

AGENCY FOR INTERNATIONAL DEVELOPMENT <b>PROJECT DATA SHEET</b>		1. TRANSACTION CODE <input checked="" type="checkbox"/> A = Add <input type="checkbox"/> C = Change <input type="checkbox"/> D = Delete	Amendment Number _____	DOCUMENT CODE 3
2. COUNTRY/ENTITY Zaire		3. PROJECT NUMBER 660-0126		
4. BUREAU/OFFICE Africa		5. PROJECT TITLE (maximum 40 characters) Transport Reform Project		
6. PROJECT ASSISTANCE COMPLETION DATE (PACD) MM DD YY 01 92 4 94		7. ESTIMATED DATE OF OBLIGATION (Under "B." below, enter 1, 2, 3, or 4) A. Initial FY 90 B. Quarter 3 C. Final FY 94		

8. COSTS (\$000 OR EQUIVALENT \$1 = )

A. FUNDING SOURCE	FIRST FY 90			LIFE OF PROJECT		
	B. FX	C. L/C	D. Total	E. FX	F. L.C	G. Total
AID Appropriated Total	2,000			4,800	1,600	6,400
(Grant)	( 2,000 )	( )	( )	( 4,800 )	( 1,600 )	( 6,400 )
(Loan)	( )	( )	( )	( )	( )	( )
Other: 1.						
U.S. 2.						
Host Country						
Other Donors						
<b>TOTALS</b>	<b>2,000</b>			<b>4,800</b>	<b>1,600</b>	<b>6,400</b>

9. SCHEDULE OF AID FUNDING (\$000)

A. APPRO. PRTATION	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) DFA	130	800				2,000		4,800	
(2)									
(3)									
(4)									
<b>TOTALS</b>						<b>2,000</b>		<b>4,800</b>	

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each) 821	11. SECONDARY PURPOSE CO.
12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)	
A. Code B. Amount	BR 1,000
BS 1,000	

13. PROJECT PURPOSE (maximum 480 characters)

14. SCHEDULED EVALUATIONS Interim MM YY 01 91 2 Final MM YY 11 09 14	15. SOURCE/ORIGIN OF GOODS AND SERVICES <input type="checkbox"/> 000 <input type="checkbox"/> 941 <input type="checkbox"/> Local <input type="checkbox"/> Other (Specify) 935
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16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a \_\_\_\_\_ page PP Amendment)

17. APPROVED BY	Signature: <i>Charles W. Johnson</i>	DATE DOCUMENT RECEIVED IN AID/W. OR FOR AID/W. DOCUMENTS, DATE OF DISTRIBUTION MM DD YY
	Title: _____	
	Date Signed MM DD YY	MM DD YY

## ACTION MEMORANDUM FOR THE DIRECTOR

DATE: SEPTEMBER 20, 1990

FROM: TOM DRISCOLL PDD  
THROUGH: DICK MACKEN PDD *RM*

SUBJECT: TRANSPORT REFORM PROJECT, 660-0126

I. Action: You are requested to approve a grant for \$4.8 million from the Development Fund for Africa Account for the four-year Zaire Transport Reform Project, 660-0126.

II. Discussion: USAID Zaire proposes the \$4.8 million Transport Reform Project as a preliminary step toward arresting the decline in road maintenance services due to inadequate funding by improving the efficiency of those services primarily through technical assistance and research. The Project will also provide for a continuation of a policy dialogue related to road maintenance funding and much needed institutional reforms.

The Project will help to increase the flow of goods and services between urban and rural areas. In time, project assistance will contribute to improved road conditions which will result in (i) reduced transport costs and decreased prices of transported goods; (ii) increased farm gate prices and increased sales of farm products; (iii) greater movement of basic consumer goods to rural areas; and (iv) improved quality of and access to health and educational services. The immediate beneficiaries of improved road conditions will be transporters, merchants, productive enterprises dependent on transport for agro-industrial and other inputs, and private road maintenance contractors and their employees. The ultimate beneficiaries of cheaper transport services are rural producers and consumers; women traders, transporters, farmers, and market vendors; and urban consumers of foodstuffs and other rural products.

The continuing deterioration of Zaire's road network imposes high economic costs, discourages regional specialization, reduces access to services, and is a critical constraint to broad-based economic growth and development. The problem results from unstable macroeconomic conditions; and the result is evident in the failure of earmarked fuel taxes to generate sufficient revenues for road maintenance. The problem is worsened because of inadequate supplementary funding from the GOZ budget and generally ineffective road network management.

The Project, which is a product of the May 1990 non-project assistance proposal submitted to AID Washington will focus on three primary objectives: (i) improved road network planning and investment choices; (ii) improved performance of road management institutions, particularly in the area of road maintenance; and (iii) limited research for the benefit of institutions on alternative funding sources for roads, the impact of the cost of infrastructure maintenance on society, and the environmental impact of roads.

III. Financial Summary: For the total life-of-project funding, the Mission plans to obligate \$2,000,000 in the fourth quarter of FY 1990, \$2 million in the fourth quarter of 1991 and the remaining \$800,000 the second quarter of 1992. The GOZ contribution to the project, from counterpart fund generations, will be no less than the equivalent of \$1.6 million.

The overall breakdown of the requested project funding is as follows:

	Initial Obligation (\$000)	LOP (\$000)
Technical Assistance	890	2,660
Program Management	360	720
Commodities	240	362
Research and Analysis	260	720
Evaluation and Audits	50	56
Contingency	200	282
Total by FY	2,000	4,800

IV. Committee Action and Findings: The Implementation Plan contained in the PP has been carefully reviewed by the Project Committee, which concluded that the Plan was realistic and established a reasonable time frame for carrying out the project.

V. Special Concern:

A. The Environment: An IEE prepared by the REDSO/WCA Regional Environmental Officer was submitted with the original PAIP and approved by the Africa Bureau's Environmental Officer with AFR/GC clearance. Although the program described in the non-project assistance proposal was substantially larger and would occur over a longer time period than the activities included in the present project. The environmental implications remain unchanged. In response to recommendations made in the IEE, the project

includes an environmental covenant requiring institutionalization by Office des Routes of environmental impact assessments for roads projects.

B. Responsible Officers: John Wall, Chief of the USAID Zaire Office of Project Design and Operations, is the officer responsible for the project in the field. William Hammink, AFR/PD/CCWAP, is the officer responsible for the project in AID Washington.

C. Disadvantaged Enterprises: The Project Paper discusses the Mission's review of the qualifications of disadvantaged enterprises suggested by the Africa Bureau with regard to a possible set-aside of the Transport Reform Project institutional contract for a disadvantaged enterprise or institution. Full and open competition of contractors was recommended. As required under current legislation, the CBD notice requesting proposals will state that at least 10% of the contract value must be subcontracted to disadvantaged enterprises or institutions and that technical proposals submitted must include a subcontracting plan for such disadvantaged enterprises or institutions.

D. Local Costs: Dollar disbursements for local costs will not be made except in accordance with the requirements of Handbook 1B, Chapter 18.

VI. Waivers: No waivers are expected under the project.

VII. Justification to Congress: The Information needed to prepare a Congressional Notification was sent to AID Washington on July 20, 1990,. The Notification was submitted to Congress and ultimately expired on September 10, 1990.

VIII. Authority: You have authority under Section 4.A of DOA 551 to authorize a project of up to \$20,000,000 and ten years of life-of-project, provided that no significant policy issues are involved and provided no waivers are required which exceed your authority. No such policy issues or waivers are involved here.

XI. Recommendation: That you sign the attached Project Authorization and thereby approve life-of-project funding of \$4.8 million for the Transport Reform Project, 660-0126.

Attachments: Project Agreement  
Project Authorization  
Project Paper

Charles W. Johnson  
Director  
USAID Zaire

Date: \_\_\_\_\_

Clearances:

Baudouin de Marcken DDIR	<u>MB</u>	Date:	<u>9/20/90</u>
John Bierke PEP	<u>NID</u>	Date:	<u>9/21/90</u>
Al Hulliung CONT	<u>VAH</u>	Date:	<u>9/20/90</u>
Ron Harvey ARD	<u>RAH</u>	Date:	<u>9/21/90</u>
Dick Macken PDO	<u>RAM</u>	Date:	<u>9/20/90</u>
Jerry Kryschtal EXO	<u>CAT for</u>	Date:	<u>9-20-90</u>
Charles Signer CMO	<u>CS</u>	Date:	<u>9-20-90</u>

**TRANSPORT REFORM**

**TECHNICAL ASSISTANCE AND RESEARCH PROJECT**

**660-0126**

9/21/90

# TRANSPORT REFORM

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## Introduction

The \$4.8 million Transform Reform Project is the product of nearly two years of analysis, design and negotiation aimed at addressing the crisis which is affecting Zaïre's rapidly deteriorating road network. This project paper responds to the critical need for technical advisors in the national roads bureau, Office des routes, to reinforce and influence high-level decision-making in key areas of highway and rural road management: general planning, maintenance programming and civil engineering.

