters, offices, Muyama	GRB
7	Materials delivered	AAO/GRB
7	GRB provides rock crusher-Rumonge	GRB
7	Begin rough widening Rumonge - direction Muyama	GRB
8	GRB provides compressor/jack hammers	GRB
8	Begin road widening Muyama - direction Rumonge	GRB
8	Begin fill area Rumonge	GRB9
	Begin ditching Muyama - direction Rumonge	GRB
9	Update baseline data	GRB
9	Begin culverts Rumonge - direction Muyama	GRB
10	Ld rough widening for trucks at Muyama	GRB
11	Begin culverts Muyama - direction Rumonge	GRB
11	GRB power shovel, roller and 3 trucks Muyama	GRB
12	Begin paving Muyama - direction Rumonge	GRB
12	Commence roads study	GRB/Contractor
13	Update baseline data	GRB
17	Update baseline data	GRB
18	Complete road study	GRB/Contractor
18	GRB power shovel, roller and 3 trucks moved to Rumonge	GRB
	Update baseline data	GRB
22	Complete road widening - Muyama Rumonge	GRB
23	Complete road ditching - Muyama - Rumonge	GRB
25	Update baseline data	GRB
25	Complete road paving - Muyama - Rumonge	GRB
25	Road Construction complete	GRB
26	Final evaluation	AAO/GRB/REDSO
27	PACD	AAO

Procurement Plan

Construction materials, including cement and steel, handtools, will all be purchased by REDSO/ESA. These items of 941 origin are available in Kenya. POL will be locally procured by OAR/Burundi. Prior to the end of project month two, the REDSO engineers will finalize the specifications for these commodities. Prior to the end of project month three, the Mission will issue a PIO/C naming REDSO/ESA as the authorized agent to undertake the procurement of these items. The RSO, working with the RCO, will issue an RFQ using the specifications provided by the engineers. Awards will be made on CIF basis with delivery to take place prior to the end of project month seven. The supply contracts will be signed by one of the RCOs.

Emergency spare parts will be procured directly by the Mission; as needed. The Mission will issue a PIO/C naming the AAO/Burundi as authorized agent. It is anticipated that no single procurement of spare parts will exceed \$10,000 in value and the Mission may therefore use the small value purchasing procedures contained in the Federal Procurement Regulations and the AID Procurement Regulations. Spare parts will either be ordered through the local dealers or purchased off the shelf, if available.

The one utility vehicle will be purchased by use of a PIO/C naming AAO/Burundi as the authorized agent. The source/origin waiver will be drafted and approved by the Mission in accordance with the guidelines for implementation of Delegation of Authority 140, Revised. The vehicle will be ordered through one of the local dealers.

Procurement related to contracting for the baseline study the evaluation study and the roads feasibility studies is presented in Section 9 and in Annex E-1.

Payment Procedures

The project will follow normal payment procedures wherein A.I.D. deposits appropriate funding into a special account for the GRB for local currency payments (see condition precedent, Section 8). It is anticipated that the GRB will require an advance to mobilize and commence construction activities and such an advance is accepted procedure in AID payment procedures. AID/Burundi will be issuing PIO/Cs for procurement of tools, cement, POL, steel and emergency spare parts.

In unusual circumstances if the AID Representative foresees any emergency requirements for checks, the office will request RFMC to issue prepositioned checks based on a realistic estimate of the contractor's needs for any given period.

6. Monitoring and Inspection Plan

There will be regular involvement of the Highway Department staff during project implementation, principally the IBRD provided Road Construction Engineer, P. Rucquoy, who will be assigned to the project on a half-time basis, and H. Verhulst, also provided by IBRD, who will participate on a full-time basis. A Peace Corps volunteer will also assist in project supervision. Monitoring of project progress will be the responsibility of the USAID office (AAO), with regular site inspections by a REDSO/ESA engineer.

Other elements of the monitoring plan are shown below:

<u>Project Month</u>	<u>Action</u>	<u>Agent</u>
4-5	Baseline study	GRB
7	REDSO engineer every 2 months for 3 days	REDSO
9,13,17,21,25	Baseline updated every 4 months	GRB
9,13,17,21,25	Traffic vehicles, bicycle, pedestrian count every 4 months	GRB
26	Final evaluation	GRB/AAO REDSO

7. Summary of Analyses

In the following section, summaries of the technical, social and economic analyses will be given. As the other analyses (financial, administrative, environmental, and energy) are brief, they are included in this section in their entirety.

7.A. SUMMARY OF TECHNICAL ANALYSIS

Analysis of the Transport Plan in Burundi

Burundi is one of the poorest countries in Africa, and faces the formidable problems of very dense rural population in a mountainous region. One of the elements of the Third National

Plan (1978-1983) is to decentralize economic and social activity away from Bujumbura by promoting the development of regional economic centers. The underlying factors behind these socio-economic objectives are the country's landlocked position and its unbalanced export-import flows. The Government's transport investments and policies responded to the objectives of the five-year plan.

Although the existing network 5,500 km of road reaches most parts of the country, its condition is not totally suited to Burundi's needs and much of it is in unsatisfactory condition owing mainly to poor construction standards and inadequate maintenance. This situation is aggravated by the mountainous terrain which increases both construction and maintenance costs.

The GRB is attempting to follow a program of road improvement, rehabilitation and upgrading for a period of 10 years utilizing increased government revenues from various sources. Burundi is receiving capital and technical assistance in road construction from the World Bank (IDA), the African Development Bank (AFDB), the European Development Fund (FED), UNDP, the Government of Kuwait, and the Peoples Republic of China.

Burundi with its high population density and rural under-employment utilizes labor intensive rehabilitation and maintenance of secondary and local roads. Labor intensive road construction has relatively low foreign exchange costs when compared to more capital equipment intensive road construction projects. The GRB has repeatedly stressed its interest in developing a labor intensive road construction program in addition to traditional road improvement activities. There are two ongoing labor intensive projects in Burundi, a Belgian-financed road in the tea growing area and USAID's Rural Road project (R.P. 84). The GRB regards the Route 84 project as a model approach to labor intensive road construction.

3. Design of Road

Only occasional vehicular traffic uses the road and only in the dry season, but bicycles and pedestrians use the road continuously, and when open to vehicular traffic it would provide through traffic between RIG 7 and Rumonge. It is deemed justified to consider the GRB standard of 5 meter travelway with 1.0 to 1.5 meter shoulders on each side. This standard was modified in RP 84 to give 6 meter travelway on 7 meter road formation plus 1 meter top ditches and constitutes the approved road design.

4. Inputs

The mix of capital and labor intensive inputs described in the technical annex has been developed based on experience in implementing similar construction activities on Route 84. In terms of labor, practically all work will be done by task rather than a set pay per day using small entrepreneurs and casual labor. This should result in work being performed in a faster time period as well as taking care of weather fluctuations. A trial period will be made to determine the possible work output and wage, which will be set to encourage larger amounts of money per laborer per day than fixed daily wage, yet remain within the budget unit price. Payment by task is suggested for this project because of the simplicity of calculating quantities for team tasks for this particular road.

5. On the Job and Other Training

As in RP 84, earthwork and ditching will be done on the job and by infusion of trained RP 84 workers. Apprenticeships will be set up for training of masons and foremen, while drivers and operators will be done at recognized schools.

6. Materials

Cement, POL, reinforcing and structural steel should be obtained through Kenya. Handtools such as picks, shovels, wheelbarrows, etc. should be obtained from Kenya where labor intensive roads have been in operation for a number of years. Time of procurement and transportation costs will thus be minimized. Materials supplied by GRB will be metal and concrete pipes and handtools. Sand and rock will be locally procured.

Spare parts and replacement parts for plant will be procured from separate GRB and USAID funds, which will have the dual effect of speeding up the process.

7. Work Force

It is proposed that a work force of some 500 men be employed to work on the road in teams of 10 or 20 dependant on the required task, with one team leader per team, who will be responsible for the work, workers and their tools. Three GRB technicians will supervise the work, assisted by a PCV, under overall direction of the IBRD provided expatriate engineers.

8. Construction Plan

Handtools and material necessary for the construction and mobilization will be ordered in October 1983. Mobilization buildings will be constructed in December 83/January 84 and in January 84, work teams will be drawn from RP 84 and the new road for earthwork beginning at Muyama. In addition, earthwork teams at Rumonge will open up the road sufficient for trucks to bring sand and cement for culvert construction at Muyama and downwards. The rock crusher would stockpile stone at Rumonge while the power shovel at Muyama would feed trucks for this project and RP 84. All work would progress toward Rumonge while at Rumonge road fill, culverting and earthwork would progress at a more limited rate, and pavement loose laid for traffic consolidation. Eventually in July 1985, all work would be completed, although road sections completed at specific villages would be handed over prior to that time. GRB will set up maintenance forces of 1 man per kilometer with a foreman for every 10 men similar to that set up for RP 84.

611(a) Compliance

The design team has carefully reviewed financial and technical design with GRB Highway Department and IBRD seconded engineers as well as reviewing work presently being carried out on RP 84 and is satisfied that the designs for construction, costs and financial plan satisfy the requirements of Section 611(a) of the FAA.

7.B. FINANCIAL ANALYSIS

As this project is a non-revenue producing project which has no specific participation by individual producers (small farmers or entrepreneurs), the financial analysis will be restricted to a budgeting analysis, institutional analysis and cost analysis. The budgetary analysis has largely been included in the section on cost estimates and financing (see Section 4 above), especially in regard to the discussion on recurrent costs. Regarding the institutional capacity to manage financial matters, it should suffice to indicate that the same financial management system which has been used (and evaluated) for RP 84 will be used for this project. To the extent that food distribution has been eliminated in this project and that all work will be done on a task basis, the management of project finances (especially in the field) will be greatly simplified from RP 84. Payment will be effected upon certification by supervisory personnel that the task has been completed. There should be no question that the GRB will be able to discharge its responsibilities during project implementation.

In terms of cost analysis, it must be pointed out that the elimination of the distribution of food has had the effect of making the project less costly overall than was projected in the PID. Inclusion of \$96,000 worth of food in the PID implied costs in excess of \$300,000 when freight and management costs were included. By moving to task work, the project has been able to both eliminate food and related costs and slightly reduce the actual construction budget. The chart below further analyzes the costs of this project when compared to RP 84. If one excludes expatriate management provided by the IBRD as being essential during this pilot level of activity but non-economic in the long run, the cost per kilometer comparison of the two roads reflects favorably on the proposed Rumonge-Muyama Road which is being done in easier terrain and without provision of food.

Comparison Rumonge-Muyama and RP 84

	RM	RP 84	Original RP 84	Ann. RP 84	
1. Length of road	30				
2. Total cost		58		58	-
A. USAID	841,000	1,346,000	926,000	420,000	
B. GRB	360,000	607,000	567,000	40,000	
C. FFP	0	625,000	625,000	0	
D. IBRD	247,500	0(577,500)	0(495,000)	0(82,500)	
3. Project period (months)	18 mth.	30 mth.	24 mth.	6 mths	
4. Work costs					
A. Earthwork	290,000	470,000	270,000	200,000	
B. Rock	25,000	76,000	36,000	40,000	
C. Ditches	37,000	60,000	60,000	0	
D. Culverts	201,000	303,000	253,000	50,000	
E. DBST	15,000	30,000	30,000	0	
F. Pavement	260,000	293,000	193,000	100,000	
G. Bridges	0	75,000	75,000	0	
H. Contingencies & Inflation	137,000	500,000	500,000	0	
5. Project costs					
A. USAID labor	300,000	813,000	393,000	420,000	
B. USAID materials	249,000	265,000	265,000	0	
C. USAID P.O.L.	80,000	74,000	74,000	0	
D. USAID studies & evaluations	100,000	40,000	40,000	0	
E. GFB personnel over-head, eng. superv.	64,000	190,000	244,000	-54,000	
F. GRB equipment	187,000	275,000	235,000	40,000	
G. GRB materials	62,000	50,000	36,000	14,000	
H. GRB military		45,000	0	45,000	
I. USAID, GRB contingencies	137,000	151,000	151,000	0	
6. A. Cost per kilometer gross (2A thru D)	48,283	54,290	44,850	9,440	
B. Cost per kilometer net (2A and B)	40,033	33,657	25,640	8,017	
C. Cost per kilometer (2A B and C)	40,033	44,448	36,517	8,017	

7.C. ECONOMIC ANALYSIS SUMMARY^{1/}

1. Scope and Methodology

This project intends to reconstruct a rural access road using labor intensive methods and to reinforce the GRB's institutional capacity to implement such projects. The evaluation of Route 84, a similar project, concluded that the methodology of assisting the GRB in reconstructing roads is an effective means of reinforcing the GRB's institutional capacity to undertake labor intensive roads projects. Because the institution building aspects of this project are built upon the experience gained from the Route 84 project, it is reasonable to assume that this project also represents an effective means of increasing the GRB's institutional capacity. Thus, the principal objective of this economic analysis is to determine whether the total return from reconstructing the Rumonge-Muyama Road justifies the commitment of resources.

The approach used to quantify this road's benefits is a mixed approach which incorporates elements of the road user saving approach and the producer surplus approach. To avoid the possibility of double-counting benefits, the producer surplus approach was utilized to estimate the project's benefits in the immediate area affected by the road and the road user savings approach was utilized to measure the benefits beyond the immediate area of the road. The immediate area of the road or the zone of influence has been estimated as a zone which is an average of five kilometers wide on either side of the road.

For the most part, the economic costs of this project are based upon the financial costs presented elsewhere in the PP. However, an economic cost was calculated when the "true" cost to the economy was believed to be significantly different than the financial cost. When such a divergence occurred, a shadow price was calculated to more accurately reflect the value to Burundi society.

In this economic analysis, shadow values were calculated for

^{1/}See Economic Analysis for further details.

charcoal^{2/}, certain labor costs and foreign exchange. A shadow value for charcoal was calculated because it is a scarce commodity whose financial valuation does not accurately reflect its cost to the Burundi society. In particular, the use of charcoal (wood) to produce palm oil in a country which is losing ground cover rapidly is contributing to soil erosion and degradation, and altering of the water tables in the areas affected.

A shadow wage rate was calculated in certain cases because the opportunity cost to Burundi of employing the labor in alternative forms of employment is very low since there is considerable excess labor in the project area, as well as the country as a whole.

By a similar analogy, the value of foreign exchange to the Burundi society is higher than the financial or official exchange rate indicates. Burundi's declining terms of trade and continuing current account deficits on the balance of payments imply that the Burundi Franc is overvalued. In addition, tariffs and other exchange controls, and continued borrowing abroad, will project an over-valuation of the Burundi Franc by at least another 15 percent. In view of these considerations and the fact that the current black market rate is reportedly between 10 to 15 percent above the official Burundi Franc per dollar rate, a shadow price is used to approximate the true value of foreign exchange to Burundi.

2. Benefits

a. Producer surplus

In the project area the three crops which will be affected the most by the road are palm fruit, bananas, and cassava. There were suggestions from several observers that the level of production and marketing of other crops such as coffee and beans could be affected. However, they were excluded, given the low importance of these other crops in terms of marketed production and the lack of unutilized area upon which to expand acreage.

^{2/}Charcoal is used in the traditional production of palm oil. It is included in the analysis because this method of production will be affected by the road

i. Palm Oil. Oil bearing palm trees are the most important cash crop in the project area. Palm oil is obtained from boiling down the palm fruit. This process is costly in terms of time and energy expended. Charcoal is used to supply the intense heat required to render the oil. Presently, the palm fruit is boiled to oil because of the relative returns from one headload trip to Rumonge carrying oil versus carrying fruit. The price of one liter in Rumonge is BuF 49/kg. while the price of fruit is between BuF 4-6/kg. Thus, given a average headload of 20 kgs, the revenue from a headload of oil is BuF 980 versus BuF 120 for fruit.

On a per hectare basis though, the current prices in Rumonge yield BuF 17,640 for oil versus BuF 27,000 for fruit. Clearly, the present transport difficulties are providing an incentive structure for boiling the fruit to oil. When the road is completed, it is firmly expected that traditional production of palm oil will decline dramatically as trader/transporters supplant the headload as the means for ferrying goods to and from market. Furthermore, the use of charcoal for boiling fruit will decline. This is a considerable benefit since it takes about 4.5 MT of charcoal to render one hectare of fruit to oil. With the present technology, the annual charcoal consumed in the project area to produce 300 MT of oil is roughly 3,700 MT.

Of considerable importance is that if the Rumonge-Muyama Road is reconstructed, another project by the Society for Rural Development (SDR) will assist the farmers in the project area in replanting approximately of 290 hectares of oil palm trees. Currently, total revenues from the sale of artisanally derived oil by people in the project area are roughly BuF 14.7 million. The costs are more difficult to estimate, hence the focus is what would be significantly different before and after the road is built: the use of charcoal. An economic cost rather than the financial cost was used to estimate the benefit to Burundi society from reducing charcoal use. The economic or shadow price for charcoal in Burundi is based on the border price of charcoal imported from Kenya, a nearby exporter of charcoal. When the road is constructed, the total revenues from oil palm trees in the project area will increase, because fruit will be sold to the SDR palm oil factory at a higher value per hectare, and the replanted trees will yield more per hectare. Removal of the present trees and replacement with improved stock would result in an increase in fruit production to 7 MT per hectare by the fifth year after planning (and to a maximum of 18 MT per hectare by year 11).

On the cost side, with the road the SDR plant will use diesel fuel to render the oil. Thus, this cost is adjusted from the revenues gained from the palm fruit. Again, since Burundi is diesel fuel deficit, the import parity price was used as the value of the fuel to Burundi society.

To obtain the benefit stream from oil palm production, the net economic revenue (economic revenue less economic costs) of the present situation was deducted from the net economic revenue from the situation after the road has been reconstructed.

ii. Bananas. One the road is completed, the value of bananas in the project area will increase to a level comparable to that in Rumonge. A large part of the increase will probably go to the producer and the trader/transporter will get the rest. Since the price is expected to go up substantially, production is assumed to increase by roughly a conservative 3 percent per year for about 10 years and level off.