As a result of the present macro-economic situation, however, evidenced by the absence of a structural adjustment framework for reform and recovery, many of the conclusions and recommendations found in the attached Annexes cannot be implemented at this time. In its first iteration, this Project emerged as a \$35 million **POLICY REFORM** program. The Transport Reform PAAD was submitted to AID Washington in May of 1990. Washington response to the proposal was mixed, recognizing on one hand the need for decisive actions to arrest the downward spiral of road quality, but recognizing as well the important link between the macro-economic environment and the enormous cost of roads to a country the size of Zaïre.

The program was designed to define and support macro-economic steps which could be taken by the Government of Zaïre to address the fundamental obstacle to the provision of roads, which is funding. The original program proposed a series of interrelated conditionality linked to the Transport Surtax on Fuel. This tax, roughly 50% of which is dedicated to road improvement and maintenance, is the principal source of local financing for the national road maintenance organizations.

Secondly, the PAAD proposed using local currency generated from a quick-disbursing commodity import program to fund road maintenance activities conditioned on further **INSTITUTIONAL REFORMS** within Office des routes and SNRDA, Zaïre's agricultural feeder road maintenance organization. These measures, conditioned on positive reforms at the policy and institutional levels, were to be implemented, monitored and followed-up by a program management and technical assistance team acting to continue the policy dialogue and advise the roads bureau at national and regional levels.

Lastly, the program featured concise research and training activities to round out an assistance package designed to address both the present road maintenance crisis as well as the need to continue to maintain roads as a means of promoting economic stability and growth well into the next century.

Because of a lack of a structural adjustment program. The Mission, with AID Washington concurrence, trimmed the proposal back to the bare essentials. Following many weeks of additional negotiation with the government and other donors, this revised proposal represents a technical assistance and research project which is adequately self-contained and supported to provide a stand alone, three year advisory program to improve planning and decision-making using the minimum levels of fuel tax revenues presently available for road maintenance. It will allow USAID to maintain its key role in the policy dialogue as well as to look for innovative solutions to the problem of funding and implementing road programs in the future in the interest of developing the rural, agricultural economy of Zaïre.

## I. Project Strategy and Rationale

USAID Zaire proposes the \$4.8 million Transport Reform Technical Assistance Project as a preliminary step toward arresting the decline in road maintenance services due to inadequate funding by improving the efficiency of those services primarily through technical assistance and research. The Project will also provide for a continuation of a policy dialogue related to road maintenance funding and much needed institutional reforms.

### A. The Problem

The deterioration of Zaire's road network imposes high economic costs, discourages regional specialization, reduces access to goods and services and is a critical constraint to economic growth and development. The Project will assist the GOZ in improving the effectiveness of its road maintenance bureaus and provide resources for research activities to support improved delivery of road maintenance services and alternative strategies for funding. In addition, the Project will put an increased emphasis on the environmental and socio-economic impact of roads.

#### 1. The Macro-Economic Climate

During the 1980s, Zaire made notable progress in economic policy reform, particularly in the areas of pricing, exchange rate and trade policies. Despite improved macroeconomic performance in 1989, attempts by the GOZ to negotiate a 1990-91 structural adjustment program with the IMF and World Bank have been unsuccessful. The critical stumbling block is the lack of agreement on public expenditure policies, particularly on issues of resource allocation and budgetary transparency. Deficit spending by the GOZ is a significant source of economic instability.

Prospects for early resolution of the differences between the GOZ and the IMF and World Bank are clouded by the economic uncertainty resulting from the formation of a transitional government, and by indications that the GOZ's budgetary discipline has broken down again in 1990. The threat to the economy posed by excessive government expenditure, a decrease in export earnings due to an ailing mining industry, continued degradation of the country's, road, rail and river transport infrastructure, and the growing public sector arrears in payments for energy consumption, has profound implications for USAID's need to remain involved in the national policy and road maintenance funding dialogue. This Project will provide management and a technical advisory staff to assist the GOZ in planning and decision-making during this critical period of economic malaise.

## 2. Performance of Road Maintenance Institutions

The inventoried road network in Zaïre dating from the colonial period is 145,000 kms. However, ineffective road network management has hampered economic growth in Zaïre since independence. Many of the problems can be directly attributed to the roads bureaus, Office des routes (ODR), which is responsible for the priority national highways and regional roads, and the Service National des Routes de Desserte Agricole (SNRDA), which is responsible for management of the local interest feeder road network. ODR, historically responsible for 58,000 kms of paved and earth highways, has reduced the network during the past year to 19,000 kms of priority roads. SNRDA, a small parastatal created in 1986, is responsible for the overwhelming network of 87,000 kms of lightly traveled, agricultural roads.

ODR has been the key institution in road maintenance for Zaïre since it was created in 1972, relying increasingly over the years on force account rehabilitation and maintenance of roads. The resulting parastatal institution employed as many as 16,000 staff and workers at its height and oversees an equipment park valued at \$150 million. After 17 years of existence ODR has experienced its peaks and troughs in much the same way that the macro-economic picture has shifted, performing adequately during periods of adequate funding, and performing poorly when the funds were unavailable. Beginning in 1987 and continuing to the present, ODR has suffered from a financial crisis because of the dysfunctioning fuel tax. As a result, ODR's image is that of an over-grown and often inefficient parastatal. The overriding recommendation of the World Bank/USAID-funded Technical Audit performed in March 1989 was that ODR needed to be streamlined and restructured.

The General Manager (PDG) of ODR has put much effort into rethinking the role of ODR, its strategy for managing the road network and the corporate structure required to implement that strategy. The result of nine months of concentrated study by a team of private consultants working closely with a select ODR committee is a strategy for institutional reorganization and the outline of a ten year road maintenance and improvement plan. ODR will take the lead at national and regional levels as manager and financier of the road network. The private sector will be used to the extent possible to perform the actual construction, rehabilitation and maintenance of roads. In a deliberate move to reduce its employment roster, ODR staffing has dropped from 8,000 in 1986 to 5,800 in March 1990. An additional 1,200 layoffs are planned by 1991. The move to greater private sector involvement in execution of road construction, rehabilitation and maintenance is at the top of the list of USAID priorities in the road subsector.

An initial 1990-92 ODR transition program, is designed to provide road maintenance services at the same time as institutional reforms are underway. ODR has identified a minimum priority road network of 19,000 kms which corresponds to regional needs and rural-urban economic priorities. The emphasis ODR places on the priority network is to salvage past investments. Once the infrastructure has been recovered, the accent will be put on maintaining it through the increased involvement of the private sector. Identification of the reduced network by ODR is a clear indication that the roads bureau is making an effort to develop a realistic program in which the number of roads maintained corresponds to the amount of funding available.

This strategic reorientation in road infrastructure management is consistent with USAID institutional objectives in the sector: (i) identification of minimum networks which correspond to available funding and favorable economic returns, (ii) coherent maintenance planning and budgeting related to local and regional needs, (iii) development of the capability of the private sector to maintain roads.

SNRDA, the rural feeder road counterpart to the highway department, ODR, faces its own difficulties due to its dependence on fuel tax revenues. Changes in ODR have meant changes in SNRDA as well. ODR once provided all technical oversight for SNRDA maintenance activities. This was a source of many problems in the past. Recent negotiations between the heads of the two organizations in connection with the appraisal of the World Bank Pilot Feeder Roads Project and the initial pre-appraisal of the Second Transport Rehabilitation Project have resulted in an agreement to eliminate the ODR zone engineers, moving them to SNRDA to provide oversight and supervision of local road maintenance contracts.

ODR-SNRDA programs have been loosely coordinated in the past during the planning stage through a special Governors' committee, the Regional Road Commissions (RRCs). An additional USAID objective in road sector management, greater decentralization of responsibility for management and financing of roads and local resource mobilization, is aimed at resolving the problem of inappropriate central decision-making through the development of the capabilities of regional institutions: regional ODR and SNRDA offices, and the RRCs or their equivalent.

Analysis of the problem of the steady deterioration of Zaire's roads because of a lack of maintenance has repeatedly concluded that funding is not the only factor affecting the quality of roads. Improved performance of the road maintenance institutions, ODR, SNRDA, the RRCs and the private sector, is critical to putting limited funding to effective use.

### 3. USAID's Role in Alleviating Constraints to Sustainability of the Road Sector

USAID Zaire analysis has identified three broad constraints to development of the road subsector and the physical maintenance of infrastructure:

- the macro-economic climate,
- the source of revenues for roads,
- the quality of road maintenance institutions.

This Project will address these constraints through a continued policy dialogue with the GOZ and other donors. Technical assistance (coordinated with the GOZ and the World Bank) will be provided in the reform of national institutions responsible for the management and maintenance of Zaire's roads in order to set the stage for more far-reaching policy reform actions in the future if economic conditions warrant it.

#### B. Project Goal, Purpose and Expected Achievements

The Goal and Purpose of the Project form a subset of the broader objectives in the transport sector as stated in the 1990 USAID Zaire Action Plan.

**THE GOAL: TO IMPROVE THE FLOW OF GOODS AND SERVICES ON ROADS AND RIVERS.**

**THE PURPOSE: TO IMPROVE INSTITUTIONAL PLANNING CAPABILITY, RESOURCE ALLOCATION DECISIONS, AND MANAGERIAL PERFORMANCE.**

The purpose and goal are consistent with the USAID strategy for the transport sector. Under the Project the following will be accomplished:

- Road bureau financing will be used primarily for maintenance activities on a priority network corresponding to the level of funding available and based on an estimated favorable economic returns.
- National and regional medium-term planning decisions will be founded on accurate and current traffic and road quality data.
- Private contractors will perform an expanded role in road maintenance through expanded contracting and improved selection and supervision systems.

- The respective roles of ODR and SNRDA will be clearly defined resulting in complementary planning and budgeting and effective use of the rural zone engineers,

- Steps will be taken to ensure that physical maintenance of priority national and regional roads will be sustained over time.

- Regional and local institutions will play a greater role in road network management, road maintenance programming and budgeting, and local resource mobilization.

- Alternative national and regional sources of funding for road maintenance will be identified.

- Greater emphasis will be placed on environmental concerns and the socio-economic impact of roads on the rural and urban poor through roads bureau planning coordinated with the Project research agenda.

### C. Beneficiaries

Because of the cross-cutting nature of improved transportation, the potential beneficiaries and the expected impacts of this project are diverse. The Project will concentrate its limited resources to the extent possible in support of Mission priorities: (i) increased agricultural productivity, output and increased rural incomes, and (ii) development of the private sector.

Under this strategy, certain key population groups emerge from the long list of beneficiaries of transport sector reforms. In general, these groups are comprised of rural households and private sector enterprises.

Roughly 70 percent of Zaïre's population lives in rural areas. Without transportation corridors, rural populations are isolated from the national economy and dependent on subsistence agriculture. Transportation, both the infrastructure and the distribution system (markets, vehicles, transport companies) ranks near the top of the list of rural dweller's expressed needs. It is expected that women traders, transporters, farmers and market vendors will also favorably benefit from the Project.

Potentially, the primary beneficiaries in the key population groups are likely to be traders, merchants, transporters, private road maintenance contractors and employees of road maintenance companies. Sustained maintenance of rural infrastructure complemented by investments in agriculture, health and the private sector, will bring about long-term benefits to the rural poor.

#### D. Donor Coordination

ODR and SNRDA receive assistance from 11 different donors. The largest donor in terms of direct institutional assistance is the World Bank. In many cases, however, a single capital investment project funded by an individual donor may represent a significant percentage of combined GOZ-donor annual funding. Because of the multiplicity of interests and the forces at work in road transport, coordination is critical to the success and sustainability of road network management.

USAID coordination with other donors to Zaire's roads dates back to 1972 and the creation of ODR. At that time, roads were moved from the direct administration of the Ministry of Public Works into a separate parastatal organization. A U.S., French, Belgian consortium provided more than 40 technical advisors to the new roads bureau.

For almost 15 years, the GOZ and the donors have witnessed the checkered performance of ODR and its growth throughout the 1970s until it was clearly recognized that ODR was incapable of managing all 145,000 kms of roads in Zaire through force account operations. Inter-ministerial and donor deliberations in the early 1980's led to the creation of SNRDA in 1986 as a hoped-for solution to the over-extension of ODR and the lack of maintenance services on lightly traveled agricultural roads.

The financial crisis of 1987-1989 triggered by the problems associated with the fuel tax greatly eroded the past efforts to assist ODR which were reinforced with nearly 8,000 donor-trained and technically assisted employees and \$150 million of donor-funded equipment and ferries.

In response to ODR's financial and institutional crisis, USAID and the World Bank jointly funded a Technical Audit of ODR in March 1989. During the 16 months since the high-level audit recommended that ODR reduce its operating costs, minimize its road network to correspond to available funding, and increase the involvement of the private sector in road maintenance, much has happened to reorient the outlook of the GOZ and the donors involved in the transport sector.

The ambitious effort made by the PDG of ODR and his staff of advisors and consultants from September 1989 to the present has emphasized the importance of donor coordination. ODR announced in August 1990 that all studies for the restructuring of the parastatal and the programmed transition from force account to private sector operations had been completed. ODR is now looking for Government and donor support to implement major reforms. Unfortunately, macro-economic problems continue to erode plans to

resolve debt, reduce fixed costs and perform minimum rehabilitation and maintenance simultaneously.

The ODR proposal, largely funded by the World Bank, is now coming under donor scrutiny. The official GOZ request for USAID assistance to implement reforms within ODR asks for the key advisor positions described in this document. The Project's technical assistance and research elements are seen as keys to demonstrating donor support to an ailing but essential sector, and to providing guidance in planning and decision-making related to the minimum level of resources available to salvage the road network.

## II. Technical Assistance, Research and Analysis

With a total planned life of project funding level of \$4.8 million, approximately \$2.6 million will support institutional reform in the central Kinshasa office of ODR. Technical advisors assigned to ODR will also be expected to work as well with ODR, SNRDA and GOZ and private entities in the regions. The Project will focus on strengthening the capability of ODR, SNRDA, the RRCs and other local entities to successfully manage Zaire's road network. The remaining LOP funding \$2.2 million will be used to fund the PSC Project Manager, the Project Planning Division and research activities, commodities and evaluations. The following areas of focus of the Project assistance have been selected and coordinated with the World Bank and other donors, as well as with the senior staff of ODR and SNRDA:

- Strengthened transport planning data collection and analysis.
- Coordination of national and regional programs, particularly during ODR transition phase, emphasizing greater involvement of the private sector in rehabilitation and maintenance.
- Greater decentralization emphasizing regional experimentation with local resource mobilization.

The specific TA assignments, research and analysis agendas are discussed below. Funding levels are detailed in the Financial Plan and Disbursement Schedule, Chapter III.

### A. The Management and Technical Assistance Team

Management of the Project, in addition to USAID direct-hire staff, will be handled by a U.S. PSC Project Manager and an senior FSN Assistant Manager. The Project will be implemented by an institutional contractor responsible for most activities other than USAID management, evaluations, audits and research. The technical assistance team and most Project activities will be managed by a Chief of Party located in Kinshasa.