The benefit stream was calculated as the difference between the total revenue before and after the road is reconstructed. Changes in the cost of production (e.g., reduced time spent headloading, on the one hand, and increased time working to grow bananas, on the other) were estimated to be minimal and offsetting, and therefore not included in the analysis.

iii. Cassava. In spite of being the most important food crop marketed (in terms of quantity), little information exists about the crop. Thus, for simplicity, it was assumed that there would be little price effect as a result of the road. The major savings would come from the reduced time spent headloading the cassava to market. Based on work done elsewhere, it is assumed that the average household makes at least one trip per week to Rumonge to market cassava or cassava products.

Using a shadow value for labor of BuF 20 per day, the estimated savings from the road are BuF 4.7 million per year. By not including the possible price effects, this benefit stream is fairly conservative.

b. Road User Savings. The savings calculated here would accrue to vehicles using the road to transport coffee, bananas and cassava products from the intermediate and central plateau areas beyond Muyama to Rumonge and those bringing in oil, fish and commercial/industrial products to those local markets. Operating costs are currently BuF 35 per MT/km for the

commonly-used one ton Toyota pickup modified for passengers and overloaded with freight and travelling on dirt roads. On paved roads the cost drops to an estimated BuF 26 per MT/km.

The road is likely to have significant amounts of through traffic as it provides a shorter access route from Rumonge to the interior of the country where there is a demand for the oil and fish produced at the lake.

3. Costs

As noted in Section A, the project's financial costs were adjusted in two cases where they diverged significantly from the estimated economic costs as well.

a. Shadow wage rate. The financial cost to the GRB for labor paid is the minimum wage. However, the excess supply of labor suggests that the economic value is much less. Thus, the same shadow wage rate or cost of labor used in the cassava benefits calculations are used to calculate the economic cost of road maintenance costs.

b. Shadow foreign exchange rate. The road's construction costs are in large part being paid using foreign exchange from AID and the IBRD. Based on the discussion in Section A, a shadow foreign exchange rate equivalent to a 20 percent devaluation of the Burundi Franc against the SDR was utilized.

4. Benefit-Cost Analysis

a. Basic Results

The benefit and cost streams were not adjusted for inflation because it is expected that the benefits and costs will rise at roughly the same rate. Even if they do not rise at the same rate, the effect of not adjusting them would be insignificant since the costs are so low relatively to the benefits after year two that any adjustments would have minimal impact.

Based on the calculated cash flow (economic benefits less economic costs), the internal rate of return (IRR) of the project is 27 percent (see Table 1), a very respectable internal rate of return.

Analyzing the benefit streams it becomes evident that the major source of economic benefits come from palm oil or more specifically, the reduced consumption of charcoal. Given the

number of assumptions involved in the estimation of this benefit stream, as well as several of the others (i.e., shadow price of foreign exchange) a sensitivity analysis of the basic results is justified.

b. Sensitivity Analysis

Three sensitivity analysis were performed.

First, the shadow wage rate or economic value of labor was reduced to zero with respect to cassava benefits and road maintenance costs. This has the effect of valuing the labor saved from headloading and the economic cost of maintaining the road at zero. The impact of this sensitivity test would reduce benefits more than costs.

Second, a shadow foreign exchange rate equivalent to a 30 percent devaluation of the Burundi Franc against the SDR was tested to see the impact of an under evaluation of the economic value of foreign exchange.

Third, the benefits projected to be derived from palm oil production and charcoal savings were reduced arbitrarily by 50 percent.

Table 1 summarizes the results of the sensitivity analysis. In the three cases the IRR's all remained above the opportunity cost for capital to Burundi assumed in this analysis (i.e. 15%).

c. Externalities. The above economic analysis was conservative in several respects as noted above. On the negative side, there are few unexpected costs. As AID impact evaluations and other road evaluations have pointed out, the impact of reconstructing a rural road is different from the introduction of a new road in a previously inaccessible area.

In this case of reconstructing the project road, the risks are, in all probability, minimal while the benefits are substantial, primarily because of gains from altering the technology of palm oil production in the project area.

By the same token, the selection of the project road by the GRB vis-a-vis other road options also appears to be sound.

Table 1: SENSITIVITY ANALYSIS OF THE PROJECT ROAD ECONOMIC ANALYSIS

	Internal Rate of return
Basic Analysis	27.25
1. Shadow value of labor reduced to zero.	25.48
2. Economic cost of Foreign exchange increased by 10% (equal to a 30% devaluation of the BuF per SDR	23.64
3. Benefits from palm oil reduced by 50%	17.92

The IRR of this project is more than respectable by most standards. Hence, the value of comparing this project to other projects become less of a pressing concern. It should not be forgotten that there is a cost involved in undertaking numerous alternative economic analyses.

In sum, the sensitivity analysis suggests that the benefits from the project can alter substantially and still show a respectable economic rate of return. This project appears to be a cost effective way to increase the GRB's institutional capacity to undertake labor intensive road construction.

7.D. SUMMARY OF SOCIAL ANALYSIS

1. Socio-Cultural Context

The road area has a population of at least 26,000 people which is the population of the administrative collines or "townships" which the road traverses. It is likely that an additional 5,000 plus persons live within the zone of influence. In addition, the road starts at Rumonge, a community of 5,000 people which provides both immediate local demand for food products produced in the road area and is an important market used by traders plying the 76 kilometers of excellent paved road between Rumonge and Bujumbura.

At present, the Rumonge/Muyama road is in very bad condition and vehicles very rarely attempt to use it. It has been necessary to headload the crops produced in the area to market and to carry sick individuals to the hospitals on litters.

A limited survey was carried out of households located at Kilometers 4.2, 9.8, 15.3 and 25.3. The survey reveals the general orientation of households all along the road to the Rumonge market, although the Muyama market was also visited by some men who lived at the bottom of the road. The two markets along the road did not presently appear to attract the same degree of interest, probably because Rumonge offers an outlet for selling produce at higher prices and is better supplied with industrial and consumer products.

No health facilities are located at any point along the road, and people desiring medical attention must walk either to the Rumonge hospital or to the Muyama dispensary. The problem of reaching the hospital or the dispensary was an important factor in the local population's desire for improving the road, since people expected it would be possible to obtain a ride to reach the hospital or dispensary when vehicles are using the road.

The household members indicated that they walked down or up the road rather than using paths, and many individuals were seen along the road including a few who were pushing bicycles. The area's topography consists of steep slopes which are difficult to traverse while the road runs along a ridge. Accordingly, people walk to the road and follow it. Traffic counts on the Route 84 project indicate that both pedestrian and vehicle traffic would increase considerably from an improved route. In addition, bicycle traffic should increase considerably.

2. Beneficiaries (Including the Role of Women)

Major beneficiaries will be the farmers of the region through the provision of all weather access to markets resulting in increased farm gate prices and production of some or all agricultural products. Road workers and their families will gain income directly from project activities as soon as construction begins. Households in the project area welcomed the possibility of employment on the project and the project should not have any difficulty in recruiting laborers. People would seek employment in order to obtain wages and also because the people in the area want to have the road improved.

A second level of beneficiaries will be the total population of the project area. People will obtain ready access to markets, schools, and health facilities when the road is completed. Oil palm producers will enjoy a producer surplus through selling palm fruits rather than oil.

It is possible also that producers of bananas and cassava/cassava products may profit from this type of benefit, while coffee producers will benefit from road user savings in marketing their crop. It is unlikely that much additional land will become available through the road improvement activity since the project involved reconstruction rather than the building of a new road.

Reconstruction work on the Rumonge/Muyama road will provide an ideal site to judge the potential of labor intensive construction with a trained management team and for the Ministry of Public Works to refine its operational plans before undertaking the organization of such activities in other parts of Burundi.

In addition, the project includes making the initial technical and socio-economic analyses for a package of road projects. The studies will provide a basis for future GRB or donor financed road construction and will also upgrade the planning and evaluation capacity of the Ministry of Public Works.

The Ministry of Public Works will benefit from the improvement in its working methods. The project should have an enhanced "spread effect" by strengthening its institutional capacity to undertake similar work in other areas of Burundi. The construction methods will also bring a new income flow into the area for a sustained period.

Women will benefit directly from the labor intensive component of the project to the extent their husbands and/or relatives bring home wages earned. A portion of the wages, as shown in the RP 84 evaluation, goes for fish and high quality food. In addition, women are the principal agricultural workers and are responsible for assuring the family's food supply.

Increased speed and ease of access to services such as health care and markets is particularly important to women. Their responsibilities for childcare, farming and meal preparation make it impossible for them to be away from home for any extended period. When these aspects are considered as a whole, we expect the road will make a considerable improvement in the situation of women.

3. Participation

Participation of the local population is built into the project in the form of laborers working on the project. In addition, the workers themselves will organize work teams for earthwork, rock excavation, road formation and culverts, for which the work teams are paid on a piecework basis. Small entrepreneurs also organize groups for masonry requirements. Once sections of the road are accepted by the GRB, the local inhabitants, under the supervision of MOW, will do maintenance work on ditches, slopes, road surface and shoulders, supervised by a local foreman who has received on the job training in the project.

4. Socio-Cultural Feasibility

This project is clearly feasible from the socio-cultural viewpoint. The GRB has tested in the field the methodology, logistics and administration system. The system is in a form which can be used throughout Burundi. Recruitment and employment of local labor should present no problems. The established practice of hiring those who present themselves may result in a bias towards lower income groups. Mobility patterns may change in the project area, as those living further away from Lake Tanganyika will avail themselves of a route which will take them to Bujumbura more quickly. Lake-caught fish and a number of other commodities will become more readily available, and the total quantity of commodities available will change, rather than the kinds in use.

5. Impact

This project will have an impact on various local groups. The locally recruited laborers will receive at least a minimum wage. Additional direct beneficiaries of the project will be several Ministry of Public Works road building personnel who will receive training under the project, also the labor team foremen or sub-contractors who will lead the different labor teams. The families, relatives and friends of the labor crews will benefit directly from the wages paid to the laborers for their work.

Two classes of people will benefit from the completion of the road: (1) users of private, public and commercial vehicles and foot traffic and (2) the farmers living in the area. The farmers will benefit not only from improved access to goods and services but also from the increased value of agricultural production as farm gate prices rise due to a portion of the road user savings being passed onto farmers.

Two categories of quantifiable benefits flow from the project: (a) those accruing as a result of labor intensive construction, and (b) producer surplus and/or road user saving. (See economic analysis.)

Labor intensive construction employing local labor is a project benefit which will result from the increased productivity and income flow generated by the construction activity. The first portion of the benefit derives from the wages paid to road workers and experience on Route 84 indicates that placing the value of this benefit at the level of the salary paid to workers is a conservative estimate.

Workers on the road also use a substantial portion of their earnings to purchase consumption items produced locally (fish, oil, bananas, beans, etc.). This, and the wages paid to farm labor, results in a high multiplier benefit arising from the wages, particularly as the funds to pay the wages are derived from outside the Burundian economy.

Work on the road reduces the availability of labor for agricultural production only slightly given the possibility of flexible working arrangements and the fact that women, rather than men, provide most agricultural labor when necessary. Men working on the road employ other men in the area to help their wives with farm labor.

7.E. ADMINISTRATIVE ANALYSIS

1. Role of GRB - This project is characterized by very active participation by the host government. The implementing agency will be the Highway Department (Direction Generale des Routes) of the Ministry of Public Works (TPEM). Specifically most of the engineering, supervisory and administrative work will be performed by the Bridges and Roads Branch of this office (Ponts et Chaussees). This branch is fortunate to have as a technical advisor a very competent and experienced Belgian construction engineer, Mr. Pierre Rucquoy, provided under IDA financing. He has been in Burundi for 8 years and is expected to remain for another 3 years. The Director-General provided assurances that Mr. Rucquoy would be available to work on the implementation of this project both from the Bujumbura headquarters and at the construction site, on at least a half-time basis (3 days a week), and preferably on a full time basis if RP 84 and the new project should overlap, for the full life of construction, and Hubert Verhulst would assist Mr. Rucquoy for the full life of the project.

2. Work Force Contracting Procedures

Construction labor will be provided through a modified form of force account, not using the regular work force of the Highway Department, but a series of mini-contracts with local labor contractors who will be responsible for all work done by the laborers whom they recruit. Recruiting local laborers should present no problems according to the Highway Department. Publicity can be by word of mouth, the parish pulpit and the local radio station. Workers will be paid at or above the minimum wage of 88 Fbu daily, according to work task. Mini contracts will be for specific and finite tasks or operations within a special time period. Payment will be subject to inspection for compliance by Highway Department staff. This will provide an incentive to the contractor and his men to perform each task properly and on time. Contractor/supervisors will be responsible for training their laborers for keeping track of their time and for paying them. These supervisors will receive training as needed in road construction on the job by the Highway Department construction staff.

The system described above has worked effectively on Route 84. Although absenteeism on that project has been roughly 20-25 percent among unskilled workers, such absenteeism varies daily with home agricultural activities, weather, labor activity location and the need for sizeable work teams. A tight control has been developed in Route 84 on project labor and tools through the team leader.

In addition to GRB project personnel, a part time locally recruited independent bookkeeper/accountant is financed by the U.S. contribution to the Route 84 project. This person prepares monthly reports, financial disbursements, operational efficiencies and checking of labor distribution. This system will be maintained under the proposed project.

3. Peace Corps

With the recent establishment of Peace Corps activities in Burundi, an opportunity has arisen to effect collaboration between AID, Peace Corps and the GRB. The GRB will request, and Peace Corps will recruit, a mechanic to be assigned to the workshop in Muyama and a road surveyor who can assist in the overall collection and monitoring of baseline statistics, also based in Muyama. The agreed upon job descriptions are included in the Technical Annex to the PP. Their housing will be developed by renovation, of an existing structure in Muyama.

Funding for such renovations is shown in Section 4 above. To assure appropriate mobility to perform their tasks, the project will procure a pickup truck and provide essential POL (see section 4).

4. Summary of Administrative Feasibility

In a labor intensive project such as this involving up to 500 workers, close supervision, effective administration and attention to details are especially important. However, the project design team has every confidence in Mr. Rucquoy, Mr. Verhulst, and their colleagues at the Highway Department. The Highway Department has had relevant prior experience with RP 84 and has given details of implementation a great deal of advance thought. On the USAID side, construction progress will be monitored closely by the AAO in Bujumbura and by REDSO/ESA engineering staff every sixty days.

7.F. ENVIRONMENTAL STATUS

The Initial Environmental Examination (IEE) submitted with the PID recommended a Negative Determination. The IEE was approved with the PID (see Annex A), with the following considerations to be monitored.

A review of the design features in the technical analysis reveals that the environmental impacts are expected to be minimal due to the following five design considerations:

- 1) widening will be carried out by hand labor (not mechanical)
- 2) widening on side slopes will be confined to only four locations over limited distances
- 3) the road will follow an existing alignment, except at the approach to Rumonge where the route has right angle bends
- 4) total embankment fill will occur at only two locations between hills
- 5) drainage discharge will occur with no substantial addition of culverts.

This project paper has made use of RP 84 (an earlier USAID road project) as a model for the present road project. However, the environmental effects resulting from this earlier project should be more carefully evaluated so the future AID/Burundi road projects can benefit. Consequently, when the present road project is evaluated at the end of project, the environmental impacts should be reviewed by comparison between RP 84 and the present project.

Regarding the final evaluation of the present project, the above five design considerations should be reviewed, especially as to their effectiveness in minimizing the environmental impacts. Information will be provided from the baseline study on one site where widening has occurred, and both this and the RP 84 review will be the basis for any new project design effort.

7.G. ENERGY ANALYSIS

There are three sources of energy utilized in the Rumonge-Muyama Road project; human energy, POL (both gasoline and diesel) and dynamite. As human energy is excluded under the terms of AID analysis (see HB 3, page 3-0-1), the utilization of \$80,000 worth of POL funded by AID and a few hundred dollars of dynamite funded by GRB will be presented. Despite the high cost and scarcity of POL in Burundi, there is simply no economic alternative to using POL. The labor-intensive techniques to be used have been tested in the field in the implementation of Route 84 and the mix of labor/capital is considered to optimize the efficiency of labor. A complete shift to wheelbarrows instead of trucks, sledgehammer and crowbar instead of jackhammers driven by air compressors, hand drawn rollers instead of a power roller, and manual shoveling of sand instead of power shovel loading of sand into dumptrucks is technically possible, but only at the cost of interminably stretching out the completion of the project, and costing more overall in terms of labor wages. A further consequence of a shift exclusively to labor would be to greatly delay the commencement of the flow of benefits to the population of the area which can be expected from opening the road. This same argument of optimal labor/capital mix is also legitimate in justifying the use of dynamite.

In summary, this project is designed with an awareness of the efficiency, appropriateness and cost implications of using POL and dynamite, and it has been concluded that the human/physical energy mix (labor/capital mix) is appropriate given the availability and cost of human labor, POL and dynamite in the context of road construction of the designated standard to provide maximum economic return.

8. Conditions, Covenants and Negotiating Status

A. Conditions Precedent:

The standard requirement for host government authorized signatures will constitute one condition precedent. A second condition precedent will be establishment by the GRB of a separate bank account for the deposit of all funds originating from the AID grant. This will permit an effective audit trail to be instituted. A final condition precedent affecting only construction funds will be evidence provided by the GRB that the share of mobilization costs originating from the GRB is additive and not included in the operational budget for construction. This condition precedent is considered necessary to assure that the GRB does not simply direct the project to use operating budget for mobilization thus depleting the amount for operations. These conditions precedent will be incorporated in the Project Agreement.

B. Covenants:

The Project Agreement will include the following covenants:

1) Prior to commencement of construction the GRB will furnish a plan to provide qualified management and technical personnel to supervise construction of the road; 2) no later than six months prior to the scheduled completion of the project the GRB will provide a detailed plan for providing the necessary training, equipment and budget to ensure proper maintenance of the project road after its reconstruction; 3) the GRB will take steps to ensure the continuation of the two highway technician positions established under RP84 project throughout the Rural Road II project; 4) except for those spare parts to be procured by USAID on an emergency basis, the GRB will expeditiously provide all spare parts necessary to keep all equipment in operating condition; 5) the GRB also agrees that the housing currently provided to IBRD-financed technicians on RP 84 will continue to be made available to the technicians working on the Rural Roads II project.