### B. TA Team Partial Terms of Reference

Title/Duties	Status	Term	Profile
<p><u>Project Manager</u></p> <p>Transport Reform Project management, procurement of Contractor services, Contractor oversight, policy dialogue, donor coordination, liaison with GOZ, manage the overall transport research component, monitoring, evaluations and audits.</p>	PSC	LOP	<p>Experience: USAID project management, work in sub-Saharan Africa, rural roads, contracting and supervision, french S3/R3, experienced in policy discussions, host country government relations and donor coordination.</p>
<p><u>FSN Assistant</u></p> <p>Assist in Transport Reform management, project implementation, liaison with Contractor, GOZ and other donors, monitoring conditionality.</p>	Trust Funds	LOP	<p>Experience: USAID senior FSN, USAID project implementation, previous work in transport and the private sector.</p>
<p><u>Chief of Party &amp; ODR Technical Coordinator</u></p> <p>TA team leader and institutional contract manager, advisor to the PDG of ODR on major aspects of reorientation of technical program, providing oversight for all transport project activities under the Contractor including procurement and CPF management, liaison with USAID and the GOZ, working with ODR, SNRDA and all concerned ministries, agencies and offices, and collaboration with other donors and donor-funded roads bureau staff.</p>	Contract	3 yrs	<p>Experience: Inter-disciplinary team management, highway and rural road planning, construction and contract supervision, rural road maintenance in Third World countries, corporate management and demonstrated skill and achievement related to working with host country governments, donor agencies and Contractors. French S4/R4. Civil engineering and management experience preferred.</p>
<p><u>National Maintenance Director</u></p> <p>Advisor to the PDG and staff of ODR on aspects of road maintenance programs, providing oversight for the development of multi-annual, national road maintenance programs and close collaboration with other contract team members and appointed local counterparts. The Maintenance Director will work with ODR, SNRDA and all concerned ministries, agencies and offices, and collaborate with other donors and donor-funded roads bureau staff.</p>	Contract	3 yrs	<p>Experience: Highway and rural road maintenance planning, construction and contract supervision, rural road maintenance in Third World countries, and demonstrated skill and achievement related to working with host country governments, donor agencies and Contractors. French S4/R4. Civil engineering and management experience preferred.</p>

National Planning Director

Contract 3 yrs

Head up the ODR Planning Division, establishing a multi-annual program for collecting and analyzing highway and rural road statistics nationally, organizing data collection programs for implementation by ODR/SNRDA in Bandundu and Shaba, establishing computer hardware and software necessary for efficient data analysis, assist ODR and SNRDA annual planning exercises, manage some aspects of the Transport Reform research program.

Experience: minimum of 5 years in transport planning and economics, highway statistics and analysis, computer fluent, previous experience in rural road maintenance planning in Third World countries. French S3/R3. Degree in economics preferred.

Local Resource Mobilization (LRM) Researchers in Bandundu and Shaba

Contract 2 x 15 months

Work with Transport Reform manager to establish LRM methodologies and work plans for each region, work through the governors' offices and with the Zairian University system if possible to study regional taxation and develop recommendations for field resource mobilization trials, and, through short-term evaluation visits, monitor the trial progress and results.

Experience: Junior-level public finance and administration experts, previous experience in decentralization and LRM activities and studies in sub-Saharan Africa and third countries, French S3/R3.

## Tasks

Short-Term Consultants

LRM Public Finance and Administration Expert

Contract 6 mos

1. Provide U.S.-based backstop in the specialized aspects of decentralization and LRM to the field researchers; 2. Assist in developing the research agenda and provide field support to the team.

Planning Division and Environment

Contract 11 mos

1. Assist transport economist and ODR in developing highway and rural road statistics program for implementation on a national basis;  
2. Provide assistance in the regions to implement and monitor planned activities.  
3. Provide initial terms of reference for integration of environmental assessment, planning and evaluation in ODR.

ODR Transition Diagnostic

Contract 18 mos

1. Provide fast-reacting assistance to ODR during the period of restructuring based upon needs identified by the COP, the PDG of ODR and other staff members, USAID and other donors;  
2. Recommend solutions to transition problems oriented toward immediate actions.

Specific Research Topics

Contract 37 mos

1. Impact of Fuel Pricing on the Society.  
2. Road/Vehicle Damage and Road User Fees.

BEST AVAILABLE DOCUMENT

A<sub>x</sub>

3. Transporter Response to Changes in Roads.
4. Expansion of the Transport Industry.
5. The Informal Transport Sector.
6. Transport Needs of Low Income Groups and Intermediate Transport Technologies.

Monitoring, Evaluation and Audits	RFP	3 mos	Evaluate end of the Transport Reform Project, emphasizing socio-economic impact on key population groups.
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## B. The Project Research and Analysis Program

The research agenda is designed to complement the project objectives by exploring areas relevant to alleviating constraints to the development of the sector identified during the Project design as well as looking carefully at project impact questions. Under the responsibility of the Chief of Party and the Project Manager, in collaboration with the Contract transport economist, the USAID research committee. The Project will study and develop action-oriented recommendations in the following areas:

- Alternative Funding for Roads,
- Planning Division Statistics, Analysis and the Environment
- ODR Transition Program Diagnostic and Evaluation.

### 1. Alternative Funding for Roads

An area of great importance to the GOZ in strengthening its economy will be to find alternative sources of funding for roads. This aspect of the Project will initiate decentralization efforts through an action-oriented study of regional management capabilities and the feasibility of significant local resource mobilization (LRM) leading to applied field demonstrations and trials. This activity will be managed directly by the Project Manager under a contract separate from the prime technical assistance contract due to the specialized nature of decentralization and local resource mobilization.

Two local resource mobilization researchers will work primarily in the regions of Bandundu and Shaba with UNAZA, the Zairian University system, to analyze and develop recommendations for improving existing regional organizations and fiscal mechanisms. The recommendations will be geared toward greater regional responsibility for the maintenance of local roads. The team will recommend specific actions for increasing revenue performance, collection efficiency and the financial management capabilities of the local administrative jurisdictions. These

recommendations may be implemented in field trials during the last year of the Project.

An additional nine months of short-term support to the field researchers for initial planning and evaluation of the LRM trials will be provided by a senior public finance expert with a background in decentralization and public administration in sub-Saharan Africa.

The Project will use short-term consultancies to broaden the GOZ understanding of alternative funding for roads through the following additional studies:

- User Fees and Limiting Road Damage,
- The Impact of Fuel Pricing on the Society.

2. Planning Division Statistics, Analysis and the Environment

The Project, under the direct supervision of the Chief of Party will help re-establish a relevant data collection program designed to provide the foundation necessary for the development of a long-term Highway Master Plan. The Planning Division will also contribute to the collection of baseline and follow-up data for assessment of the impact of USAID projects in Bandundu and Shaba. The assistance project will include but not be limited to the organization of the following activities:

- Develop a program for nation-wide traffic counting on priority paved highways and earth roads.
- Develop a program for updating road quality and maintenance backlog inventories.
- Develop a program for nation-wide origin/destination studies on priority roads.
- Establish computer systems and databases as useful analytical tools for planning, budgeting and investment decision-making,
- Provide initial terms of reference for integration of environmental assessment, planning and evaluation in ODR.

The Contractor transport economist heading up the Planning Division, under the direction of the Project Manager and the USAID transport and engineering staff, will assist in conducting the Project-funded research activities:

- Transport distribution industry response to changes in road infrastructure,

- Strategies for the expansion of the transportation industry and road use,
- Identification of the informal sector involvement in road use and maintenance,
- Assessment of the transport needs of lower income groups, including women, and intermediate technologies for efficient transport
- Continue detailed road/vehicle damage tests related to road maintenance and rural agricultural economies of scale.

### 3. ODR Transition Program Diagnostic and Evaluation.

The ambitious ODR reorientation program will continue to encounter organizational and management questions that require outside assistance to provide answers. The Project will provide short-term TA to help deal with these management and organizational problems as they arise.

## III. Financial Plan and Disbursement Schedule

\$4.8 million will be used for technical assistance to the GOZ roads bureau, ODR, in Kinshasa, and for research and information activities. A portion of the project assistance funding will go toward long- and short-term advisors and researchers working in the area of decentralization and local resource mobilization, and for project management, monitoring, evaluation and audits, and commodity procurement. The Mission plans to obligate \$2 million for the Project in the fourth quarter of FY 90 in order to issue an RFP and put the TA and research programs in place as soon as possible.

### A. The Financial Accounting Mechanisms

#### 1. U.S. Dollars

A personal services contract (PSC) will be negotiated with individuals selected for the Project Management position. The USAID Controller will arrange direct payment.

The institutional technical assistance contract will be competitively tendered following issuance of a USAID Request for Proposals providing detailed scopes of work and responsibilities. This contract will include negotiation of all long- and short-term personnel, as well as research, procurement and support services. Contractor payments will be made against contractor invoices following Project Manager and USAID Controller approval.

A second agreement will be initiated to provide technical assistance for the local resource mobilization activities through a buy-in to the USAID centrally-funded project, Decentralization: Finance and Management.

## 2. Local Currency Counterpart Funds

Overall financial management and reporting responsibility for the Project CPF will be assigned to the Chief of Party of the TA team fielded by the Contractor.

USAID Zaire and the Department of Plan will provide CPF releases directly to the Contractor team through the established budgeting and release process. These funds will be used primarily for the general purpose of supporting Project research activities, in-country procurement and travel. Activity support funds will be managed the Contractor team.

The Contractor will be responsible for controlling and accounting for all advances and expenditure of CPF. Financial reporting and accounting certification requirements will be the same as those demanded of all USAID Zaire CPF-funded activities.

Any activity support contracts between the two governments entered into under the Project will be funded through a modified FAR mechanism. The Contractor will be responsible for final payment approval of all force account agreements with ODR. The modified FAR will provide for advance payments and the Contractor will maintain appropriate records of all advances. The purpose of the FAR is to purchase a product for a fixed fee. If additional agreements with private firms are required, sub contracts will be used. The Contractor will not be responsible for accounting beyond the contract level. CPF use will be audited regularly during the life of the project by local firms.

## 3. Budget Tables

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	LOP Cost Estimate and Financial Plan (\$000)		Table 1
	Dollars	GOZ	Total
	1 Technical Assistance	2,660	887
2 Project Management	720	240	960
3 Commodities	362	120	482
4 Research and Analysis	720	240	960
5 Evaluation and Audits	50	19	75
6 Contingency 11% of TA	282	94	376
Totals:	4,800	1,600	6,400

All Financing by Direct Transfer

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Position	Term	Time (Mos)	Table 2	
			Per Annum	Total
			\$	\$
1 Project Manager	1	48	180	720
2 Technical Director COP	1	36	200	600
3 National Planning Dir	1	36	200	600
4 National Maintenance Dir	1	36	200	600
Decentralization Activities				
5 Local Resources/Bddu	1	15	200	250
6 Local Resources/Shaba	1	15	200	250
7 Public Finance Backstop	2	6	180	90
Short-Term Consultants				
8 ODR Transition	2	18	180	270
Total TA Months:		210		
(* Includes Project Manager)				
Total Long-Term:		3,020		
Total Short-Term:		360		
Total Technical Assistance:		3,380		
Project Management Cost:		720		
Institutional Contract TA:		2,660		

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		Research & Analysis Budget S-T Consultants			Table 3		
Item		1	2	3	YR 1	YR 2	YR 3
	Dollars	S-T Consultants					
1 Planning Division		3	1	1	45	15	15
2 Environment		2	2	2	30	30	30
3 Specific Studies:							
3.1 Local Resource Mobilzn		12	12	12	(See TA Budget for Cost Figures)		
3.2 Impact of Fuel Pricing		3	2	2	45	30	30
3.3 Road/Vehicle Damage		6	3	3	90	45	45
3.4 Intermediate Technology		2	2	2	30	30	30
3.5 Transport Expansion		2	2	2	30	30	30
3.6 Informal Sector		2	2	2	30	30	30
Total Pers/Months		72					
Sub-Totals:					300	210	210
Total Dollars:					720		
Local Currency (in \$)		Local-Hire and Support					
1 Planning Division		2	2	2	3	3	3
2 Environment		2	1	2	4	2	4
3 Specific Studies:							
3.1 Local Resource Mobilzn		6	9	6	30	45	30
3.2 Impact of Fuel Pricing		2	3	2	8	12	8
3.3 Road/Vehicle Damage		6	6	6	6	6	5.5
3.4 Intermediate Technology		2	2	2	3	3	3
3.5 Transport Expansion		0	2	3	0	3	4.5
3.6 Informal Sector		2	2	2	3	3	3
4 Transparency Campaign		3	3	3	15	15	15
Total Pers/Months		82					
Sub-Totals:					72	92	76
Total Local Currency (in \$):					240		

		Commodities Budget (\$000)			Table 4	
No	Item	Unit P	Dollars	CPF	Total	
10	Vehicles \a	20.0	200	40	240	
8	Computer Hardware	5.0	40	20	60	
8	Computer Software	5.0	40	11	51	
4	Audio Visual Aids	5.0	20	20	40	
3	Office Supplies	5.0	15	20	35	
50	Traffic Counting Eqpt	0.5	25	20	45	
%	Miscellaneous	5%	24	20	471	
Total:			364	151	942	

\a 3 TA/K + 2 LRM/R + 3 ODR + 2 S-T = 10

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U.S. Dollars	Estimated Expenditure by Fiscal Year (\$000)				Table 5
	FY 90	FY 91	FY 92	FY 93	
1 Technical Assistance	0	887	887	887	
2 Project Management	180	180	180	180	
3 Commodities	121	121	121	0	
4 Research and Analysis	180	180	180	180	
5 Evaluation and Audits	0	128	0	128	
6 Contingency 10% of TA	71	71	71	71	
Total by FY	551	1,566	1,438	1,445	
Total LOP		5,000			

GOZ Contribution	Zaires in Equivalent U.S. Dollars			
	FY 90	FY 91	FY 92	FY 93
1 Technical Assistance	0	296	296	296
2 Project Management	60	60	60	60
3 Commodities	38	38	38	38
4 Research and Analysis	60	60	60	60
5 Evaluation and Audits	0	43	0	43
6 Contingency 10% of TA	24	24	24	24
Total by FY	182	520	478	520
Total LOP		1,700		

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#### IV. Project Management and Implementation Plan

##### A. USAID Management Capability

The Project has been designed with USAID's comparative advantage in policy dialogue, donor coordination and impact measurement in mind in order to minimize USAID's role in routine implementation actions. Under USAID supervision, the institutional contractor will take on the responsibility for management and support of technical assistance, and share the responsibility for research activities. Procurement of project commodities and equipment, local currency management and accounting, data collection and analysis of key economic, social, and environmental indicators will be primarily the responsibility of the Contractor.

USAID's experienced transport and engineering staff has developed broad contacts with GOZ officials at national and regional levels as well as with World Bank and other donor representatives. The Project manager and other transport staff will broaden these contacts and further the institutional reform agenda while monitoring GOZ performance in making improvements in sector management. USAID's close working relationship with other donors involved in transport will mean that the Project-financed activities will fit neatly into a multi-donor effort in road transport.

The institutional contractor will be delegated as much of the responsibility as necessary for managing project activities, including technical assistance, data collection and analysis, commodity and equipment procurement, and local currency management and accounting. The Project manager, assisted by a senior FSN, will supervise the institutional contractor's performance, using detailed performance criteria set forth in the technical assistance contract to ensure high quality performance. The Project Manager will also assume primary responsibility for implementing activities on the research agenda, although the Contractor will provide short-term consultants and in-country support as necessary according to detailed scopes of work prepared by the Project Manager.

USAID has developed clear guidelines and procedures for local currency budgeting, accounting, management, and auditing. The contractor will be instructed on how to best adhere to those guidelines.

The Project monitoring and evaluation system establishes clear monitoring elements and identifies lines of responsibility for collecting monitoring information. The overall USAID project evaluation system as well as data collection and analysis activities of the Central Shaba Project and the Agricultural Marketing Development Project in Bandundu will provide much of the information needed to define the economic and social impact of the Project supported institutional reforms and local currency-funded activities.

#### B. Project Implementation Plan

The overall project implementation process involves three distinct phases:

- Mobilization Activities (months 1-6)
- Operational Phase (months 7-42)
- Completion of the Project (months 43-48)

## 1. Mobilization Activities (months 1-6)

The first six months following the signing of the project agreement will involve the completion of contracting actions, vehicle procurement and the arrival of the TA team. The main actions will include:

- Project agreement signed with GOZ.
- RFP issued for institutional contractor.
- Initiation of Road-Vehicle Damage Tests and preparation of detailed Project research agenda.
- Vehicles and household furnishings for institutional contractor personnel and other key items ordered by USAID Commodity Management staff.
- Institutional contractor selected and contract negotiated by USAID Contracting Officer.