C. Negotiating Status:

As a follow on project to Route 84, the GRB is familiar with project requirements for labor intensive road construction. The status of negotiations could be stated as ready for signature of the Grant Agreement and timely commencement of implementation. During the design phase, the PP team met with the GRB and discussed a number of concerns identified in the PID. The results are presented below and are considered to be satisfactory for initiation of project activities.

a. the GRB has been reminded of the standard provisions of the project grant agreement providing for duty free privileges.

b. the GRB verifies that the following will be available, and a covenant in that regard is suggested above:

(1) labor

(2) sufficient plant in good operating condition (1 roller, 4 dump trucks and spare, 1 power shovel, 1 compressor, 4 jackhammers, 1 rock crusher)

(3) sufficient parts for plant will be available on time so as to minimize down time

(4) sufficient mechanics, drivers, operators are in training or already trained for operating the planned project plant/equipment.

c. the GRB has indicated that it will:

(1) budget for training and supervising a maintenance force sufficiently large to keep the road in good condition

(2) deliver, through the Department of Roads and Bridges, the required administration, engineering, supervision and construction services.

d. the GRB concurs with the proposed baseline study and will contract for such a socio-economic study to be updated periodically during the project.

e. REDSO engineering will monitor once every two months during project startup and thereafter.

f. the GRB agrees that the housing currently provided to IBRD financed technicians on RP 84 will remain available for the technicians working on the second project.

g. the GRB agrees that the workshop, storage and office facilities presently in Murago will be transferred to Muyama. Note that a condition precedent is proposed to assure that funds for such a transfer become available.

9. Evaluation Arrangements

As a continued activity in a relatively unstudied rural area and in a highly promising sector with limited USAID Burundi experience, this project demands careful monitoring and evaluation. To meet this demand, the following evaluation arrangements have been planned and provided for in the project budget.

A. Baseline Study (\$15,000)

Just prior to initiation of the project, a local firm or unit of the University will be contracted with by the GRB to carry out a baseline study of the project area with special attention paid to collecting data useful to the eventual evaluation of project impact. The study will collect household-level socio-economic data on farm production, division of labor, local marketing and consumption patterns, use of local services, etc.; the study will also identify a sub-sample of the families of laborers working on road construction to monitor uses of wages provided by the project, along with other household income and expenditures; further, one small section of the road will be selected (preferably at a point where road widening will be carried out) and monitored on an occasional basis for signs of erosion and/or local land degradation. Upon completion of the study, the GRB and AAO, assisted by a REDSO evaluation or project officer, will select specific evaluation targets to be monitored which will form the basis during the evaluation for determining project impact. Monitoring of this sub-sample will continue on a periodic 6 month basis throughout the project.

B. Project Evaluation (\$15,000)

An evaluation is planned for the 3rd quarter of FY 1985. This evaluation will focus on achievement of the two project purposes, i.e. provision of all weather access in the road area and the establishment of a tested prototype system for labor-intensive road construction for application in other parts of Burundi. The evaluation team will include an engineer with labor-intensive road construction experience, a social scientist to focus on socio-economic aspects of the project, and relevant Highway Department personnel. The regular data updating and construction progress reports will constitute a basic unit of analysis for the evaluation team.

The project has budgeted \$15,000 for the evaluation, on the assumption that at least half of the team members may be provided by REDSO from its regular operating budget.

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E.O. 12356: N/A

TAGS:

SUBJECT: BURUNDI, RURAL ROADS II (695-0112)

REF: (A) STATE 42100, (B) BUJUMBURA 0891

1. THE BUREAU ECPR CHAIRED BY DAA LOVE MET ON MARCH 4 AND APPROVED THE PID. THE PP MUST ADDRESS CONCERNS IDENTIFIED IN DETAIL IN REF (A) AND AS AMPLIFIED IN THE GUIDANCE PROVIDED BELOW.

2. THE PROJECT PAPER MUST DETAIL HOW THIS PROJECT FITS WITHIN YOUR PROGRAM STRATEGY. ALTHOUGH THE PROPOSED RURAL ROAD II PROJECT IS WITHIN THE FY 1984 CDSS UPDATE, THE ECPR NOTES AN INCONSISTENCY IN THAT THE CDSS UPDATE INDICATES THAT ADDITIONAL ROAD PROJECTS MAY BE UNDERTAKEN BY AID (P. 7-8) WHILE THE PID STATES THAT FUTURE ROAD CONSTRUCTION RESULTING FROM RR IISTUDIFS WILL BE FUNDED BY OTHER DONORS. WILL THE PROPOSED PROJECT COMPLETE THE INSTITUTIONALIZATION PROCESS AND LEAVE FUNDING FOR OTHER DONORS OR DO YOU CONTEMPLATE AID'S INVOLVEMENT IN A SERIES OF ADDITIONAL ROAD ACTIVITIES? THIS SHOULD BE CLEARLY STATED IN THE PP.

3. THE INSTITUTION BUILDING OBJECTIVE OF THE PROJECT IS NOT CLEARLY STATED. THE COMMITTEE FELT THAT THE PURPOSE OF THE PROJECT SHOULD BE TO DEVELOP A LONG TERM, LOW COST SYSTEM FOR ROAD DEVELOPMENT IN BURUNDI. CAN THAT PURPOSE BE ATTAINED THROUGH THIS PROJECT? WHAT MEASUREMENTS CAN BE USED TO JUDGE WHETHER OR NOT WE HAVE ACHIEVED THAT OBJECTIVE? WITH INSTITUTION BUILDING AS AN OBJECTIVE, WHAT DOES THAT MEAN FOR FUTURE MISSION PROGRAMMING. AGAIN, DOES IT LEAD TO OUR CONTINUED INVOLVEMENT IN OTHER ROAD CONSTRUCTION EFFORTS.

4. THE ECPR REAFFIRMS THE CONCERN IN REF A, PARA C, THAT THE SOLUTION TO THE ROAD MAINTENANCE PROBLEM MUST BE TIED TO THIS PROJECT. HOW WILL ROAD MAINTENANCE BE INSTITUTIONALIZED? YOU SHOULD CONSIDER THE USE OF A CONDITION PRECEDENT TO FUNDING THE COST OVERRUN ON ROUTE E4 AS A WAY TO GET A COMPREHENSIVE ROAD MAINTENANCE PLAN DEVELOPED. YOU SHOULD ALSO START A DIALOGUE WITH VILLAGE ELDERS AS THEY WILL BE CRITICAL TO THE IMPLEMENTATION OF YOUR PROPOSED MAINTENANCE SCHEME. THE METHOD SELECTED MUST BE SOCIALLY ACCEPTABLE.

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5. THE PRIVATE SECTOR THRUST OF THE PROJECT MUST BE EXPLORED IN MORE DEPTH. ARE THE EUROPEAN FIRMS SUBCONTRACTING WITH LOCAL FIRMS FOR ANY PORTION OF THEIR WORK? HOW IS THE FURUNDI PRIVATE SECTOR BEING USED ON THE BIGGER JOBS? THE PAPER NEEDS TO COMPARE OPTIONS FOR PRIVATE SECTOR INVOLVEMENT IN BOTH CONSTRUCTION AND MAINTENANCE.
6. THE ECONOMIC ANALYSIS MUST BE BROADENED TO INCLUDE DATA GATHERED FROM THE ROUTE E4 PROJECT. IT MUST ALSO BE TIED TO THE INSTITUTIONAL DEVELOPMENT ASPECTS OF THE PROJECT. IT SHOULD UTILIZE THE ANALYSES OF OTHER AID ROAD PROJECTS, SUCH AS PFC'S IMPACT EVALUATION AND OTHER S/T EVALUATIONS. COPIES OF THE IMPACT ELEMENT AND S/T'S REPORTS HAVE BEEN POUCHED TO THE MISSION. THE ANALYSIS SHOULD INCLUDE A COMPARISON OF DIFFERENT CONSTRUCTION METHODS, PRIMARILY LABOR VERSUS CAPITAL INTENSIVE METHODS.
7. UNDER AFRICA BUREAU DELEGATION OF AUTHORITY 140 THE AUTHORIZATION VENUE IS IN THE FIELD. HOWEVER, THE ECPR REQUESTS THAT A CABLE RESPONSE TO POINTS 2 AND 3, ABOVE BE PROVIDED PRIOR TO AUTHORIZATION. SHULTZ
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SUBJECT: BURUNDI RURAL ROADS II (695-0112)
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2. RE PARA 2, REFTEL, MISSION ANTICIPATES THAT INSTITUTIONALIZATION PROCESS WILL BE COMPLETED WITH SUBJECT PROJECT BUT GRC WILL CONTINUE TO REQUIRE DONOR ASSISTANCE FOR OPERATIONAL COSTS OF LABOR INTENSIVE ROAD PROJECTS. IN ACCORDANCE WITH BURUNDI PI 2553, AID WILL CONSIDER FUNDING FOLLOW-UP LABOR INTENSIVE ROAD PROJECTS. REFERENCE IN PID TO QUOTE PROJECTS WHICH MAY BE FUNDED FROM A VARIETY OF DONOR OR GRC SOURCES UNQUOTE WAS NOT MEANT TO EXCLUDE AID. MISSION CANNOT BE SPECIFIC AT THIS TIME CONCERNING WHICH ROAD PROJECT(S) WE WILL FUND BECAUSE OF THE INVOLVEMENT OF OTHER DONORS. FOR INSTANCE, TWO OF THE PROPOSED ROAD STUDIES LISTED IN THE PID (SECTION II.C.4) HAVE ALREADY BEEN UNDERTAKEN BY OTHER DONORS (AUSTRALIA AND LIBIA) AND IT IS EXPECTED THAT THEY WILL ALSO IMPLEMENT LABOR INTENSIVE ROAD CONSTRUCTION FOLLOWING THE STUDIES. ALTERNATE ROAD STUDIES ARE BEING INCLUDED IN THE PI IN ACCORDANCE WITH GRC PRIORITIES. TO REFLECT AID POLICY AND CURRENT SITUATION, THE FOLLOWING PARAGRAPH WILL BE ADDED AFTER LIST OF ROAD STUDIES IN PI. QUOTE THE PERFORMANCE OF THESE STUDIES WILL GREATLY IMPROVE THE CAPABILITY OF THE GRC, MINISTRY OF PUBLIC WORKS, TO PERFORM FEASIBILITY OF SIMILAR LABOR INTENSIVE ROAD PROJECTS. AID EXPECTS THE GRC TO CONTINUE TO SOLICIT OTHER DONOR FUNDING FOR IMPLEMENTATION OF SUCH ROAD CONSTRUCTION. NEVERTHELESS, AID WILL BE PREPARED TO CONSIDER FUNDING ADDITIONAL LABOR INTENSIVE ROAD ACTIVITIES UPON COMPLETION OF THE PRESENT PORTFOLIO. UNQUOTE.

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3. RE PARA 3, REFTEL, THE PID STATES ON PAGE 4, PARA C.2, AND IT ANTICIPATES THAT THE INSTITUTIONAL OBJECTIVE IS TO COMPLETE THE SYSTEM FOR PLANNING, SUPERVISION, MANAGING AND ADMINISTERING LABOR INTENSIVE ROAD CONSTRUCTION PROJECTS. AID BELIEVES THAT THIS PROCESS WILL BE COMPLETE AT THE END OF THIS PROJECT, WITH THE EVIDENCE BEING THE PHYSICAL COMPLETION OF R.P. 94 AND THE

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UMKRE-MUYAMA ROAD (P.B. II). ADDITIONAL APPLICATION
 THE ABOVE SALES WILL BE UNDERTAKEN IN THE ABOVE-
 MENT AUSTRIAN AND MILYAN FOREIGN ROAD ACTIVITIES.
 ID/SP SEES NO FURTHER REQUIREMENT TO INVEST IN
 THE MINISTRY OF PUBLIC WORKS INSTITUTIONAL STRUCTURE
 OR PLANS

5. SUPERVISING, MANAGING AND ADMINISTERING
 LARGE INTENSIVE ROAD ACTIVITIES. NEVERTHELESS, GIVEN
 HIS LIMITED RESOURCES, THE GRP WILL FIND IT NECESSARY
 TO SOLICIT THE DONOR COMMUNITY (POSSIBLY INCLUDING
 ID) FOR FUNDING OPERATIONAL EXPENSES OF LARGE INTENSIVE
 ROAD ACTIVITIES, SUCH AS FUEL, CONSTRUCTION MATERIAL
 AND LIMITED EQUIPMENT AND SPARE PARTS.

6. PERTINENT PORTIONS OF THE ABOVE MATERIAL WILL BE
 INCORPORATED INTO THE PP. REGARDING POINTS IN PARAS 4,
 AND 5 REFERRED, AID/SP APPRECIATES RCPR'S COMMENTS AND
 GUIDANCE AND IS WORKING WITH REDSO TO ENSURE THAT THESE
 ITEMS ARE COVERED IN THE PP.

7. PER PARA 7 REFERRED, MISSION REQUESTS AID/SP CLEARANCE
 PARAS 1 AND 2 ABOVE SO THAT WE MAY PROCEED WITH
 PROJECT AUTHORIZATION. PLEASE ADVISE ASAP, WITH INFO
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TAGS:

SUBJECT: BURUNDI RURAL ROAD II PROJECT 695-0112
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AID/W HAS REVIEWED RESPONSE TO ECPR CABLE TRANSMITTED REF
A. MISSION IS ADVISED TO PROCEED WITH PP DESIGN AND
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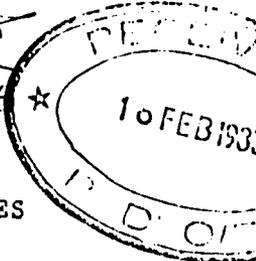
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SUBJECT: BURUNDI-RURAL ROADS II (695-0112) PID ISSUES MEETING



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1. THE PID WAS REVIEWED AT A PID ISSUES MEETING ON JANUARY 31. THE REVIEWERS SUPPORT PRESENTING THE PID TO THE BUREAU ECPR FOR APPROVAL, SUBJECT TO FOUR INCLUDING IN THE PP RESPONSES TO THE POINTS LISTED BELOW:

A. THE PP SHOULD CONTAIN A SECTION SHOWING HOW THIS PROJECT FITS WITHIN THE CURRENT AID POLICY FOCUS, INCLUDING POLICY REFORM, PRIVATE SECTOR, TECHNOLOGY TRANSFER, AND INSTITUTION BUILDING.

B. IT DOES NOT APPEAR FROM THE PID THAT ANY CONSIDERATION WAS GIVEN TO PRIVATE ENTERPRISE CONTRACTOR PARTICIPATION IN THE PROJECT. ROAD CONSTRUCTION AND, POSSIBLY, ROAD MAINTENANCE ARE AREAS WHERE PRIVATE ENTERPRISE CAN EASILY AND USUALLY MORE EFFICIENTLY SUBSTITUTE FOR A GOVERNMENT AGENCY MANAGING AND ADMINISTERING ACTUAL ROAD RECONSTRUCTION AND MAINTENANCE ACTIVITIES. AGENCY POLICY ON PRIVATE ENTERPRISE IS TO SEEK AND UTILIZE EVERY OPPORTUNITY TO INVOLVE THE PRIVATE SECTOR IN PLACE OF GOVERNMENT AGENCIES. PID REVIEWERS ARE COGNIZANT OF THE SUCCESSES OF RURAL ROADS I AND

DO NOT PROPOSE TO HALT THE MOMENTUM GENERATED TO DATE. NONETHELESS, IT IS CLEAR THAT MISSION MUST CONSIDER PRIVATE CONTRACTORS AS THE FIRST-CHOICE MEANS FOR EXECUTING APPROPRIATE RECONSTRUCTION AND MAINTENANCE ELEMENTS OF THE PROJECT. ONLY WHERE MISSION'S INTENSIVE ANALYSIS CONCLUDES THAT THIS IS NOT FEASIBLE SHOULD THE GOVERNMENT AGENCY ALTERNATIVE BE RESORTED TO. MISSION SHOULD ALSO INCLUDE IN THE PP DISCUSSION OF HOW MISSION SEES ADDITIONAL INVOLVEMENT OF PRIVATE CONTRACTORS AS PRINCIPAL AGENTS FOR ROAD WORK IN ADDITIONAL 275KMS PROPOSED FOR FUTURE RECONSTRUCTION.

C. THE PP MUST DEAL WITH THE QUESTION OF MAINTENANCE OF THE PROPOSED ROAD AS AN ESSENTIAL ELEMENT OF FEASIBILITY. WHAT ARE THE PLANS FOR MAINTENANCE OF THE PROPOSED ROAD AND OTHER ROADS IN THE COUNTRY? WHAT IS THE DIMENSION OF FUNDING REQUIRED AND ITS SOURCE? IS THE GOVERNMENT FINANCIALLY ABLE AND COMMITTED TO A ROAD MAINTENANCE PROGRAM? ADEQUATE PLANNING AND/OR ARRANGEMENTS FOR MAINTENANCE MUST

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BE INCLUDED IN THE PROPOSED PROGRAM. THE MAINTENANCE PLAN, AS WELL AS AN ASSESSMENT OF GOVERNMENT FUNDING AVAILABILITIES AND BUDGETARY ALLOCATIONS TO MAINTENANCE, MUST BE DISCUSSED IN A COMPREHENSIVE RECURRENT COST ANALYSIS.

D. THE ECONOMIC ANALYSIS SHOULD PROVIDE JUSTIFICATION FOR THE SELECTION OF ROUTE 82 FOR RECONSTRUCTION, VIS-A VIS OTHER ROAD OPTIONS. JUSTIFICATION FOR THE CONDUCT OF TECHNICAL AND SOCIO-ECONOMIC BASELINE STUDIES FOR THE FOUR ADDITIONAL ROADS WILL LIKEWISE BE NECESSARY.