## 2. Operational Phase (months 7-42)

During the thirty-six months of full-scale operations, technical assistance, research, and CPF-financed activities will move at full speed. Major actions during the period, many of which are recurring or continuing, include the following:

- Initial TA personnel arrive, settle in Kinshasa and establish first work plan.
- Vehicles and household furnishings for TA team arrive; TA team initiates procurement of remaining computers and other support equipment.
- Technical assistance activities begin in Kinshasa and the regions.
- Final equipment procurement arrives.
- The ODR Information Unit produces traffic, transport cost, and road inventory data used by evaluations and impact surveys.
- Evaluation (month 12) verifies the degree of effectiveness and impact of the project.
- Research activities develop recommendations for future policy and institutional reform as well as possible future USAID assistance in the transport sector.

### 3. Completion of the Project (months 42-48)

The final six months of the project will include completion of TA and research activities as well as final judgments on lessons learned. Design of a follow-on USAID transport project may be completed during this period. Major actions will include the following:

- Final impact surveys carried out and summary report prepared on overall economic and social impacts of project.
- Final audit surveys of CPF expenditures.
- Design of follow-on USAID transport project completed.
- TA team departs.
- Manager closes out Project and prepares final report.

#### C. Procurement Plan Summary

The Project will include a substantial institutional contract for a wide range of services, including procurement of as much of the equipment and supplies needed as is practicable.

##### 1. Procurement of Services

In line with the principle of shifting as much of the day-to-day management burden of the Project as possible away from the Mission, USAID will select an institutional technical assistance contractor and will conclude a direct USAID contract. The contractor will:

- provide long-term and short-term technical assistance
- provide short-term consultants and carry out analysis and research studies under the supervision of the Project Manager
- undertake equipment and commodity procurement
- monitor and account for CPF expenditures under the Project.

##### 2. Disadvantaged Enterprises

As a part of the Project design process, USAID requested the names and qualifications of disadvantaged enterprises who might be considered as prime contractors for Transport Reform. The Bureau provided capability statements for five such firms with related experience. The Mission carefully reviewed these firms' experience, capabilities, and personnel to determine whether a

set-aside decision was possible, given the wide range of skills and capabilities that the Project institutional contract would require.

In the Mission's judgment, none of the disadvantaged firms considered had sufficiently broad experience or capabilities in the range of services required to warrant a set-aside of this institutional contract for disadvantaged enterprises. USAID Zaire recommends, therefore, that the institutional contract for the Project be advertised under full and open competition. The Mission feels that its recommendation for full and open competition combined with at least 10% subcontracting for disadvantaged enterprises and institutions is in compliance with USAID policy, and is reasonable in this case.

### 3. Equipment and Commodity Procurement.

The Procurement Annex includes a detailed discussion and cost estimate of the supplies and equipment required to support the TA team, and research activities. No significant pieces of construction equipment will be purchased with U.S. Dollars under this project. With the exception of the purchase of vehicles and household furnishings for the TA team, all procurement will be handled by the institutional contractor, thus reducing the management burden on USAID.

## V. Monitoring and Evaluation Plan

The Project monitoring element is designed to collect key implementation, impact, and evaluation data. The four major monitoring areas are, (i) implementation of the technical assistance work plan and research activities; (ii) management and use of counterpart funds; (iii) achievement of the Project objectives; and (iv) analysis of socio-economic and environmental impact.

The Project manager and the chief of party will be responsible for coordinating monitoring activities and ensuring that the data collected is both timely and complete. Long-term technical advisors working in ODR will monitor the Project implementation. Each advisor's scope of work will include specific monitoring responsibilities including specific task related to environmental concerns. When implementation problems are identified, short-term consultants will assist in identifying appropriate corrective actions.

Monitoring data collected will be reported by consultants as well as in project implementation reviews, audits, end-use inspections of commodity imports and impact studies. The monitoring system will measure changes in traffic through the ODR

information office, transport costs, and commercial activity as indicators of economic impact.

Additional monitoring will be done in USAID-assisted project areas. Traffic counts and travel times will be available from ODR's Planning Division and from the information units of the Central Shaba Development Project and the Bandundu Agricultural Marketing Development Project. Commercial activity will be measured in these project areas. Commercial baseline surveys have already been conducted in association with these projects, and follow-up surveys are scheduled for 1991-92. Transport costs, the third indicator, will be measured in Bandundu and Shaba by existing project data collection teams, as well as by the Transport Reform Project.

Census and regional data bases, currently being developed by the Mission for its Project Impact Evaluation framework, will be another tool for studying the relationship of transport infrastructure to labor productivity, per capita consumption of goods and services, and nutritional status. Research findings from the Cornell Food and Nutrition Policy Program will also provide relevant data for analysis.

Under present Mission policy, in-house and local hire sources will provide consultants for the start-up and final evaluations. IQC firms will be used to provide consultants where local expertise is unavailable. The first internal review of the ODR transition and the mid-term Project evaluation will focus primarily on the status of institutional reforms supported by the technical assistance team as well as planning, environmental impact awareness and Project monitoring activities. The final internal review will concentrate on overall project impact: the GOZ road maintenance system (planning, management of limited resources, decentralization, local resource mobilization, private sector involvement), road infrastructure, environmental impact and socio-economic indicators.

## **VI. Conditions and Covenants**

A. The Project will require satisfaction of the standard USAID signatory condition precedent to disbursement:

"Except as A.I.D. may otherwise agree in writing, prior to the initial disbursement under the Grant, or to the issuance by A.I.D. of documentation pursuant to which disbursement will be made, the Grantee will furnish to A.I.D., in form and substance satisfactory to A.I.D. a statement of the names of the persons holding or acting in the offices of the Grantee specified in Section 8.3 of the Project Agreement, and of any additional

representatives, together with a specimen signature of each person specified in such statement."

B. In addition, the GOZ and USAID will agree to a special covenant outlining an Project evaluation program.

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

(a.) evaluation of progress toward attainment of the objectives of the Project;

(b.) identification and evaluation of problem areas or constraints which may inhibit such attainment;

(c.) assessment of how such information may be used to help overcome such problems; and

(d.) evaluation, to the degree feasible, of the overall development impact of the Project."

C. In response to the IEE recommendations and to further environmental guidance received from AID/Washington on related issues, the Project will include an environmental covenant whereby the GOZ agrees to incorporate environmental impacts assessment as a standard function of the ODR Planning Division.

"The Parties agree to establish and support an activity within the Planning Division of ODR for the purpose of developing the initial terms of reference for integration and implementation of environmental assessment, planning and evaluation of roads projects as part of the Project. Except as the Parties otherwise agree in writing, the program will include long- and short-term technical assistance to accomplish environmental objectives."

## VII. **Summaries of Analyses**

The following is a brief summary of sectoral and institutional analyses developed for the design of the Project. (For an explanation of the evolution of the Transport Reform Project and the basis for the exhaustive design analysis, see the Introduction to this Project Paper.)

### A. **Road Infrastructure and Institutional Analysis**

This annex provides a discussion of the road network management parastatals ODR and SNRDA. The principal analytical questions pertained to the institutional reform of ODR currently

underway, and the identification of priority road maintenance networks by ODR and SNRDA in order to focus limited funding on a realistic number of kilometers of road and to maximize resources. The analysis also includes a discussion of the economic benefit of regular maintenance as opposed to new construction and no maintenance.

The analysis was conducted concurrently with the initial pre-appraisal of the World Bank's Second Transport Rehabilitation Project. USAID-funded experts and transport staff benefited from collaboration with the Bank team and the thorough review of the ODR reorientation proposal, the ODR transition program for 1990-1992, and the appraisal of the SNRDA Pilot Feeder Roads Project which all took place during the Project analysis period.

The infrastructure and Institutional analysis uses the exhaustive World Bank-funded study of ODR (BCEOM, October 1989-January 1990) as the basis for discussion. Key issues addressed in the analysis are:

- The cost of Zaire's road program, analyzing multi-annual, combined GOZ and donor funding. Annex 3 presents two funding scenarios for the three year ODR Transition Program, the first projecting \$519 million of combined funding with a GOZ contribution of \$177 million (\$59 million per year); a second projecting \$451 million with a GOZ contribution of \$160 million (\$40 million per year).
- The organization of ODR and the details of its proposed shift to the private sector for greater involvement in road rehabilitation and maintenance.
- The potential for gradual increased involvement of SNRDA in decentralized management of roads.
- Issues related to private contracting relevant to both ODR and SNRDA.
- Development of a corporate plan for ODR as a step in its reorganization.
- Improvements in ODR and SNRDA reporting and accounting to increase transparency in the flow of funds and to provide a framework for better coordination of donor-funded programs and projects.
- Institutional decentralization.
- Transport planning.
- Analysis of ODR's proposed program.

The annex provides the foundation for the Project institutional reform and planning recommendations, particularly related to delegations of authority to the regions, management training and team building, and provision of assistance to the ODR Planning Division. Many of the recommendation, however, are outside the limited scope of objectives and resources of the Project. USAID has negotiated the Project carefully with the World Bank and the GOZ, and recommendations for additional conditionalities and assistance to the roads bureaus will be included in the World Bank project and requested from other donors.

#### B. Private Distribution and Construction Industry Analysis

The USAID transport portfolio has included assistance for improvements in road infrastructure for two decades under the assumption that improved road conditions would result in reduced vehicle operating costs and an increased flow of goods and services. This annex provides a perspective on the road users in Bandundu and Shaba as well as the large transport companies based in Kinshasa. The analysis also includes a limited discussion of the formal road construction and maintenance industry.

The study points out the vast difference between Bandundu and Shaba. Densely populated Bandundu, a region of poor soils and poor roads, is regarded by merchants and transporters as suffering from a lack of road maintenance, credit for vehicles and spare parts, and reliable road management institutions. Road transport is characterized by merchant traders, agro-industry and small, informal transporters.

Shaba, which contains the mining fields of southeastern Zaïre, has better soils and therefore greater potential for good roads. Transport there is dominated by the mining industry, with road transport overshadowed by rail transport. Roads and trucks are important however, and transporters complain that the roads are bad and that the maintenance institutions are ineffective. Interestingly, Annex 4 points out that the availability of credit is not a constraint to transporters wanting to purchase vehicles and spare parts as it is in Bandundu.

The principal recommendations made in this annex pertain to the expansion of the transport industry. An initial study responding to industry expansion will be conducted under the Project research program. The recommendation that the Project take steps to rebuild the damaged confidence of private sector road maintenance contractors is the cornerstone of the Project contracting and supervision technical assistance, and is further reinforced with the Project conditionality related to funding transfers to the regions, increased delegations of authority, and the availability of CPF to provide guaranteed local resources for maintenance contracts.

### C. Regional Management and Finance of Road Maintenance

The status of road subsector finance and management at regional levels is the subject of this annex. The analysis team met with national and regional officials including the governors of Bandundu and Shaba, the presidents of regional assemblies and the division chiefs of key ministries. The principal issues addressed in the annex are road maintenance funding; planning, programming and budgeting; financial management; contracting; inspection and supervision; and popular involvement in road rehabilitation and maintenance programs.

The recommendations resulting from the field studies were developed to satisfy two objectives: (i) the establishment of regional capability to manage the rehabilitation and maintenance of the regional road network, and (ii) the strengthening of regional resource mobilization and administration capacity allowing the regions to make a significant contribution to road maintenance activities.

The analysis provides the basis for the Project local resource mobilization (LRM) studies and field trials as well as the establishment of the TA road maintenance coordinator and ODR contracting specialist in Shaba

It was recommended that local currency resources be provided to the regions of Bandundu and Shaba to provide them with the financial wherewithal and necessary technical assistance to begin to implement recommendations made in the analysis of regional management and finance of road maintenance. Of the three options provided in the analysis, the Project will rely on the option of mixed financing for regional institutions, supplementing GOZ funds from the national-level with available regional contributions.

Studies in the regions of Bandundu and Shaba will examine ways to strengthen institutional capability to collect and manage local resources with the objective of implementing LRM trials in the field. The recommendation to provide technical assistance to the Ministry of Decentralization has not been incorporated into the Project design on the basis that the recommendation went beyond the scope of the program and did not fit into the Project logical framework.

### D. Economic Analysis

The economic analysis covers three topics:

- the general economics of road rehabilitation and maintenance as it is applied in developing countries;

- the expected returns to road rehabilitation and maintenance in Zaïre according to the priorities set by ODR;
- macro-economic considerations.

There are high internal rates of return to road rehabilitation and maintenance expenditures in developing countries, and particularly in Category III countries like Zaïre. Undiscounted annual maintenance costs plus periodic maintenance costs are eighteen times less than the cost of reconstructing an earthen road and twenty-nine times less than the cost of reconstructing a paved road. If this is the case, then one might ask why road maintenance has been so grossly neglected in so many countries. The answer is that road agencies bear only a small part of total costs as a road deteriorates. Discounted at a rate of 15%, the cost of reconstructing a road after ten years of neglect is paradoxically only slightly greater than the cost of maintaining it. However, such a calculation ignores the tremendous increases in costs to road users which occur when annual and periodic maintenance are neglected. When these costs are taken into account, one obtains internal rates of return to road rehabilitation and maintenance activities of 50 to 100 percent or higher.

In the specific case of Zaïre, the road maintenance organization has adopted a maintenance strategy which shuns new construction (just as the World Bank policy study recommended) and has begun the task of prioritizing its road rehabilitation and maintenance for the 1990-1992 transition program. This prioritization is based principally on internal rate of return calculations with the following basic recommendations resulting from this exercise:

1. Salvage the existing paved road network of 2,801 km, or 2% of the total road network and 14.5% of the core 19,000 km road network,
2. Give priority to continuity on major national highways. This requires maintaining earthen roads which are part of the core 19,000 km. network,
3. Rehabilitate and maintain all bridges and ferries and provide minimal emergency maintenance to all other roads to keep them passable by trucks and four-wheel drive vehicles.

This strategy is best categorized as triage, with the road sections showing the highest returns to rehabilitation and maintenance being those which will be put back into fair or good condition, and the condition of the rest of the network essentially being sacrificed to minimal or emergency maintenance only due to the general lack of resources (both domestic and foreign).

Finally, the economic analysis considers the macro-economic situation and discusses the significant risks to attempting a road maintenance program in the absence of a sound macro-economic framework and GOZ fiscal discipline. These risks include underfunding of ODR and erosion of real funding levels for road rehabilitation and maintenance by inflation as well as potential non-payment of the fuel taxes which are the major domestic source of funds for road maintenance. The magnitude of these risks is such that the analysis concludes that agreement must be reached on a sound macro-economic program with the World Bank and the IMF before USAID provides support to the GOZ road rehabilitation and maintenance program.

#### E. Social Soundness and Research Analyses

The Social Soundness Analysis and Research Annex contain a detailed discussion of target population and project impact. Social soundness analysis focus is primarily on the impact of fuel imports, institutional and policy reforms, decentralization, and road rehabilitation on various populations, particularly rural households and private sector enterprises. The annex identifies ways in which the Project may affect road contractors, manual road workers, transporters, and farmers. Gender and urban/rural differentials are discussed as well as socio-political issues.

A viable road network can make a significant contribution in the rejuvenation of Zaïre's economy. The most immediate beneficiaries of improved roads will be major road users and people with access to capital, such as the owners of industries, commercial enterprises, and trucking firms. In rural areas the first beneficiaries of the Project will be merchant transporters and private sector road contractors and their employees. Women are most likely to benefit from the Project in their role as traders/transporters, farmers, and market vendors. They are unlikely to benefit from the project's training and employment opportunities. The most promising prospects for the Project are in areas where roads are one component of an integrated development approach. Rural households will be able to capitalize on the opportunity provided by better access to markets if they can increase their yields, improve the quality of their produce, and alleviate time constraints.

The suggested economic indicators proposed in the Social Soundness Analysis and incorporated in the Project monitoring system are changes in traffic, transport costs, and commercial activity. Given the wealth of data being collected under agricultural projects and Mission research activities, the recommendation is made that the Project use this data for social impact analysis in addition to information collected in the two Project impact studies, one on the social impact of fuel adjustments and the other on transporters' response to improved

road conditions. In order to identify appropriate interventions that will address women's transport needs, the Project has included as part of its research agenda a study on intermediate transport technology and the informal transport sector.

#### F. Summary of the Environmental Analysis

The Initial Environmental Examination (IEE) conducted by the Regional Environmental Officer, REDSO/WCA; cleared by GC/AFR; and concurred in by the Africa Bureau Environmental Officer, recommended a negative determination. The recommendation was based on a categorical exclusion for the policy reform, institutional reform, and technical assistance components.

In response to the IEE recommendations and to further environmental guidance received from AID/Washington on related issues, the Project will provide funding for the initial development of environmental impact assessment program for roads projects to be institutionalized within Office des routes.