IN ADDITION, THE ECONOMIC ANALYSIS SHOULD DISCUSS THE PRICING AND MARKETING SITUATION IN THE PROPOSED PROJECT AREA AND WITHIN THE ROAD'S ZONE OF INFLUENCE. THE PRODUCTION EFFECT OF PRICING AND MARKETING FACTORS SHOULD BE ANALYZED IN CONJUNCTION WITH THE POTENTIAL IMPACT OF THE ON-GOING FED EXTENSION AND BFC SEED PRODUCTION PROJECTS.

E. IN ADDITION TO THE DISCUSSION OF POTENTIAL BENEFITS THAT MAY RESULT FROM THE RECONSTRUCTION OF ROUTE 82, AN ASSESSMENT OF POTENTIAL NEGATIVE EFFECTS MUST BE MADE. THESE INCLUDE INCREASED MIGRATION DUE TO IMPROVED ACCESS TO URBAN CENTERS, POSSIBLE DISRUPTIVE CHANGES IN LABOR AVAILABILITIES AND DISTRIBUTION, AND POTENTIAL ROAD CONSTRUCTION LABOR MANAGEMENT PROBLEMS. AS THIS IS AN ILLUSTRATIVE LIST DISCUSSION OF NEGATIVE EFFECTS NEED NOT BE LIMITED TO THE ABOVE.

F. THE EXISTING BASELINE STUDY FOR ROUTE 82 SHOULD BE COMPLETED IN ORDER TO PROVIDE APPROPRIATE AND ADEQUATE

BASIS FOR UNDERTAKING PP ECONOMIC AND SOCIAL ANALYSES. IN ADDITION, BASELINE STUDY WILL BE USEFUL IN PROVIDING BASIS FOR MONITORING AND EVALUATING IMPACT OF ROAD RECONSTRUCTION. ALTHOUGH LOGFRAME REFERS TO BASELINE STUDY AS MEANS OF VERIFICATION, PROPOSED BUDGET DOES NOT INCLUDE FUNDS TO COMPLETE EXISTING INADEQUATE STUDY. REVIEWERS SUGGEST LENGTHENING SOCIO-ECONOMIST TIME IN PP DESIGN TO COMPLETE STUDY. PROPOSED BASELINE STUDIES FOR FOUR ADDITIONAL ROADS SHOULD BE MODIFIED. SOCIAL COMPONENT SHOULD INCLUDE COLLECTION OF INFORMATION ON LAND USE PATTERNS, AND AVAILABILITY OF/ACCESS TO GOVERNMENT SERVICES. WHERE APPROPRIATE, DATA SHOULD BE DISAGGREGATED BY SEX AND AGE. ECONOMIC COMPONENT OF STUDY SHOULD INCLUDE INFORMATION ON TRAFFIC COUNT, TRADERS' MARGINS, TRANSPORTERS' MARGINS, VILLAGERS' USE OF TRANSPORT, AND VEHICLE FREIGHT AND PASSENGER COSTS.

G. THE PP SHOULD CONTAIN ASSURANCES FROM THE GRB OF ITS INTENT TO CONTRIBUTE ITS SHARE OF PROJECT FINANCING.

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UNCLAS SECTION 02 OF 02 STATE 042100

AIDAC, NAIROBI FOR REDSO/EA

2. THE IEE HAS BEEN APPROVED BY THE BUREAU ENVIRONMENTAL OFFICER. THE REDSO ENVIRONMENTAL OFFICER MUST REVIEW THE DESIGN EFFORT AND THE FINAL PP TO INSURE THAT THAT DETERMINATION IS CORRECT.

3. A CONGRESSIONAL NOTIFICATION IS REQUIRED BEFORE OBLIGATION.

4. WILL ADVISE ECPR DATE AND OUTCOME OF THAT MEETING.

2. BE ADVISED THAT OTHER ISSUES MAY BE RAISED BEFORE OR AT THE ECPR, HOWEVER PD WILL USE THIS CABLE AS "ISSUES PAPER" FOR ECPR. SHULTZ

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UNCLAS SECTION 02 OF 02 STATE 042100

5C(2) PROJECT CHECKLIST

Listed below are statutory criteria applicable to projects. This section is divided into two parts. Part A. includes criteria applicable to all projects. Part B. applies to projects funded from specific sources only:
B.1. applies to all projects funded with Development Assistance Funds,
B.2. applies to projects funded with Development Assistance loans, and
B.3. applies to projects funded from ESF.

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

A. GENERAL CRITERIA FOR PROJECT

1. FY 1982 Appropriation Act Sec. 523; FAA Sec. 634A; Sec. 653(b); Second CR FY 83, Sec. 101(b)(1).

FY 82 App. Act.
Sec. 523; FAA Sec. 653(b); Sec. 634 A; Second CR FY 83 Sec. 101(b)(1).

Yes

(a) Described how Committees on Appropriations of Senate and House have been or will be notified concerning the project; (b) Is assistance within (OYB) country or international organization allocation reported to Congress (or not more than \$1 million over that figure.

- (a) Describe how authorizing and appropriations committees of Senate and House have been or will be notified concerning the project;
- (b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than \$1 million over that amount)?
- (c) If the proposed assistance is a new country program or will exceed or cause the total assistance level for the country to exceed assistance amounts provided to such country in FY 82, has a notification been provided to Congress?
- (d) If the proposed assistance is from the \$85 million in ESF funds transferred to AID under the Second CR for FY 83 for "economic development assistance projects", has the notification required by Sec. 101(b)(1) of the Second CR for FY 83 been made?
2. FAA Sec. 611(a)(1). Prior to obligation in excess of \$100,000, 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?
- (a) Congressional Notification was submitted on July 15, 1983 and expired on July 30, 1983 without objection.
(b) Yes, the allocation is within the country OYB.
- (c) N/A
- (d) N/A
- Yes, See Technical Analysis Summary in PP.
- Yes, See Technical and Financial Analysis in PP.

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? No additional legislative action is required.
4. FAA Sec. 611(b); FY 1982 Appropriation Act Sec. 501. If for water or water-related land resource construction, has project met the standards and criteria as set forth in the Principles and Standards for Planning Water and Related Land Resources, dated October 25, 1973? 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? N/A
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. No

7. FAA Sec. 601(a). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade;

(b) foster private initiative and competition; 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

(a) The upgrading (reconstruction) of Rumonge-Muyama Road will provide access to agricultural marketing facilities within the project area as well as to outside markets, such as Bujumbura.

(b) It is expected that the availability of access to a reliable market will create greater private initiative and competition among farmers as it will increase his opportunities for sale and purchase of agricultural and other goods.

(c) Improved access to markets will stimulate and expand the five production and marketing cooperatives already located in the area. At present there are no credit unions and savings and loans institutions in the project area, however, we expect that governmental and non-governmental organizations will expand their activities in the project area, because of the economic gains resulting from increased productivity and the multiplier effects of income flow into the area, as well as substantial numbers of people living in there with training in technical skills.

The project will have no effect on monopolistic practices.

The project, with the assistance of other donors, will help improve technical efficiency of industry, agriculture and commerce.

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(f) strengthen free labor unions.

There will be no effect upon Burundi's efforts to strengthen free labor unions.

8. FAA Sec. 601(b). Information and conclusions on how project will encourage U.S. private trade and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).

The project will neither encourage nor discourage U.S. private trade or investment abroad. See 7(c) above.

9. FAA Sec. 612(b), 636(h);
FY 1982 Appropriation
Act 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.

U.S. will furnish neither technical assistance nor capital equipment, but mainly costs for construction and studies. This project is characterized by very active participation of the host government. The GRB will undertake all aspects of administration, engineering and supervision of construction, and construction labor will be provided through a series of mini-contracts with local labor contractors. The technical advisor will be a Belgian construction engineer attached to the Ministry of Public Works.

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?

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?

Yes

12. FY 1982 Appropriation Act Sec. 521. 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? N/A
13. FAA 118(c) and (d). Does the project comply with the environmental procedures set forth in AID Regulation 167. Does the project or program take into consideration the problem of the destruction of tropical forests? Yes
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)? N/A
15. FAA Sec. 128; Second CR FY 83, Sec. 101(b)(2). Has an attempt been made to finance productive facilities, goods, and services which will expeditiously and directly benefit those living in absolute poverty under the standards adopted by the World Bank? Yes

B. FUNDING CRITERIA FOR PROJECT
1. Development Assistance
Project Criteria

a. FAA Sec. 102(b), 111, 113, 281(a). Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production and the use of appropriate technology, spreading investment out from cities to small towns and rural areas, and insuring wide participation of the poor in the benefits of development on a sustained basis, using the appropriate U.S. institutions;
(b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions; (c) support the self-help efforts of developing countries;

(a) An all weather road to agricultural market facilities will extend access to the local economy. This labor-intensive road road rehabilitation project will employ a local labor force averaging 500 laborers. It is well tailored to help the development needs of Burundi's rural poor: more than 14,000 families living in the project area will benefit through increased access to markets and social services.
(b) The cooperatives already existing in the project zone have different possibilities of financial viability at existing levels of economic activity, and they could easily expand their operations by employing already trained individuals living in the area
(c) The principal development activities in the area are under the auspices of the SRD/Rumonge in oil palm and food production. These activities will provide local and logistical support for the further development of rural infrastructure which are important elements to project success. Better access throughout the area generating increased productivity should further encourage self-help projects.

(d) promote the participation of women in the national economies of developing countries and the improvement of women's status; and

Women will benefit directly from the labor intensive component of the project to the extent their husband and/or relatives bring home wages earned. The system of payment has been planned to maximize the likelihood that women will receive the benefits from wages.

(e) utilize and encourage regional cooperation by developing countries?

This project neither encourages nor discourages regional cooperation between developing countries.

b. FAA Sec. 103, 103A, 104, 105, 106. Does the project fit the criteria for the type of funds (functional account) being used?

This project will permit the evacuation of agricultural produce from the newly reopened area of the road.

c. FAA Sec. 107. Is emphasis on use of appropriate technology (relatively smaller, cost-saving, labor-using technologies that are generally most appropriate for the small farms, small businesses, and small incomes of the poor)?

Yes, labor intensive road construction is the objective of the project

d. FAA Sec. 110(a). Will the recipient country provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or is the latter cost-sharing requirement being waived for a "relatively least developed" country)?

Yes

e. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts

N/A

for other financing, or is the recipient country "relatively least developed"?

f. FAA Sec. 122(b). Does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities and self-sustaining economic growth?

Yes, the road will stimulate the economy of the region by providing access to markets

g. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civil education and training in skills required for effective participation in government processes essential to self-government.

The project has an institution building component which will require extensive participation of the government

2. Development Assistance Project Criteria (Loans only)

a. FAA Sec. 122(b). Information and conclusion on capacity of the country to repay the loan, at a reasonable rate of interest.

N/A

b. FAA Sec. 620(d). If assistance is for any productive enterprise which will compete with U.S. enterprises, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan?

N/A

c. ISDCA of 1981, Sec. 724 (c) and (d). If for Nicaragua, does the loan agreement require that the funds be used to the maximum extent possible for the private sector? Does the project provide for monitoring under FAA Sec. 624(g)?

N/A

d. Second CR FY 83, Sec. 134. If the recipient country has an annual per capita gross national product greater than \$795 but less than \$1,285, will the loan be repayable within 25 years following the date on which funds are initially made available? If it has an annual per capita GNP greater than or equal to \$1,285, within 20 years?

N/A

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3. Economic Support Fund
Project Criteria

- a. FAA Sec. 531(a). Will this assistance promote economic or political stability? To the extent possible, does it reflect the policy directions of FAA Section 102? N/A
- b. FAA Sec. 531(c). Will assistance under this chapter be used for military, or paramilitary activities? N/A
- c. FAA Sec. 534. Will ESF funds be used to finance the construction of the operation or maintenance of, or the supplying of fuel for, a nuclear facility? If so, has the President certified that such use of funds is indispensable to non-proliferation objectives? N/A
- d. FAA Sec. 609. If commodities are to be granted so that sale proceeds will accrue to the recipient country, have Special Account (counterpart) arrangements been made? N/A
- e. Second CR FY 83, Sec. 101(b)(1). If ESF funds to be utilized are part of the \$85 million transferred to AID under the Second CR for FY 83 for "economic development assistance projects", will such funds be used for such projects and not for non-development activities including balance of N/A

payments support, commodity
imports, sector loans, and
program loans?

PROJECT DESIGN SUMMARY
 LOGICAL FRAMEWORK

ANNEX B

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

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

Project Title & Number: Rural Road II (695-0112)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Program or Sector Goal: The broader objective to which this project contributes:</p> <p>To increase incomes and social welfare of the rural poor in project area.</p>	<p>Measures of Goal Achievement:</p> <p>Increased farmer income in region. Increased agricultural production in region. Improved access to social services.</p>	<p>Socio-economic baseline study. Project Evaluations</p>	<p>Assumptions for achieving goal targets:</p> <p>Continued GRB interest in development of the existing internal road network</p>

PROJECT DESIGN SUMMARY
 LOGICAL FRAMEWORK

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

Project Title & Number: Rural Road II (695-0112)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Purpose:</p> <ol style="list-style-type: none"> To reconstruct the Rumonge-Muyama road using labor intensive construction methods, which through the reconstruction process reinforces GRB institutional capacity to implement labor intensive road construction projects; To provide all weather access to markets for agricultural products in the project area, including a connection to markets on Lake Tanganyika, the interior, and in Bujumbura. 	<p>Conditions that will indicate purpose has been achieved: End of project status.</p> <ol style="list-style-type: none"> Construction of road completed. Institutionalization of labor intensive system within the Public Works Ministry. Trained cadre of road construction workers, pipe layers, masons, drivers made available for projects and private sector through on the job training. Studies of new roads completed. 	<p>Project evaluations. RFDSO engineering visits. Ministry of Public Works technical reports.</p>	<p>Assumptions for achieving purpose:</p> <p>The road is suited to labor intensive construction techniques. The cadre of private businessmen with the ability to perform as sub-contractors will be interested in working on similar road projects. Other donors/GRB willing to use the trained cadre of road construction workers.</p>

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project: _____
From FY _____ to FY _____ 3
Total U.S. Funding: _____
Date Prepared: _____

Project Title & Number: Rural Road II (695-0112)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	KEY ASSUMPTIONS
<p>Outputs:</p> <ol style="list-style-type: none"> 30 Km. of rural road will be reconstructed to improve the Rumonge-Muyama Road to all-weather status. Increased incomes among families of construction workers. Institutionalization of labor intensive system within the Public Works Ministry. Trained cadre of road construction workers, pipe layers, masons and drivers made available for projects and private sector through on the job training. Increased agricultural production and marketing at less cost and wastage. Study completed for additional roads. 	<p>Magnitude of Outputs:</p> <p>30 km of improved earth road and drainage structures. Improvement shown in comparison to baseline socio-economic study.</p> <p>Number of trained GRB staff (supervision and planners).</p> <p>Number of workers trained.</p> <p>Studies done.</p>	<p>Ministry of Public Works personnel records. Health dispensary records. Commune statistics.</p> <p>Comparison of baseline data on prices with data gathered during project.</p>	<p>Assumptions for achieving outputs:</p> <p>GRB PW will provide two expatriate construction engineers (IBRD financed) one on a half time and one on a full time basis.</p> <p>Labor can readily be recruited from the project region.</p> <p>GRB will continue to train cadre of workers.</p>

PROJECT DESIGN SUMMARY
 LOGICAL FRAMEWORK

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

Project Title & Number: Rural Road II (695-0112)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Inputs:</p> <p>Local Labor Materials, cement, steel Handtools/Misc. Emergency spare parts POL Roads and Baseline Studies Evaluation Contingency</p> <p><u>GRB</u> Personnel Materials Equipment Contingency</p> <p><u>IBRD</u> as GRB Contribution Technical assistance: 1.5 persons for 1.5 years.</p>	<p>Implementation Target (Type and Quantity)</p>	<p>GRB Dept. PW's records and technical records.</p>	<p>Assumptions for providing inputs:</p> <p>Necessary equipment (dump trucks, rollers, jackhammers, etc.) Will be made available by GRB Dept. PW on a timely basis.</p>



Ministère des Travaux Publics,
de l'Energie et des Mines
Cabinet du Ministre

N/Ref : 720/6682/L. J./C.M./83.-

V/Ref : V/1 AAO-83-218 du 18 avril 1983.

Objet : Requête en vue de la construction de la route MUYAMA-RUMONGE par les méthodes à haute intensité de main-d'oeuvre et en vue de l'octroi d'un crédit supplémentaire pour l'achèvement de la R.P. 84.

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

Bujumbura.-

Monsieur le Directeur,

Je vous remercie pour votre lettre aux références ci-dessus, par laquelle vous m'informez que votre siège de Washington a approuvé le document d'identification du projet de construction de la route MUYAMA - RUMONGE par les méthodes à haute intensité de main d'oeuvre.

J'accuse également réception de la version française de ce document. Je marque accord avec celui-ci et avec l'élimination de la composante " nourriture pour le travail", pour les raisons évoquées dans votre lettre.

En ce qui concerne les études d'autres routes, faisant l'objet de la section II, C4 du document d'identification, je vous informe que je souhaite l'étude de 6 routes, qui sont respectivement :

- R.P 82 (KUMUYANGE - RUMEZA - NYAKIKUKU), en province de BURURI ; 54 km.
- R.P 45 (GAKUNGWE - MUBONE - KARINZI - GAKARA - RUHORORO) en province de Bujumbura ; 57 km.
- Route communale BUHONGA - KARINZI, en province de Bujumbura ; 28 km.

- Route communale MUTUMBA - MUHUTA - RUTONGO en province de Bujumbura ; 34 km.
- Route RUTONGO - TORA (une quarantaine de km) en provinces de Bujumbura et de BURURI ; la majeure partie de ce tracé n'existe actuellement pas et devra faire l'objet d'une étude de topographique préalable à la construction.
- Route communale Kigwena - VYANDA - KIBINBA, en province de Bururi ; 71 km.

Vous avez signalé que la présente requête doit vous parvenir au plus tôt, pour vous permettre d'exécuter sans retard l'étude de finalisation de la route MUYAMA - RUMONGE, de demander les fonds à votre siège de Washington et enfin de préparer l'accord pour signature de façon à ce qu'il soit d'application dès la prochaine année fiscale. Dans ces conditions, pour éviter tout retard, je n'annexe pas les justifications socio-économiques et les estimations de coût des six routes dont je souhaite l'étude ; je vous ferai parvenir ces éléments dans un proche avenir, dès qu'ils auront été établis.

Par ailleurs, comme vous le savez, un crédit supplémentaire pour paiement de la main d'oeuvre sur le chantier de la RP 84 est nécessaire, à la suite notamment de l'augmentation du volume des terrassements par rapport aux estimations initiales, et de l'augmentation des salaires journaliers. En conséquence, je vous serais obligé de demander dès à présent à votre siège de Washington les crédits supplémentaires nécessaires au paiement des salaires sur la RP 84.

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

LE MINISTRE DES TRAVAUX PUBLICS, DE
L'ENERGIE ET DES MINES



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Mr. Isidoro Nysboya
Minister of Public Works,
Energy and Mines

AAO-83-216

18 April 1983

Bujumbura

RECEIVED

Dear Mr. Minister,

Based on our experience with the Rural Road (R.P. 84) project over the last two years, USAID is considering a second road project using the same kind of labor-intensive methods. My staff has discussed this new project, covering the Muyana-Rumonge road, with Department of Roads officials and I think there is general agreement among the two parties for this project.

We have just received confirmation that our Washington office has approved the Project Identification Document (PID) and we are now authorized to proceed with a detailed design of the project. A French translation of the PID is enclosed for your review. Please note, however, that in the last few months discussions involving my office, AID's regional office in Nairobi and personnel from the Department of Roads, have resulted in some changes in the project. Briefly these are:

1. Elimination of the PL 480 Title II Food for Work component. This decision is based on the minimum wage increase of last year which makes a wage supplement less meaningful. Furthermore, the vast majority of the work on the new project will be performed by crews working on subcontracts and food is not provided under these subcontracts even on the current project. Finally, it is judged that earthwork on the Muyana-Rumonge road is not as difficult as on R.P. 84 and therefore the additional incentive provided by Food for Work is not necessary.
2. Change in road studies in Section II. C.4 of the PID. Studies now envisaged include:
 - a) R.P. 82 Bururi Province (Kusuyange-Rumaza-Nyakikuko) 54 kms.
 - b) Communal Route Bururi Province (Kigwena-Uranda-Kibimba) 71 kms.
 - c) The Mutumba Road.

.../2

RECEIVED

If other roads have a higher priority in your Ministry's plans, they can be substituted for those listed.

If you approve the basic project idea as outlined in the PID, we would appreciate receiving an official request from your Government for USAID assistance to this activity. With your concurrence we expect that the Project Paper will be completed within the next month.

Sincerely,



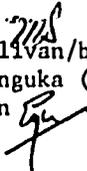
George T. Bliss
AID Representative

Encl.

cc: Mr. Paul Munyenbari, Director General
for Europe, North America and
International Organisations
Ministry of External Relations
and Cooperation

Mr. François Nahigombeye
Director General of Roads
Ministry of Public Works,
Energy and Mines

drafted: MSullivan/br
cleared: SNTunguka (in draft)
WEgan



Ir. Isidore Nyaboya
Ministre des Travaux Publics
de l'Energie et des Mines

AAO-83-218

18 avril 1983

Bujumbura

Monsieur le Ministre,

Sur la base de notre expérience pendant ces deux dernières années avec le projet Route Provinciale R.P. 84, l'USAID considère un deuxième projet routier en utilisant le même genre de méthodes à haute intensité de main-d'oeuvre. Mon personnel a discuté de ce nouveau projet, qui couvre la route Muyana-Rumonge, avec les responsables du Département des Routes et je pense qu'il existe un accord général entre les deux parties concernant ce projet.

Nous venons de recevoir la confirmation que notre siège à Washington a approuvé le Document d'Identification du Projet et maintenant nous sommes autorisés à procéder à l'élaboration d'une analyse plus détaillée du projet. Une copie de la version française de Document d'Identification du Projet est incluse pour votre révision. Veuillez noter, cependant, que suite à des entretiens pendant ces derniers mois entre l'USAID, le bureau régional de l'USAID à Nairobi et le personnel du Département des Routes, quelques changements dans le projet ont été décidés. En bref, il s'agit des changements suivants:

1. Elimination de la composante PL 480 Titre II "Nourriture pour le Travail". Cette décision est basée sur l'augmentation du salaire minimum de l'année dernière, ce qui donne moins de valeur à un supplément de salaire. De plus, une grande partie des travaux sur le nouveau projet seront exécutés par des ouvriers travaillant sous un sous-contrat et la nourriture n'est pas fournie par ces sous-contrats, même dans le projet en cours. Finalement, nous jugeons que les travaux en terre sur la route Muyana-Rumonge ne sont pas aussi difficiles que ceux sur la R.P. 84 et de ce fait le stimulant supplémentaire procuré par la "Nourriture pour le Travail" n'est pas nécessaire.
2. Changement dans les études de routes Section II. C.4 du Document d'Identification du Projet. Les études envisagées maintenant comprennent:

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- a) R.P. 82 Province de Bururi (Kumuyange-Kumera-Nyakikuko) 54 kms.
- b) Route Rurale Province de Bururi (Kigwana-Uranda-Kibinba) 71 kms.
- c) Route de Mutumba.

Si votre Ministère a projeté d'autres routes ayant une priorité plus élevée, elles peuvent être substituées à celles susmentionnées.

Si vous approuvez l'idée de base de ce projet telle qu'elle est décrite dans le Document d'Identification du Projet nous vous serions reconnaissants de bien vouloir nous adresser une requête officielle de votre Gouvernement demandant l'assistance de l'USAID pour cette activité. Avec votre accord nous espérons avoir terminé l'Analyse du Projet le mois prochain.

Veillez agréer, Monsieur le Ministre, l'assurance de ma très haute considération.



George T. Bliss
Représentant de l'USAID

P.J.

CC; M. Paul Mnyambari, Directeur Général
pour l'Europe, L'Amérique du Nord, et
les Organisations Internationales
Ministère des Relations Extérieures
et de la Coopération

M. François Nahigombeye
Directeur Général des Routes,
Ministère des Travaux Publics,
de l'Energie et des Mines

drafted: MSullivan
transl.: BRudolph
cleared: FPanfietti (in draft)

BURUNDI RURAL ROADS II

TECHNICAL ANALYSIS ANNEX

Analysis of the Transport Plan in Burundi

Burundi is one of the poorest countries in Africa, and faces the formidable problems of very dense rural population in a mountainous region.

One of the elements of the Third National Plan (1978-1983) is to decentralize economic and social activity away from Bujumbura by promoting the development of regional economic centers. The underlying factors behind these socio-economic objectives are the country's landlocked position and its unbalanced export-import flows.

The Government's transport investments and policies responded to the objectives of the five-year plan and generally to the needs of the economy by (a) improving the existing internal road network to support the productive sectors and to facilitate decentralization; (b) improving alternative external connections to Dar es Salaam; and (c) building up a road transport industry for domestic and international transport.

Internal transport in Burundi depends almost exclusively on roadways. Although the existing network 5,500 km. of road reaches most parts of the country, its condition is not totally suited to Burundi's needs and much of it is in unsatisfactory condition owing mainly to poor construction standards and inadequate maintenance. This situation is aggravated by the mountainous terrain which increases both construction and maintenance costs.

The GRB is keenly aware of this problem and within the limits of the resources, is making serious efforts to correct it. In 1977, a Road Investment Survey was conducted by Louis Berger International Inc. and the Bureau Central d'Etudes d'Outre Mer (Berger-BCEOM Report). The GRB is attempting to follow a program of road improvement, rehabilitation and upgrading as generally outlined in the Berger-BCEOM report, which proposes a road improvement scheme for a period of 10 years utilizing increased government revenues from various sources. Burundi is receiving capital and technical assistance in road construction from the World Bank (IDA), the African Development BANK (AFDB), the European Development Fund (FED),

UNDP, the Government of Kuwait, and the Peoples Republic of China.

Burundi with its high population density and rural under-employment utilizes labor intensive rehabilitation and maintenance of secondary and local roads. Labor intensive road construction has relatively low foreign exchange costs when compared to more capital equipment intensive road construction projects.

The GRB has recently repeatedly stressed its interest in developing a labor intensive road construction program in addition to traditional road improvement activities. There are two ongoing labor intensive projects in Burundi, a Belgian-financed road in the tea growing area and USAID's Rural Road project (R.P. 84). The GRB regards the Route 84 project as a model approach to labor intensive road construction.

Route 84 (R.P. 84) begins at kilometer 57 on Route National RN 3 (Lake Tanganyika Highway) and follows an existing side hill track through agricultural areas, Dama Valley, Muyama (Burambi Province) to RP 82 10 kilometers south of Tora (tea producing area) in a total distance of 58 kilometers.

2. Physical Description of Road

The Rumonge-Muyama road, although not a Route Provincial, is a 30 km direct link between Rumonge, an important town on RN 3 at kilometer 75 and Muyama, provincial headquarters of Burambi on R.P. 84 and from there to R.P. 82 and the Chinese Road.

The entire route follows an existing alignment from the plains of Rumonge (depressed road) around the cultivated fields, along a side hill to the crest of hills in an ever-ascending incline to other hills which increase in height practically to Muyama. Only in some four locations is side hill necessary to attain hill crests and then for limited distances. The route is generally four to five meters wide except at its entrances to Rumonge and Muyama where it decreases to 2-1/2 to 3 meters. Rock and stone along the road is limited to the lake area, some 5 kilometers at Rumonge and then at small areas of side hills spaced some 10 kilometers apart. Soil is generally red clay with some small stone and soft rock, all of which combine to give soft rutted surfaces in the rainy seasons, which was the main reason for closing the road to vehicular traffic. The road crosses three small wood bridges but there are no main streams or rivers. Earthwork

construction for the road with the exception of side hills will consist of widening out the existing road in cut or by cutting on one side and filling on the other. Cuts are generally 2 to 6 meters high with average 4 meters. No realignment is anticipated except perhaps at the approach to Rumonge where the route has right angle bends. Total embankment fill is anticipated at only two locations between hills so as to reduce valley grades. Due to the road being on the crest of hills and passing between them, ditch drainage can be discharged without substantial addition of culverts. The road through agricultural areas with villages spaced about every 5 kilometers.

Construction should be relatively simple except for the need to bring sand and stone from Rumonge and the lake area. Main construction will start from Muyama R.P. 84 so the existing route will need to be widened out so as to take sand to masons building culverts and pavement stone as necessary.

3. Design of Road

Only occasional vehicular traffic uses the road and only in the dry season, but bicycles and pedestrians use the road continuously, and when open to vehicular traffic it would provide through traffic between the Chinese road and Rumonge. However, the volume of traffic would not warrant a travelway in excess of 4 meters (1 lane). Due to its through traffic and need to assist farmers in transporting their produce to market and lake fish into the interior, it is deemed justified to consider the original GRB standard of 5 meter travelway with 1.0 to 1.5 meter shoulders on each side. This standard was modified in R.P. 84 to give 6 meter travelway on 7 meter road formation plus 1 meter top ditches. This modified standard is more conservative on road widening projects in dense agricultural areas as well as more economical in construction especially on curves and side hills, and constitutes the recommended design.

A. Alignment will coincide with the existing road; 6 meters wide pavement of 10 cm. stone on 7 meter road formation. Cross slope 4% away from the cut section on one side, crown section where both sides are in cut.

B. Drainage ditches will be 50 cm. bottom, 90 cm. top, 30 cm. deep.

C. Culverts to be 30/45 cm. diameter in the fill sections of the Rumonge plain up to 60/80/100/120 cm. in other areas.

Where single pipes are insufficient, twin pipes are allowable; otherwise consider precast concrete plank bridges for greater spans. Pipe culverts to be full width of road, plank bridges 5 meters.

D. Earthwork. Excavation in cuts to be slopes not less than 1 in 12 and long side hill cuts to be protected by hillside ditches. Embankments to be full width except that greater width is required when embankment is on steep side slopes which are unstable for vehicular traffic.

E. Paving of 1 km. of the road. An asphalt surface is strongly recommended for several short sections totaling 1 km. where the gradient exceeds 8°. This was not in the original GRB plans but is considered a cost effective way to reduce maintenance on these sections which are highly vulnerable to erosion. The GRB Highway Department informally favors the proposal, and an appropriate sum (about \$15,000) has been added to the budget to provide for this extra work.

4. Capital Intensive Inputs

A. Trucks. One truck is needed to supply cement, sand and rock to masons building culverts. This is critical because sand is only available at the lake. Three additional trucks are needed because pavement stone is mainly available in the Rumonge plains with other limited sources spaced out at about 10 kilometer intervals. An additional truck should be considered as reserve because of maintenance and repair.

B. A roller is needed for compaction of subgrade and pavement.

C. A power shovel is needed because of long travel distances by truck in transporting pavement material. The efficiency of the power shovel depends entirely on the number of operable trucks.

D. Rock crusher. The rock crusher is needed for pavement material of a dimension to allow 8 to 10 cm depth of rock material; otherwise the larger the material the better it is due to clayer subgrade. The crusher would be located in the Rumonge area.

E. The compressor and jackhammers would be used for excavation in rock or construction of ditches in rock.

5. Labor Intensive Inputs

Labor intensive road operations may be more expensive than capital intensive operations. However when labor is drawn from the surrounding areas, the wages automatically benefit that area which is entirely different from capital intensive which gives no benefit. In addition, road maintenance is simpler and more efficient because the inhabitants have the feeling that it is their road.

Labor will be used for earthwork, ditches, culverts, preparation of subgrade and spreading of pavement material.

On this project, practically all work will be done by task rather than a set pay per day. This should result in work being performed in a faster time period as well as taking care of weather fluctuations. A trial period will be made to determine the possible work output and wage, which will be set to encourage larger amounts of money per laborer per day than fixed daily wage, yet remain within the budget unit price. Payment by task is suggested for this project because of the simplicity of calculating quantities for team tasks. The only complexity will be on pavement laying which depends upon truck availability, and distance traveled.

6. On the job and other training. As in R.P. 84, earthwork, and ditching will be done on the job and by infusion of trained R.P. 84 workers. Training of masons, drivers, operators will be done at recognized schools. An arrangement has to be made through GRB that drivers and operators suitably trained for the project do not leave immediately for other projects.

7. Materials

Cement, POL, reinforcing and structural steel should be obtained through Kenya. Handtools such as picks, shovels, wheelbarrows, etc. should be obtained from Kenya where labor intensive roads have been in operation for a number of years and where the handtools are specified, improved and put out to tender every year. Time of procurement and transportation costs will thus be minimized. Materials supplied by GRB will be metal and concrete pipes, handtools, all of which will probably be given to GRB by Belgium. Sand and rock will be locally procured.

Spare parts and replacement parts for plant will be procured from separate GRB and USAID funds, which will have the dual effect of speeding up the process.

8. Work Force

It is proposed that a work force of some 500 men be employed to work on the road in teams of 10 or 20 dependants on the required task, with one team leader per team, who will be responsible for the work, workers and their tools. These local small scale entrepreneurs, before training, do not know how to prepare a bill of quantities for simple construction, have limited supervisory experience and possess no capital. A sizeable proportion of R.P. 84's work, and a much larger proportion of Rural Road II's work is/will be done under a system of mini-contracts with private individuals. A local mason (or work-gang foreman), will contract to build one to three box culverts (or a fixed quantity of cubic meters of earthwork, or linear meters of drainage ditches). Each mason (or foreman) organizes apprentices and workers on his team and contracts with the project to do work for a fixed fee within a set time period. There is a strong incentive to complete the work more quickly, because then one's team can start another piece of work and thus earn higher salaries. The masons and other team leaders are being taught how to draw up bills of quantity and cost estimates so that they can acquire the skills to become fully independent and bid on proposed works. Three GRB technicians will supervise the work and Pierre Rucquoy will direct the first part of the construction before being joined by Hubert Verhulst for the second part after completion of RP 84. Both Rucquoy and Verhulst are IBRD seconded to GRB with Verhulst presently working full time on RP 84.

GRB will supply the necessary book, time and store keepers.

9. Mobilization. Store sheds, offices and vehicle repair shop will be built in Muyama for the project. All furniture, equipment presently in Murago for work on RP 84 will then be moved there for use on both projects and for RP 82 in the future. A small store shed will be built in Rumonge.

10. Construction Plan

Handtools and material necessary for the construction and mobilization will be ordered in October 1983. Mobilization buildings will be constructed in December 83/January 84 and in January 84, work teams will be drawn from RP 84 and the new road for earthwork beginning at Muyama. In addition, earthwork teams at Rumonge will open up the road sufficient for trucks to bring sand and cement for culvert construction at Muyama and

downwards. The rock crusher would stockpile stone at Rumonge while the power shovel at Muyama would feed trucks for this project and RP 84. All work would progress toward Rumonge while at Rumonge road fills, culverting and earthwork would progress at a more limited rate, and pavement loose laid for traffic consolidation. Eventually in July 1985, all work would be completed, although road sections completed up to villages would be handed over prior to that time.

11. Monitoring.

Monitoring would be by REDSO engineer at 2 month intervals at the beginning and every 3 months thereafter. AID/B would handle procurement and payment vouchers.

12. Maintenance.

GRB will set up maintenance forces of 1 man per kilometer with a foreman for every 10 men similar to that set up for RP 84. This overcomes previous maintenance deficiencies.

PROPOSED SCOPE OF WORK FOR BASELINE STUDY

The purpose of this contract is to carry out a baseline study of the zone of influence of the Rumonge-Muyama Road with special attention paid to collecting data useful to the eventual evaluation of project impact. The study should identify the types of research and analytical work to be carried out during the evaluation process.

A. Scope of Work: Topics covered should include:

(1) Household-level socio-economic data:

(a) Population per household including identification of the number of active men and women as opposed to the number of dependents;

(b) Amounts of each crop sold, where sold and price received;

(c) Division of labor between men and women in household and other activities, i.e. cooking, wage labor, construction, etc.;

(d) Per capita cash income of the household including breakdowns between men and women incomes and source of income;

(e) Household expenditures per annum, including food and other items broken down between men's and women's;

(2) Local Markets: Identification of constraints on marketing.

(3) Use of local services;

(a) Access to various government services (schools, clinics and other administrative points);

(b) Access to mission-oriented activities (church, parochial schools, hospitals and cooperatives);

(c) Analysis of the cooperative structure in project area and related logistic support as well as membership, commodities produced and sold, and general financial operation.

(4) Analysis of the area's commercial transportation structure;

(a) Number of vehicles collecting agricultural commodities from Bujumbura and other regional markets, and their deliveries of basic consumer goods and other food items to the project area;

(b) Current costs for transport of various crops to markets in project area and to Bujumbura;

(c) Number of vehicles transiting project area with agricultural and other commodities destined for markets adjacent to project area.

(5) Constraints to increased production:

(a) Availability of land;

(b) Utilization of fertilizer (organic or chemical);

(c) Appropriateness of cultural systems and seed stock.

(B) Duties to be Performed: The survey will be conducted by three survey teams each consisting of two interviewers, and supervised by an officer of university

level. Not less than 100 families and 30 road construction workers in the project zone will be interviewed. No agronomic sample is needed. The survey will be conducted and all work which will include preparation, interviews, tabulation, additional data gathering, analysis, write up and delivery of reports to GRB, will be completed by December 31, 1983.

(C) Consultation/Orientation: Contractor may consult with responsible GRB and AID personnel at any given time. Annex E-2 (Economic Analysis) and Annex E-3 (Social Soundness Analysis) of the Rural Road II Project Paper will be handed over to the Contractor for background information. Other background information necessary to facilitate the study will be made available as the GRB and USAID deem appropriate.

PROPOSED SCOPE OF WORK FOR RURAL ROADS STUDY

1. General

The Burundi Ministry of Public Works has proposed several additional roads as suitable for labor-intensive reconstruction. The purpose of this study is to assess the socio-economic, engineering and financial feasibility of these roads, analyze any special problems or difficulties, and rank them in priority using cost-benefit analysis. Financing will then be requested from the donor community. AID may or may not be interested in reconstructing one or more of the roads.

The Department of Highways has provided us with the following information on the roads in order of priority.

- A) R.P. 82 (Kumuyange-Rumeza-Nyakikuko), Bururi Province, 54 Km.
- B) R.P. 45 (Gakungwe-Mubone-Karinzi-Gakara-Ruhororo), Bujumbura Province, 57 Km.
- C) Route Communale Buhonga-Karinzi, Bujumbura Province, 28 Km.
- D) Route Communale Mutumba-Muhuta-Rutongo, Bujumbura Province, 34 Km.
- E) Route Rutongo-Tora, Bujumbura and Bururi Province, 40 Km.
- F) Route communale Kigwena-Vyanda-Kibimba, Bururi Province, 71 Km.

2. Construction Survey

The study should assess road construction, difficulties encountered, quantities and costs by means of a vehicle survey using an accurate odometer. Typical road sections should be: five meters wide pavement with eight cm-thick gravel surface or equivalent loading strength with two shoulders each one meter wide plus a trapezoidal ditch contained within the one meter width. The road's grade should be a maximum of 10 percent with a spray stone surface for slopes over eight percent. Culverts should be assessed as 450/600/800 mm. diameter with masonry entrance chamber; box culverts should have slab or concrete plant top, or otherwise for river bridges. Surface structures should be one lane wide with a minimum of four meters in width. The alignment should have a minimum radius of 20 meters in hilly terrain. Widening or possible shortening of road length should have a minimum impact on environment and land use.

The existing road and terrain shall be used as a base line for assessing the proposed alignment, grade and consequent earthwork quantities. Slopes of existing cuts and embankments shall be used for assessing stability and slippage. The intent of the project is to use labor intensive construction, thus requiring that operations must be calculated for excavation, using hand tools in earth and transportation by wheelbarrow to spill or fill areas, compared with truck transportation for economical distances; excavation of soft rock by crowbar, hammer and wedge; and excavation of hard rock by jackhammer or dynamite. Disposal of excavated material shall also include rough forming of the road. A roller shall also be used for compacting the road formation.

Paving operations shall given consideration to the availability of gravel or other equivalent materials so as to give the possibility of using hand truck operations compared to the use of a power shovel with a small number of trucks for long distance operations. Spreading and trimming operations should be labor intensive.

An assessment of operations should indicate the equipment and hand tool requirements plus the quantity of store sheds necessary. The labor force should be assumed at 500 workers per road, with increases or decreases as necessary, and sufficient on-the-job training to result in an efficient working force of teams after a transition period. There will

also be a support group of administrative, engineering and supervisory personnel.

The study should also indicate the amount of traffic at maximum use on market days or times of major crop transportation. This includes vehicles, bicycles and pedestrians.

Unit costs should be prepared, keeping in mind the effect of climatic conditions and labor force fluctuations due to agricultural requirements. A note should be made of the areas where local labor may be difficult to obtain, or where distance of the construction site from centers of labor availability may require housing (general assistance in preparing unit prices may be obtained from AAO/Burundi or GRB Department of Highways based on calculations made for R.P. 84 project).

The location of markets and schools should be noted by kilometer.

The rough time sequence of operations should be set forth in the study, as well as the completion of road sections by phases. The consultant should estimate the period of time required for construction and use this as the basis of estimating inflation of the total costs of the project.

The figures used for establishing a percentage for contingencies shall vary according to the exactness and difficulty of construction operations. The consultant should provide a copy of the backup data with calculations and costs.

3. Social Survey

Through a sample survey, the socio-economist should determine:

- approximate labor force in area, underemployment, seasonal employment and other potential off-farm employment;
- population served by road;
- general composition of families, health and educational status, including availability of services, nutritional level;
- income from on and off-farm;
- type of house and health facilities;

- economic roles of men and women, division of labor;
- cooperatives; and
- land ownership.

An analysis of the survey should be made together with an assessment of the potential labor force for construction and attractiveness to the family of all weather road access to markets, social, health and educational services.

4. Economic Survey

Through a sample survey, the socio-economist should determine:

- the basic crops grown in the area, quantities of product constraints on increased production, marketability, farmgate and market prices, cash income from agriculture;
- method of transportation of product to market, restraints on marketing of product, location of specific market places;
- on and off-farm wages, potential for outside work;
- analysis of quantities and types of goods available in the market and their source/origin, market prices and type of transport.

An analysis of the survey should be made together with an assessment of potential effect of construction of an all weather access road to markets.

An analysis should be done of the project's impact in terms of producer surplus.

An analysis should be done of road user savings in terms of goods transported to market, vehicle savings, health, education and social benefits for total road and important sections as required.

An Internal Rate of Return analysis should be prepared.

5. Institutionalization of Rural Roads

The Department of Highways under the Ministry of Public Works does not yet have a separate labor-intensive rural road division. The Department is reconstructing R.P. 84 using its

own administrative, engineering and supervisory staff as well as setting up a maintenance force. The Department also intends to construct other roads in the same labor methods together with necessary support, equipment, tools and buildings.

This study should review highway operations in light of the above and recommend the appropriateness of setting up and methods of operating a separate division under general auspices of the Department.

6. Workmonth Requirements and Personnel Qualifications

- a. Engineer - four workmonths
- b. Socio-Economist - four workmonths.

PEACE CORPS VOLUNTEERS

Job Description

Position: Construction Supervisor Assistant

Duty Station: Murago/Muyama, Burundi

Duration: 1 to 2 years

Qualifications: No specific academic degree required. Some engineering and/or social science background would be desirable.

Experience: Practical field experience in supervising semiskilled laborers and experience on road construction projects, either in the U.S. or Africa, would be desirable.

Language: French S-3, R-3

Duties: The incumbent will be responsible to the IDA-funded project technician. He will assist the technician in all his duties, but primarily as a supervisor of semiskilled road construction crews. Specific duties will include, but will not be limited to, the following:

- familiarize himself thoroughly with the work/contracting methods utilized on the two projects.
- under the direction of the project technician, supervise road construction crews, ensuring that quality and quantity of work meet acceptable standards.
- maintain an up to date inventory of all AID-supplied tools and equipment.
- participate in the collection and periodic updating of the socio-economic-environmental study which will be performed early in the project.
- perform other project-related tasks as directed by the project technician and AID Representative.

Job Description

- Position: Mechanic
- Duty Station: Murago/Muyama, Burundi
- Duration: 1 to 2 years
- Qualifications: The volunteer should have a certificate/diploma from a recognized mechanics school and his course of study should have included trucks and heavy equipment.
- Experience: One to two years experience as a mechanic, preferably in connection with road construction equipment or other heavy machinery.
- Language: French S-3, R-3 level is desirable.
- Duties: The incumbent will be responsible to the IDA-funded project technician. He will be in charge of the Rural Road 84 Project garage at Murago, and later at the Rural Road II Project garage to be constructed at Muyama. He will be responsible for routine maintenance and first echelon repair on all project vehicles and he will be expected to train Burundi counterpart mechanics to take over when he leaves. Specific duties will include, but will not be limited to, the following:
- on arriving at the project site, conduct a thorough examination of project trucks, compactor and power shovel. Make a detailed report on the condition of each and itemize parts/repairs needed.
 - monitor the condition of project vehicles on a continuing basis and perform first echelon repairs as needed.
 - establish a schedule for routine maintenance of project vehicles and ensure that it is followed.

- work closely with the Burundi mechanics assigned to the project and provide on-the-job training.

- on a time available basis, work in conjunction with construction, supervisor assistant (PCV) to assist in supervision of road construction activities.

BURUNDI RURAL ROADS II
ECONOMIC ANALYSIS
ANNEX

A. Scope and Methodology

This project intends to reconstruct a rural access road using labor intensive methods and to reinforce the GRB's institutional capacity to implement such projects. The evaluation of Route 84, a similar project, concluded that the methodology of assisting the GRB in reconstructing roads is an effective means of reinforcing the GRB's institutional capacity to undertake labor intensive roads projects. Because the institution building aspects of this project are built upon the experience gained from the Route 84 project, it is reasonable to assume that this project also represents an effective means of increasing the GRB's institutional capacity.

Thus, the principal objective of this economic analysis is to determine whether the total return from reconstructing the Rumonge-Muyama Road justifies the commitment of resources.

1. Benefits.

The approach used to quantify this road's benefits is a mixed approach which incorporates elements of the road user saving approach and the producer surplus approach^{1/}. To avoid the possibility of double-counting benefits, the producer surplus approach was utilized to estimate the project's benefits in the immediate area affected by the road and the road user savings approach was utilized to measure the benefits beyond the immediate area of the road. The immediate area of the road or the zone of influence has been estimated as a zone which is an average of five kilometers wide on either side of the road. Since the road is thirty kilometers long, the total area of influence is approximately 300 square kilometers. In reality the zone of influence is narrower at the ends of the road, where it joins with other roads, and broader towards the center of the project area, where there are no alternative roads.

The producer surplus approach combines four distinct effects. They are (i) the incremental surplus (incremental revenues minus incremental costs) realized by various producers

^{1/} For those interested in the theoretical underpinnings are directed towards C. Carnework, J. Biderwan, and D. Boret, "A Broadened Approach to the Economic Analysis of Rural Roads," IBRD, 1976 (unpublished paper).

because of higher farm gate prices and lower production costs; (ii) benefits to users of the products if market prices decline as a result of road improvement, (iii) losses that may accrue to users of the products in other markets who may face higher prices; and (iv) changes in profits realized by middlemen (i.e., trader/transporters) throughout the distribution system. Based on household interviews in the project area, discussions with GRB officials at various levels and with the Society for Rural Development (SRD) officials, and information contained in various reports^{2/}, several simplifications to the analysis were believed to be justified, hence made.

First, the transport situation in Burundi and around the project area can be described as "free market" since numerous small trader/transporters all compete against one another for business, which includes the buying, selling and transporting of a multitude of commodities. As a result of this competition and the subsequent bidding down of transport prices charged, the transport cost savings due to the road project are expected to be passed along in large part to farmers in the form of higher prices for outputs and lower prices for inputs and other goods purchased.

Second, the impact of increased quantity of production marketed by the people in the project area is unlikely to result in a significant change in prices, either downwards in the markets to which the product will be transported to or upwards in the local project area markets. In essence, it is not believed that the changes expected in the project area would impact significantly the markets affected.

The impact of these simplifications is to reduce the producer surplus effects which have to be examined to two: the incremental surplus realized by farmers, and the changes in profits realized by trader/transporters. From the practical prospective, the total incremental surplus generated is equal to the sum of the surplus realized by farmers and traders/transporters. Hence, only the total incremental surplus needs to be estimated since it is an economic benefit, regardless of who gets the surplus, and since it is expected that most of the surplus will go to the farmers anyway.^{3/}

^{2/} The information gathered as a result of the Route 84 project was most useful.

^{3/} Thus, the producer surplus should not be misinterpreted to mean only the farmers surplus.

The road user savings approach as used here captures the effect of user cost savings on generated traffic in addition to the traffic that would be servicing the immediate project

area. This would include vehicles which service other areas than the project area, would use the new road rather than take an alternative route, but would not do much business along the new road. In this fashion, the benefits from traffic serving the immediate project area would not be double counted.^{4/}

2. Costs.

For the most part, the economic costs of this project are based upon the financial costs presented elsewhere in the PP. However, an economic cost was calculated when the "true" cost to the economy was believed to be significantly different than the financial cost. When such a divergence occurred, a shadow price was calculated to more accurately reflect the value to Burundi society.

In this economic analysis, shadow values were calculated for charcoal, certain labor costs and foreign exchange. A shadow value for charcoal^{5/} was calculated because it is a scarce commodity whose financial valuation does not accurately reflect its cost to the Burundi society. In particular, the use of charcoal (wood) to produce palm oil in a country which is losing ground cover rapidly is contributing to soil erosion and degradation, and altering of the water tables in the areas affected. As a result the financial cost charged for the charcoal does not reflect the true cost to society and thus a shadow value for charcoal must be calculated.

A shadow wage rate was calculated in certain cases because the opportunity cost to Burundi of employing the labor in alternative forms of employment is very low since there is considerable excess labor in the project area, as well as the country as a whole. This is evidenced by observation and by the fact that the actual wage rates in rural areas are usually below the official minimum wage. Thus, while the financial cost of labor to the project is the minimum wage, the economic cost to society is much lower. For that reason, a shadow value for wages had to be calculated.

^{4/} These benefits are already imputed in the producer surplus calculation.

^{5/} Charcoal is used in the traditional production of palm oil. It is included in the analysis because this method of production will be affected by the road.

By a similar analogy, the value of foreign exchange to the Burundi society is higher than the financial or official exchange rate indicates. Burundi's declining terms of trade and continuing current account deficits on the balance of payments imply that the Burundi Franc is overvalued. In addition, tariffs and other exchange controls, and continued borrowing abroad, will protect an over-valuation of the Burundi Franc by at least another 15 percent.^{6/} In view of these considerations and the fact that the current black market rate is reportedly between 10 to 15 percent above the official Burundi Franc per dollar rate, a shadow price is used to approximate the true value of foreign exchange to Burundi.

1. Producer surplus

In the project area the three crops which will be affected the most by the road are palm fruit, bananas, and cassava. There were suggestions from several observers that the level of production and marketing of other crops such as coffee and beans could be affected. However, they were excluded, given the low importance of these other crops in terms of marketed production and the lack of unutilized area upon which to expand acreage. As a result, the focus of the producer surplus analysis remained on the three crops noted above.

a. Poles of activity. Presently, most of the marketed production is headloaded down to Rumonge, is sold and the money used for the purchase of needed supplies which are headloaded back up the existing "road". Rumonge, with its size, access to the lake, and situation on the paved road to Bujumbura will, in all likelihood, remain the principal pole of economic activity when the road is reconstructed (See Map 1).

In comparison, very minor poles of activity exist now on the road at Kigango (7.2 km from Rumonge), Kabamburi (20.2 km from Rumonge), and Muyama. Activity in the local markets can be expected to increase from the presence of transport bringing in consumer goods and providing easy egress of agricultural produce.

b. Palm Oil. Oil bearing palm trees are the most important cash crop in the project area. They are found primarily along the road from Rumonge up to kilometer twelve. Based on interviews and the knowledge of informed observers, it is estimated that roughly 300-400 MT of palm oil is marketed in Rumonge from the project area.

^{6/} Based on IMF experience throughout the developing and developed world.

Palm oil is obtained from boiling down the palm fruit. This process is costly in terms of time and energy expended. It takes roughly 8-10 hours to boil 20 kilograms of palm fruit down to oil. Charcoal is used to supply the intense heat required to render the oil. It takes approximately one kilogram of charcoal to render one kilogram of fruit to oil.^{7/} This traditional process yields a quantity of oil which is equivalent to about percent of the original weight of the fruit. Thus, assuming an average yield of 4.5 MT of fruit per hectare, the oil equivalent per hectare is 360 kilograms. With this information the area which accounts for the present quantity of oil marketed can be estimated at about 830 hectares.^{8/}

Presently, the palm fruit is boiled to oil because of the relative returns from one headload trip to Rumonge carrying oil versus carrying fruit. The price of oil in Rumonge is BuF 49/kg. while the price of fruit is between BuF4-6/kg. Thus, given an average headload of 20 kgs, the revenue from a headload of oil is BuF 980 versus BuF 120 for fruit.

On a per hectare basis though, the current prices in Rumonge yield BuF 17,640 for oil versus BuF 27,000 for fruit. Clearly, the present transport difficulties are providing an incentive structure for boiling the fruit to oil. When the road is completed, it is firmly expected that traditional production of palm oil will decline dramatically as trader/transporters supplant the headload as the means for ferrying goods to and from market. Furthermore, the use of charcoal for boiling fruit will decline. This is a considerable benefit since it takes about 4.5 MT of charcoal to render one hectare of fruit to oil. With the present technology, the annual charcoal consumed in the project area to produce 300 MT of oil is roughly 3,700 MT.

The demand for palm fruit in Rumonge is, for all intents and purposes, unlimited. Under the tutelage of the Ministry of Agriculture, the Society for Rural Development in Rumonge (SDR) is promoting oil palm cultivation along the littoral of lake Tanganyika within Buramba Commune ^{9/} up to the altitude of 1,600 meters. The SDR purchases the fruit for its oil

^{7/} Based on discussions with people knowledgable on oil palm production and confirmation discussions with REDSO/ESA technical experts.

^{8/} $\frac{300 \text{ MT oil}}{1} \times \frac{1 \text{ hectare}}{0.360 \text{ MT oil}} = 833 \text{ hectares.}$

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extraction factory. Its extraction rates are 18-20% instead of the 8% achieved by traditional means. This increase in efficiency explains in large part why the price of fruit in Rumonge is worth more on per hectare basis than the oil equivalent.

Furthermore, SDR's oil palm program has received a US\$10.18 million by the African Development Fund (ADF) and US\$7.4 million from the African Development Bank (ADB) to undertake a seven year program to replace 4,700 hectares ageing and low producing oil problems along the littoral. The new palms will be planted, with small farmer assistance, between 1983 and 1989 and take about seven years to reach full production. By 1995, the total area replanted will produce 12,000 MT of oil to 2,000 MT at present^{10/}

Of considerable importance is that if the Rumonge-Muyama Road is reconstructed, SDR also will assist the farmers in the project area in replanting approximately of 290 hectares of oil palm trees. ^{11/} Without the road, SDR will continue its focus on those areas already accessible by road, in spite of

^{9/} The commune includes part of the project area.

^{10/} Also included in the SDR plan is the construction (in 1988) of a larger oil processing plant just outside Rumonge with a capacity of 20 MT of fruit per hour. The interim oil processing facility's capacity is already in excess of the area's present fruit production potential. There will also be an associated joint venture with private enterprise to make press board from part of the oil palm residue.

^{11/} Based on PP team discussions with SDR. Furthermore, SDR is in the process of receiving a grant of \$9 million from Saudi Arabia to promote food production in Rumonge commune over the next 4 years. This program will develop 1,600 hectares of land for mechanized food production in the littoral and will assist in extension efforts up to the 1,600 meter limits with all types of food crops. A small seed multiplication center will be associated with the food production activity. Five marketing cooperatives are active in the Rumonge area, one of which has succeeded in raising the marketed amount of rice (both irrigated and upland) from 100 tons five years ago to 600 tons at present. Again, the focus of the effort will be on those areas accessible by road, since the SDR program is not building roads.

the fact that the project road is located near the oil processing plant. Thus, the reconstruction of the project road will allow the the SDR project to impact the people along the road.

To calculate the benefits of the road on oil palm tree producers. The present situation without the road was compared to the estimated situation with the road. Currently, total revenues from the sale of oil by people in the project area are roughly BuF 14.7 million. The costs are more difficult to estimate, hence the focus is what would be significantly different before and after the road is built. Clearly, the use of charcoal for boiling fruit would be altered drastically.

Since charcoal is a scarce commodity in Burundi and charcoal production is often by the families using the charcoal, an economic cost rather than the financial cost was used to estimate the benefit to Burundi society from reducing charcoal use. The border price is often used as a proxy for the value of a commodity that has scarcity value to that society.

As Burundi is not an exporter of charcoal or fuelwood, the import parity price is used. The economic or shadow price for charcoal in Burundi is based on the border price of charcoal imported from Kenya, a nearby exporter of charcoal. The approximate value is BuF 17,900 per MT (c.i.f.) Using this figure, the annual economic cost of using charcoal in the project area is estimated at roughly BuF 67 million. Thus, from the economic perspective, the traditional production of palm oil is costing the Burundi society considerably more than it is getting in return (Intuitively, the GRB realizes this, hence it is actively supporting the modern production of oil palm through SDR).

When the road is constructed, the total revenues from oil palm trees in the project area will increase, because fruit will be sold to the SRD palm oil factory at a higher value per hectare, and the replanted trees will yield more per hectare. Removal of the present trees and replacement with improved stock would result in an increase in fruit production to 7 MT per hectare by the fifth year after planting (and to a maximum of 18 MT per hectare by year 11).

On the cost side, with the road the SDR plant will use diesel fuel to render the oil. Thus, this cost is adjusted from the revenues gained from the palm fruit. Again, since Burundi is diesel fuel deficit, the import parity price was used as the value of the fuel to Burundi society. From Kenya, diesel costs about BuF 55,680 MT. Comparing the heat

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efficiency of charcoal to diesel and the fact that the oil plant also uses some of the oil palm residue for fuelling the plant, the estimated conversion is roughly 11 kg of charcoal per one kg of diesel fuel used at the oil processing plant.

Thus to obtain the benefit stream from oil palm production, the net economic revenue (economic revenue less economic costs) of the present situation was deducted from the net economic revenue from the situation after the road has been reconstructed. The net economic benefits from these calculations appear in column 2 of Table 1. As can be seen from the table, the benefits from the road are assumed to begin in year three.

c. Bananas. Green bananas are produce' in the Medium Altitude and Central Plateau portions of the project area (between kilometer 12 and 30 from Rumonge). Total current production is on the order of 7,020MT. Bananas are an easy crop to cultivate, requiring only 90 person days per crop per hectare and yield the highest volume of product per land area used in cultivation (6,500 - 7,000 kg per hectare) of any crop grown in Burundi.

As such it represents a crop for which increased production could be achieved with relative ease. There is a ready market for bananas in Rumonge, Bujumbura and other regional markets. Bananas were also being sold in all the periodic markets visited by the PP team. There is a substantial difference between current market prices for bananas in the project area (BuF 7,500 per MT) and in Rumonge (BuF 23,200 per MT). Both the price and quantity of bananas marketed could be expected to expand significantly as a result of the road's rehabilitation.

Based on experience in Burundi, current marketings of bananas are roughly 7 percent of total production. In the project area, roughly 75% of the 4,500 household produce bananas on an average of a quarter hectare plot. Yields of 7 MT per hectare times the estimated commercialization suggests that roughly 470 MT of bananas are marketed. Observers estimate that no more than 25% of the marketed production is headloaded down to Rumonge, while the remainder is sold in the project area.

Once the road is completed, the value of bananas in the project area will increase to a level comparable to that in Rumonge. A large part of the increase will probably go to the producer and the trader/transporter will get the rest. Since the price is expected to go up substantially, production is assumed to increase by roughly a conservative 3 percent per year for about 10 years and level off.

The benefit stream was calculated the difference between the total revenue before and after the road is reconstructed. Changes in the cost of production (e.g., reduced time spent headloading, on the one hand, and increased time working to grow bananas, on the other) were estimated to be minimal and offsetting, and therefore not included in the analysis. Table 1, column 3, summarizes the benefit stream from bananas.

d. Cassava. In spite of being the most important food crop marketed (in terms of quantity), little information exists about the crop. Thus, for simplicity, it was assumed that there would be little price effect as a result of the road. The major savings would come from the reduced time spent headloading the cassava to market. Based on work done elsewhere and PP team interviews, it is assumed that the average household makes at least one trip per week to Rumonge to market cassava or cassava products.

Using a shadow value for labor of BuF 20 per day, the estimated savings from the road are BuF 4.7 million per year.^{12/} By not including the possible price effects, this benefit stream is fairly conservative. Column 4 in table 1 present the benefit stream by project year. As can be seen from the table, it was assumed that the benefits from the labor saved in the first year are zero, about 50 percent of the maximum savings starting when the road is completed (by the middle of the second year), and full benefits after year two.

2. Road User Savings. The savings calculated here would accrue to vehicles using the road to transport coffee, bananas and cassava products from the intermediate and central plateau areas beyond Muyama to Rumonge and those bringing in oil, fish and commercial/industrial products to these markets. Operating costs are currently BuF 35 per MT/km for the commonly-used one ton Toyota pickup modified for passengers and overloaded with freight and travelling on dirt roads. On paved roads the cost drops to an estimated BuF 26 per MT/km.

The road is likely to have significant amounts of through traffic as it provides a shorter access route from Rumonge to the interior of the country where there is a demand for the oil and fish produced at the lake. Equally, the lake area requires bananas, beans and peas which are produced at higher elevations beyond the project area. The road connects areas with

^{12/} A shadow price of BuF 20 per day (only 20% of the minimum wage) was chosen since it more accurately reflects the excess labor supply situation in the area.

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complementary production systems and will provide improved market access for producers in both areas as well as facilitating supplies for consumers. Passenger traffic would benefit from the passing vehicles to provide transport to medical facilities, etc. These categories of users would benefit from road user savings.

The assumptions made regarding through traffic are as follows: (i) the alternative route into the interior (Ijenda, Tora, etc.) would be RP 84 which is longer by 17 km of paved road (at BuF 26 Mt/km) and 30 km of dirt road (at BuF 35 MT/km) totalling BuF 930 per ton savings transiting the Rumonge-Muyama road; (ii) based on preliminary traffic data from RP 84, an assumption was made that a minimum of 10 tons each way each week would transit the Rumonge-Muyama road once open; and (iii) traffic would increase at 10% a year for 10 years after which it would level off.

These benefits are summarized in Table 1, column 5.

C. Costs

As noted in Section A, the project's financial costs were adjusted in two cases where they diverged significantly from the estimated economic costs. Two adjustments made in calculating the costs of this project.

1. Shadow wage rate. The financial cost to the GRB for labor paid is the minimum wage. However, the excess supply of labor suggests that the economic value is much less. Thus, the same shadow wage rate or cost of labor used in the cassava benefits calculations are used to calculate the economic cost of road maintenance costs.

2. Shadow foreign exchange rate. The road's construction costs are in large part being paid using foreign exchange from AID and the IBRD. Because of the shortage of foreign exchange, the scarcity value is higher than the financial value. Based on the discussion in Section A, a shadow foreign exchange rate equivalent to a 20 percent devaluation of the Burundi Franc against the SDR was utilized. In reciprocal terms, this means that it costs the Burundi society roughly 25 percent more to purchase a unit (SDR) of foreign exchange. In U.S. dollar terms, the economic exchange rate used was U.S.\$1.00 equals BuF 112.42.

These considerations suggest that the road construction labors are getting paid much more than their economic value to the country for two reasons: (1) because of the overvalued wage rate, and (2) because of the undervalued exchange rate.

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The adjusted project costs appear in Table 2 columns 2, 3, and 4.

D. Benefit-Cost Analysis

1. Basic Results

Sections A, B, and C provided the rationale and details as to how the project's estimated economic costs and benefits were calculated. These are summarized in Tables 1 and 2. The benefit and cost streams were not adjusted for inflation because it is expected that the benefits and costs will rise at roughly the same rate. Even if they do not rise at the same rate, the effect of not adjusting them would be insignificant since the costs are so low relative to the benefits after year two that any adjustments would have minimal impact.

Based on the calculated cash flow (economic benefits less economic costs), the internal rate of return (IRR) of the project is 27 percent (see Table 3), a very respectable internal rate of return.

Analyzing the benefit streams it becomes evident that the major source of economic benefits come from palm oil or more specifically, the reduced consumption of charcoal. Given the number of assumptions involved in the estimation of this benefit stream, as well as several of the others (i.e., shadow price of foreign exchange) a sensitivity analysis of the basic results is justified.

Table 1: ECONOMIC BENEFITS IN CONSTANT PRICES (1982)^{1/}

Project Year	Wages	Palm Oil	Bananas	Cassava	Road User Total Benefits
---in thousands of Burundi Francs---					
1	0	0	0	0	0
2	4,800	0	1,900	2,400	500
3	11,200	0	5,500	4,700	1,000
4	66,200	54,600	5,800	4,700	1,100
5	66,700	54,600	6,200	4,700	1,200
6	67,100	54,600	6,500	4,700	1,300
7	67,600	54,700	6,900	4,100	1,400
8	73,500	60,000	7,200	4,700	1,500
9	74,100	61,100	7,600	4,700	1,700
10	79,200	64,600	8,000	4,700	1,900
11	83,200	68,000	8,400	4,700	2,100
12	87,100	71,500	8,800	4,700	2,100
13	91,000	74,900	9,300	4,700	2,100
14	94,900	78,400	10,100	4,700	2,100
15	95,300	78,400	10,100	4,700	2,100
17	95,300	78,400	10,100	4,700	2,100
18	95,300	78,400	10,100	4,700	2,100
19	95,300	78,400	10,100	4,700	2,100
20	95,300	78,400	10,100	4,700	2,100

^{1/} See text for discussion as to how benefits were calculated. REDSO/ESA, DDijkerman/po, March 1, 1983.

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Table 2: ECONOMIC COSTS IN CONSTANT PRICES (1982)^{1/}

Project Year	GRB Construction	GRB Maintenance	IBRD	AID
	--- in thousands of Burundi francs---			
1	39,200	100	18,700	
2	10,700	200	9,200	32,600
3	1,000	200	0	0
4	1,000	200	0	0
5	1,000	200	0	0
6	1,000	200	0	0
7	1,000	200	0	0
8	1,000	200	0	0
9	1,000	200	0	0
10	1,000	200	0	0
11	1,000	200	0	0
12	1,000	200	0	0
13	1,000	200	0	0
14	1,000	200	0	0
15	1,000	200	0	0
16	1,000	200	0	0
17	1,000	200	0	0
18	1,000	200	0	0
19	1,000	200	0	0
20	1,000	200	0	0

^{1/} See text for discussion as to how costs were calculated.
REDSO/ESA, DDijkerman/po, March 1, 1983.

Table 3: THE INTERNAL RATE OF RETURN OF THE PROJECT

Project Year	Economic Benefits	Economic Costs	Net Benefit
---in thousands of Burundi Francs---			
1	0	118,600	-118,600
2	4,800	62,600	-57,800
3	11,200	1,200	10,000
4	66,200	1,200	65,000
5	66,700	1,200	65,500
6	67,100	1,200	65,900
7	67,600	1,200	66,400
8	73,500	1,200	72,300
9	74,100	1,200	72,900
10	79,200	1,200	78,000
11	83,200	1,200	82,000
12	87,100	1,200	85,900
13	91,000	1,200	89,800
14	94,900	1,200	93,700
15	95,300	1,200	94,100
16	95,300	1,200	94,100
17	95,300	1,200	94,100
18	95,300	1,200	94,100
19	95,300	1,200	94,100

Internal rate of return₁ = 27.25%

REDSO/ESA, DDijkerman/po, March 3, 1983.

2. Sensitivity Analysis

Four sensitivity analyses were performed.

First, the shadow wage rate or economic value of labor was reduced to zero with respect to cassava benefits and road maintenance costs. This has the effect of valuing the labor saved from headloading and the economic cost of maintaining the road at zero. The impact of this sensitivity test would reduce benefits more than costs.

Second, a shadow foreign exchange rate equivalent to a 30 percent devaluation of the Burundi Franc against the SDR was tested to see the impact of an under evaluation of the economic value of foreign exchange.

Third, the benefits projected to be derived from palm oil production and charcoal savings were reduced arbitrarily by 50 percent.

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The last sensitivity analysis combines the above three charges to examine their impact in a very unlikely worst case situation.

Table 4 summarizes the results of the sensitivity analysis. Not including the worst case, the greatest decline in the IRR resulted from the 50 percent reduction in oil benefits. The IRR declined by 9 percent to 17.92 percent. The next most significant change resulted from the adjustment of the value of foreign exchange (3.6% decline) and least important was the altering the shadow wage rate (18% decline). In the three cases, though, the IRR's all remained above the opportunity cost for capital to Burundi assumed in this analysis (i.e. 15%).

Combining the three sensitivity tests results in the IRR dropping to 13.2 percent. Thus, only in an unlikely event that all three changes occurred in the magnitudes assumed above, would value of undertaking this road reconstruction project begin to come into question. If this would happen, then it must be remembered that a number of benefits were estimated conservatively.

Table 4: SENSITIVITY ANALYSIS OF THE PROJECT ROAD ECONOMIC ANALYSIS

	Internal rate of return
Basic Analysis	27.25
1. Shadow value of labor reduced to zero.	25.48
2. Economic cost of Foreign exchange increased by 10% (equal to a 30% devaluation of the BuF per SDR	23.64
3. Benefits from palm oil reduced by 50%	17.92
4. Changes 1-3 combined	13.18

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3. Externalities. The above economic analysis was conservative in several respects. First, the wages paid to workers constructing the road were not shadow priced at zero, though this could very likely be justified. Second, the benefits of lower cost of goods and services brought up the road, such as fish and other household items, were not included. By the same token, the availability of transport may develop small cottage craft production (i.e., brooms, baskets, etc.) as well as increased marketing of other less important agricultural crops for "export" to Rumonge and beyond.

On the negative side, there are few unexpected costs. As AID impact evaluations and other road evaluations have pointed out, the impact of reconstructing a rural road is different from the introduction of a new road in a previously inaccessible area.

The AID Project Impact Evaluation Report No.6, Impact of Rural Roads in Liberia, points out:

"In general terms, the impacts of the roads, whether positive or negative, are more pronounced when new roads are built rather than when old ones are improved. When areas are first linked into a national network of transportation and communications, the impacts on the regions are rapid and vivid. However, when an existing road is improved, the consequences are not as pronounced--because the process of change had been initiated at the time the original road of track had been built.

"Thus, the renovation of an existing road, of itself, may be less a risk in terms of adverse impact on people, and conversely, much less a significant factor in any positive change that may occur" (page 7).

In this case of reconstructing the project road, the risks are, in all probability, minimal while the benefits are substantial, primarily because of gains from altering the technology of palm oil production in the project area.

By the same token, the selection of the project road by the GRB vis-a-vis other road options also appears to be sound. The IRR of this project is more than respectable by most standards. Hence, the value of comparing this project to other projects become less of a pressing concern. It should not be forgotten that there is a cost involved in undertaking numerous alternative economic analyses.

E. Conclusion and Recommendation

1. Conclusion

The economic analysis of this project has found considerable evidence to conclude that the reconstruction of the Rumonge-Muyama Road is a good investment for the Burundi society from the perspective of increasing incomes of the rural populace in and around the project area, as well as, from the perspective of increasing the GRB's institutional capacity to undertake labor intensive road construction. The sensitivity analysis suggests that the benefits from the project can alter substantially and still show a respectable economic rate of return.

2. Recommendations

Although the available information is sufficiently accurate in terms of the order of magnitudes involved, detailed socio-economic studies would contribute substantially to the understanding of the rural Burundi economy and, therefore, are recommended. While these studies would be useful in making better decisions on various subjects besides road issues, it is unlikely that the studies' findings would alter the basic conclusion that this road is a worthwhile investment. Therefore, there is no need to delay the reconstruction of the project road until the studies are completed.

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SOCIAL SOUNDNESS ANALYSIS

This analysis includes two sections: 1) A brief profile of the project area. 2) A discussion of the project in relation to topics of general AID concern including socio-cultural feasibility, benefit incidence, the role of women, spread effect and several outstanding issues related to project success.

I. Profile of the Zone of Influence

The zone of influence of the Rumonge-Muyama Road has been determined as extending at least 5 km each side of the road.

Geography and Population

The road spans a considerable variety of terrain, from the shores of Lake Tanganyika (700 meters elevation) up a long hill to the eastern junction with Route 84 at approximately 2000 meters. Along the Lake shore, there is an excellent road which runs north to Bujumbura. The population in this lower, western side of the "zone of influence" fish, produce palm oil, robusta coffee, as well as cultivate the ubiquitous bananas, beans and cassava. The main means of access to goods and services for people in this area is along the lake shore road leading to Bujumbura. Their reason for utilizing the Rumonge-Muyama Road is primarily confined to trading in the periodic markets (e.g. household commodities such as soap, matches, clothes, fish, etc.) and visiting relatives.

The road leaves Rumonge in a north-easterly direction passing initially through 3.2 kilometers of oil palm plantations. Coming out of the plantation, the road begins to climb but remains in the oil palm production belt up to the kilometer 12.

At kilometer 5.9, the road passes through Kumbuto which has a small shop but no market. At 7.2 it arrives at Kigongo which is a major market town with 4 to 5 shops and a restaurant. By kilometer 8, the elevation of the road is sufficient for arabica coffee to be produced. The village or Rubona is at kilometer 11.3. It was formerly a market town but the market has been moved to Kigongo; however, it still has a number of shops and a restaurant. Shortly after Rubona, the road climbs

to a point where oil palms can no longer be grown. Thereafter, agricultural production is solidly within the Central Plateau complex essentially to the top of the road. At kilometer 12.5, the road reaches Rubera which has a Protestant school recognized by the Government. The school offers the first three years of primary school and has 159 pupils, possibly a third of which are girls. A Foyer Sociale is also located at Rubera which has 64 pupils, 57 of which are girls. The area produces large quantities of coffee and there are noticeably greater numbers of corrugated aluminium roofs on houses in this area.

The small village of Nyarushingwa is found at kilometer 14.6 which has several small shops but no market. At kilometer 16.4, the road passes between Kanyabitumba (north side) and Mudende (south side) which respectively has a Protestant school going up to standard 5 and a Catholic school up to standard 6. This middle section of the road is passing through the Mudende colline which is a large and heavily populated colline as 8,050 persons were counted in the 1979 census.

At kilometer 20.2, the road passes through Kabumburi, a market town with a market on Mondays, and several shops and boutiques. Ruhora is found at kilometer 24.9 and the road terminates at kilometer 29 in Muyama, the administrative headquarters of Burambi commune. The area at the upper reaches of the road borders on the high altitude zone but is still of sufficiently low altitude to produce coffee and cassava. No plantings of tea are found along the road.

Population

The population of the project area is estimated to be 26,000 people. Just under 50% of this population is under age 15; 45% is between the age 15-59. The literacy is estimated to be 15%. Rugo (household) size within the area (based on Parish records) is an estimated 5.7 persons, consistent with the commonly accepted national average of 5.7. Parish estimates put the number of female-headed households in the area at just under 20%.

Overall, the area can be divided very crudely into three ecological farming/herding areas. To the far west is the lakeside road junction area discussed above. On the higher elevations a more traditionally pastoralist people predominate. Today many of these people still keep cattle, as well as grow the usual subsistence crops, wheat, and peas. The valleys between the crest support over 80% of the population of

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the area. Here the more traditionally agricultural farmers of Bantu stock predominate. Coffee is grown as the main cash crop at this elevation, along with the usual subsistence crops. Population density in the coffee growing areas is far greater than at the higher elevations, with areas supporting over 100 persons per square km.

SRD/R Activities

The Societe Rurale de Developpement de Rumonge (SRD/R) is a parastatal organization under the tutelage of the Ministry of Agriculture. Its mandate is to promote agricultural development along the littoral of Lake Tanganyika within Burambi Commune up to the altitude of 1,600 meters. To the present, it has been most actively involved with oil palm cultivation. It has just been granted \$10.98 million by the African Development Fund (ADF) and \$7.4 million by the African Development Bank (ADB) to undertake a seven year program to replace 4,700 hectares of ageing and low producing oil palms along the littoral. The new palms will be planted between 1983 and 1989 and take about seven years to reach full production. By 1995, the replanted area will produce 12,000 tons of oil compared to 2,000 tons at present. Included in SRD/R's plans is a oil factory near Rumonge with a capacity of 20 tons of oil palm bunches an hour to be built in 1988. In the interim, they are installing a one ton an hour prototype and will buy any bunches delivered to the factory. Oil extraction rates at the factory are 18-20% instead of the 8% achieved by individual growers. The presence of the oil palm factory and an associated joint venture with private enterprise to make pressboard from oil palm residue, will clearly have a profound development impact on the Rumonge area. (The economic impact on the project area will be analyzed in the Economic Analysis Annex.)

SRD/R is in the process of receiving a grant of \$9 million from Saudi Arabia to promote food production in Rumonge Commune over the next 4 years. This program will develop 1,600 hectares of land for mechanized food production in the littoral and will assist in extension efforts up to the 1,600 meter limit with all types of food crops. A small seed multiplication center will be associated with the food production activity. Five marketing cooperatives are active in the Rumonge area, one of which has succeeded in raising the marketed amount of rice (both irrigated and upland) from 100 tons five years ago to 600 tons at present.

It is evident that with the amount of activity intended for the Rumonge area by other donors, there will be a substantial

requirement for a road linking Rumonge directly with the interior which can serve to evacuate oil, fish and food production. Road users and the population along the road can expect substantial spin-off of benefits from such development activities.

II. Topics of USAID Concern

The principal purpose of this project is to provide access to an area which has considerable agricultural potential and has been involved in a range of activities promoting local participation in development activities, but whose development has been seriously constrained due to the deterioration of the main route through the area. The development activities which stand to profit significantly from completion of the road have been detailed in the last section and in the Economic Analysis.

A related purpose of this project is to rehabilitate the road utilizing to the extent possible labor intensive methods. This approach clearly has several major effects from the "social" perspective: it involves people in the process of local development, it provides employment, it builds skills for the future, and it ensures a cadre of local workers who are trained in road maintenance.

The project also has an additional closely-related purpose - to seek to strengthen a system and institutionalize for labor-intensive road construction, selected by the GRB on a national basis as an effective means for improving the conditions of the Burundi rural poor.

A. Beneficiaries

1. Road Workers and Their Families

This category of beneficiary will experience an income gain directly from project activities as soon as construction begins. The possibility of employment on the project was welcomed by the households in the area, and it is not expected that there will be any difficulty in recruiting laborers. Interviews indicated that men in their region would seek employment on the project. Employment would be sought both to secure wages and also because there was a great desire in the area to have the road improved.

2. The Population in the Zone of Influence of the Road

The population in the area will experience some indirect benefits during the construction of the road as the road workers use a substantial portion of their wages to purchase local products and labor. Following road completion, oil palm producers will enjoy a producer surplus through selling palm fruits rather than oil. It is possible also that producers of bananas and cassava/cassava products may enjoy this type of benefit, while coffee producers will benefit from road user savings in marketing their coffee crop. All individuals in the area will benefit from improved supplies in the markets and in improved access to hospitals, schools, etc. It is unlikely that much land will be taken by the road improvement activity as it is reconstruction rather than the building of a new road.

3. The Ministry of Works

The Ministry of Works project for labor intensive reconstruction of Route 84 is an experiment in organizing and managing such activities in Burundi. The project management team has developed a system of team working by task and sub-contracting specific jobs to private contractors which is resulting in better phasing of activities and more rapid progress towards road completion. By the time Route 84 is complete, there will be a corps of experienced team leaders and contractors available in the area. Reconstruction work on the Rumonge-Muyama Road will provide an ideal location to judge the potential of labor intensive construction with a trained management team and for the Ministry of Works to refine its operational plans before undertaking the organization of such activities in other parts of Burundi. In addition, the project proposes to undertake the initial technical and economic/social analysis of a package of roads both to provide the basis for on-going activities which may be financed by the GRB or donors and to upgrade the capacity of the Ministry of Works to undertake planning/evaluation activities.

The Ministry of Works will benefit from the improvement in its working methods. The project should have an enhanced "spread effect" thereby, as other areas of Burundi may ultimately benefit from improved roads and the method of constructing them which brings a new income flow into the area for a sustained period.

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B. Women

Women will benefit directly from the labor intensive component of the project to the extent their husbands and/or relatives bring home the wages earned.

Increased speed and ease of access is particularly important for women if they are to make use of such services as schools and health care, and especially if they are to become involved in marketing of food crops. Their responsibilities for childcare, farming and meal preparation make it impossible for them to be away from home for any extended period and accordingly they must depend upon sufficient demand in local markets to dispose of their produce. In addition, if it were possible to come and go quickly from more important markets, women could be expected to take advantage of the higher prices offered there and thus becoming involved in a two-way trade, selling local foodstuffs and purchasing fish for resale in local markets. At present, although women were seen in the local markets in large numbers, they were not involved in such activities as selling fish. Typically, fish selling requires at least an entire day's walk to the lake and back, and an overnight stay. When these aspects are considered, the road can be expected to make a considerable improvement in the situation of women.

There may be some possible burdens for women associated with the improvement of the road, but their extent is difficult to determine at this time, and hence should be monitored. It is possible, for example, that wage labor opportunities for men will pull them "off the farm" to the detriment of the wife. If additional labor is not hired as a substitute, the wife may be faced with an added burden, e.g. in coffee cultivation, ground clearing, etc., particularly if her husband fails to bring home food and money.

A second possible burden on women in the area may emerge over time as the road helps to accelerate the trend toward commercialization of food crops. In other parts of Africa such an acceleration of commercialization has been associated with an increasing involvement of male-oriented extension programs and men in farming, and a subsequent domination of the women's access to the sale and personal control of proceeds from farm yields. At present, the equitable involvement of girl students in the agricultural activities in the schools makes this problem unlikely in the near and midterm.

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C. Socio-Cultural Feasibility

There should be no difficulties associated with the socio-cultural feasibility of this project. The road exists, and in essence is simply being brought into an improved state. Mobility patterns may change in the area, as those living further away from Lake Tanganyika will avail themselves of a route which will take them to Bujumbura more quickly. Lake-caught fish and a number of other commodities will become more readily available, but given the existing system of head portorage, changes will be in quantity, not in kind.

Development activities are already underway. Improved access will quicken them but certainly not at a rate which could be predicted as detrimental, providing the GRB's official position vis-a-vis development of the interior is adhered to. Recruitment and employment of local labor should present no problems. The establishment practice of hiring those who present themselves may result in a bias towards the men of Bantu background who are more accustomed to hard physical labor, but such a bias would probably improve overall distribution of wealth in the area.

D. Spread Effect

Successful initiation of this roads project should result in a spread effect both within the project area, and beyond.

Within the project area, the development of a trained local labor force of over 500 men should increase the likelihood that the project road and additional feeder roads are well maintained over the long run. It is possible that a number of these laborers will be able to utilize the skills developed while working on the construction teams to find jobs or assist in self-help projects elsewhere after their involvement in the road rehabilitation is completed.

As as project labor intense rural road rehabilitation, the project also has considerable potential for generating a country-wide "spread effect" as the GRB Travaux Public or private, non-governmental organizations adopt the purposes and procedures developed under the construction program. In order that this project achieve such a spread effect, several conditions must be met. First, it must be recognized as a successful activity. The procedures developed during life of project must be documented and evaluated. There must be some evaluation of impact as soon as possible after

road improvement: i.e., to what extent has easing of a key transportation constraint contributed to an acceleration of development activities in the area? These evaluations must be undertaken in such a way as to be credible, their results must be effectively communicated to relevant decision-makers and practitioners throughout the country. Careful implementation of the project evaluation plan will play a critical role in whether or not the project does achieve the maximum spread effect.

E. Local Commitment and Participation

There seems to be no question that the GRB is genuinely interested in rehabilitation of the road; there is also ample evidence that the GRB Travaux Publics is committed to the concept of utilization of labor intensive road rehabilitation for the Rumonge-Muyama Road. It is understood, however, that the Travaux Publics personnel working on preliminary feasibility studies have found the local and regional GRB administration to be supportive. The support of the strongest local development institution in the area - the SRD - will play an important role in supporting project implementation. Local participation is also assured through incorporation of the labor-intensive aspect of road rehabilitation.

F. Impact on Local Groups

This project will have an impact on various local groups. The locally recruited laborers will receive at least a minimum wage. Additional direct beneficiaries of the project will be several Ministry of Public Works road building personnel who will receive training under the project, also the labor team foremen or sub-contractors who will lead the different labor teams. The families, relatives and friends of the labor crews will benefit directly from the wages paid to the laborers for their work.

Two classes of people will benefit from the completion of the road: (1) users of private, public and commercial vehicles and foot traffic, and (2) the farmers living in the area. The farmers will benefit not only from improved access to goods and services but also from the increased value of agricultural production as farm gate prices rise due to a portion of the road user savings being passed on to farmers. See beneficiaries section for discussion of the role of women.

Two categories of quantifiable benefits flow from the project: (a) those accruing as a result of labor intensive construction, and (b) producer surplus and/or road user saving.

Labor intensive construction employing labor is a project benefit which will result from the increased productivity and income flow generated by the construction activity. The first portion of the benefit derives from the wages paid to road workers, and experience on Route 84 indicates that placing the value of this benefit at the level of the salary paid to workers is a conservative estimate.

Workers on the road also use a substantial portion of their earnings to purchase consumption items produced locally (fish, oil, bananas, beans, etc.). This and the wages paid to farm labor results in a high multiplier benefit arising from the wages, particularly as the funds to pay the wages are derived from outside the Burundian economy.

Work on the road reduces the availability of labor for agricultural production only slightly given the possibility of flexible working arrangements and the fact that women, rather than men, provide most agricultural labor when necessary. Men working on the road employ other men in the area to help their wives with farm labor.

ANNEX F

Name of Country: REPUBLIC OF BURUNDI
Name of Project: Rural Road II
Number of Project: 695-0112
Number of Grant:

1. Pursuant to Section 103 of the Foreign Assistance Act of 1961, as amended, I hereby authorize the Rural Road II Project for the Republic of Burundi involving planned obligations of not to exceed \$841,000 grant funds over a one year period from the date of authorization, subject to the availability of funds in accordance with the A.I.D. OYB/allotment process, to help in financing foreign exchange and local currency costs for the project.

2. The project consists of the reconstruction of the Rumonge-Muyama Road using labor intensive construction methods to all-weather status and the conduct of technical and socio-economic analyses necessary for the Government of Burundi to determine the feasibility of additional road reconstruction projects

3. The Project Agreement which may be negotiated and executed by the officer(s) to whom such authority is delegated in accordance with A.I.D. regulations and Delegations of Authority shall be subject to the following essential terms and covenants and major conditions, together with such other terms and conditions as A.I.D. may deem appropriate.

a. Source and Origin of Commodities, Nationality of Services: Commodities financed by A.I.D. under the project shall have their source and origin in the Cooperating Country or in countries included in A.I.D. Geographic Code 941, except as A.I.D. may otherwise agree in writing. Except for ocean shipping, the suppliers of commodities or services shall have the Cooperating Country or countries included in A.I.D. Geographic Code 941 as their place of nationality, except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. under the project shall, except as A.I.D. may otherwise agree in writing, be financed only on flag vessels of the United States of the Cooperating Country.

b. Conditions Precedent: The Project Agreement shall contain conditions precedent providing in substance as follows:

Prior to first disbursement or the issuance of any commitment documents under the Project Agreement, the Cooperating Country shall furnish, in form and substance satisfactory to A.I.D.:

- (1) a statement of the name of the person(s) acting as representative and additional representatives of the Cooperating Country under the Project Agreement, together with a specimen signature of each person specified in such statement; and
- (2) evidence of the establishment by the GRB of a separate bank account for the deposit of all A.I.D. grant funds advanced to the Cooperating Country for project operational costs.

Prior to disbursement or issuance of any commitment documents under the Project Agreement for road construction, the Cooperating Country shall furnish, in form and substance satisfactory to A.I.D., evidence that sufficient funds, additive to the operational budget, have been budgeted and are available to meet the costs of transferring the workshop, storage and office facilities currently in Murago to Muyama.

c. Covenants: The Project Agreement shall contain covenants providing in substance as follows:

- (1) Prior to commencement of construction the GRB will furnish a plan to provide qualified management and technical personnel to supervise construction of the road.
- (2) six months prior to the scheduled completion of the project the GRB will furnish a plan to provide necessary training, equipment and budget to ensure proper maintenance of the project road after its reconstruction.
- (3) the GRB will take steps to provide any additional financing required for the continuation of the two highway technician positions established under RP 84 project throughout the Rural Road II project.
- (4) except for those spare parts to be procured by USAID on an emergency basis, the GRB will expeditiously provide spare parts necessary to keep all equipment in operating condition.
- (5) the GRB also agrees that the housing currently provided to IBRD-financed technicians on RP 84 will continue to be made available to the technicians working on the Rural Road II project.

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