Certain on-going USAID environmental activities are related to the Project and will provide direct, on-the-ground environmental impact information related to road maintenance. Under the Central Shaba Agricultural Development Project, significant non-lethal anti-poaching assistance has been provided to improve the National Park Service's protection of the Upemba National Park and other parks in the project area. Sensitive road segments in the Central Shaba project area close to the Upemba Park or through degraded rain forest have not been included in project work plans, as suggested by the original IEE for the project.

Under the \$6 million amendment for environmental activities to the Small Project Support Project, a number of PVO proposals on forest and wildlife conservation are expected, including assistance to the Zairian National Institute for Nature Conservation. Finally, the USAID FY 1990 - 1993 Action Plan lays out a long-term strategy for environmental activities that will support the environmental measures planned under the Project.

PROJECT AUTHORIZATION

Name of Country: Republic of Zaire  
Name of Project: Transport Reform Project  
Number of Project: 660-0126

1. Pursuant to the Foreign Assistance Act of 1961, as amended, and Title II of the Foreign Operations, Export Financing and Related Programs Appropriations Act, 1990, I hereby authorize the Transport Reform Project for the Republic of Zaire, involving planned obligations of not to exceed \$4.8 million in grant funds over a four 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. The planned life of the project is four years from the date of initial obligation.

2. The Project will assist the Government of Zaire (GOZ), and more specifically, the Office des Routes of the Ministry of Public Works, to support the establishment of a sustainable and effective road maintenance system in Zaire. The project will fund technical assistance, research and environment activities, and limited procurement of vehicles, computer hardware and software, supplies, as well as short-term consultancies, audits and evaluations.

3. The Project Agreement which may be negotiated and executed by the Officer 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 Goods and Services

Except as A.I.D. may otherwise agree in writing:

(1) Goods and services required for the Project, shall have, in the case of goods their source and origin, and in the case of services their nationality, in countries included in Code 935 of the A.I.D. Geographic Code Book in effect at the time orders are placed or contracts are entered into for such goods or services ("Foreign Exchange Costs"), except as provided in the Project Grant Standard Provisions Annex, Section C.1.(b) with respect to marine insurance and except as specified in subsections (2) and (3) below. All reasonable efforts will be used to maximize U.S. procurement whenever practicable.

(2) air travel and transportation to and from the U.S. shall be only upon certified U.S. flag carriers. In the case of general unavailability of U.S. flag carriers, air travel and transportation will be authorized by carriers of any 935 code country.

(3) Ocean shipping costs financed under the Grant shall be only on vessels under flag registry of the countries included in A.I.D. Geographic Code 935 and Zaire, subject to the 50/50 shipping requirements under the U.S. Cargo Preference Act and the regulations promulgated thereunder.

b. Condition Precedent

The Project Agreement shall contain a condition precedent providing in substance that prior to the first disbursement of funds under the Project, or to the issuance of any commitment documents with respect thereto, the Government of the Republic of Zaire shall furnish in form and substance satisfactory to A.I.D. a statement of the name of the person holding or acting in the office of the Grantee, and of any additional representatives, together with a specimen signature of each person specified in such statement.

c. Covenants

(1) The Parties agree to train staff members within the Planning Division of ODR in the development and integration of environmental criteria in the planning, execution and evaluation of roads projects; and

(2) The Parties agree to establish an evaluation program as part of the Project.

Signature *Charles W. Johnson*  
Charles W. Johnson  
Director  
USAID Zaire

Date *September 21 1990*

Clearances:

Baudouin de Marcken DDIR *[Signature]*  
John Bierke PEP *[Signature]*  
Al Hulliung CONT *[Signature]*  
Ron Harvey ARD *[Signature]*  
Dick Macken PDO *[Signature]*  
CHARLES SIGNOR CMS *[Signature]*

Date: *9/20/90*  
Date: *9/20/90*  
Date: *9/20/90*  
Date: *9/20/90*  
Date: *SEP 20 1990*

PROJECT AGREEMENT FUNDS CERTIFICATION

Funds Available :

Project Agreement No : 660-0126  
Appropriation : 72-1101014  
Budget Plan Code : GSSA-90-21660-KG13  
Obligation Amount : \$2,000,000  
RCN: K900017

72-1101014  
GSSA-90-21660-KG13  
\$2,000,000  
9/20/90  
  
Controller's Office Signature  
Albert D. Hulliung,  
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E.O. 12356: N/A

SUBJECT: TRANSPORT REFORM PROGRAM (TRP)(668-0126)  
AUTHORIZATION

1. THE ECPR WAS HELD ON JUNE 14 AND REVIEWED THE TECHNICAL ASSISTANCE PORTION OF SUBJECT PROGRAM. THE MEETING WAS CHAIRED BY DAA/SAIERS AND INCLUDED REPRESENTATIVES FROM AFR/DP, AFR/CCWA, AFR/PD/CCWAP, AFR/TR/ANR. THE NON-PROJECT ASSISTANCE PROGRAM WAS NOT CONSIDERED. REVIEW PARTICIPANTS CONCLUDED THAT USAID/ZAIRE SHOULD BE DELEGATED AUTHORITY TO AUTECRIZE THE NEW SUSTAINABLE TRANSPORT INITIATIVE PROJECT IN THE FIELD. HENCE, THE MISSION DIRECTOR, USAID/ZAIRE IS HEREBY DELEGATED THE AUTHORITY TO AUTHORIZE THE SUSTAINABLE TRANSPORT INITIATIVE PROJECT AT A LEVEL OF DOLS 7.2 MILLION IN ACCORDANCE WITH DOA 551 (REVISED) TAKING INTO CONSIDERATION BUREAU CONCERNS IDENTIFIED BELOW:

A. PHASING OF PROJECT COMPONENT: GIVEN THAT THE NON-PROJECT ASSISTANCE COMPONENT OF THE TRP IS NOT INCLUDED, THE MISSION SHOULD CONSIDER PHASING THE TECHNICAL ASSISTANCE, RESEARCH, AND TRAINING ACTIVITIES

IN THE PROJECT. SINCE THE MISSION DID NOT ANTICIPATE A LENGTHY DELAY BEFORE THE IMPLEMENTATION OF THE NON-PROJECT ASSISTANCE PORTION OF THE PROJECT, THE LEVEL OF PROJECT ACTIVITIES TO BE IMPLEMENTED IS NOT WELL DEFINED OR JUSTIFIED IN THE DOCUMENT. THEREFORE, THE BUREAU SUGGESTS THAT THE MISSION START WITH THE MINIMUM TECHNICAL ASSISTANCE AND RESEARCH NECESSARY TO CONTINUE THE POLICY DIALOGUE CONCERNING THE TRANSPORT SECTOR, ASSIST THE ODR IN DEVELOPING A PRIORITY MAINTENANCE STRATEGY, AND CARRYING OUT RESEARCH NECESSARY FOR DECENTRALIZATION OF AUTHORITY TO THE REGIONAL LEVEL. ADDITIONAL TECHNICAL ASSISTANCE DESCRIBED IN THE PAAD AT BOTH THE REGIONAL AND NATIONAL LEVELS, RESEARCH FOR FUTURE PROGRAMMING, ADVANCED DEGREE TRAINING AND STUDY TOURS MIGHT POSSIBLY FORM PART OF THE SECOND PHASE. HOWEVER, IT ULTIMATELY IS A MISSION DECISION AS TO WHAT TECHNICAL ASSISTANCE, RESEARCH, AND TRAINING SHOULD BE PROVIDED IN EACH PHASE.

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ACTION DUE : N/A

B. ENVIRONMENTAL MONITORING: GIVEN THE POTENTIALLY LARGE AMOUNT OF ROAD REHABILITATION/RECONSTRUCTION TO BE UNDERTAKEN WITH THE LOCAL CURRENCY GENERATED BY THE PROGRAM FUNDS (WHEN AND IF THEY ARE RELEASED), PART OF THE SHORT TERM TECHNICAL ASSISTANCE TO BE PROVIDED SHOULD INCLUDE ENVIRONMENTAL EXPERTS TO ASSIST THE ODR IN ESTABLISHING AN ENVIRONMENTAL RESEARCH AND IMPACT MONITORING CAPACITY FOR ROAD CONSTRUCTION, REHABILITATION, AND MAINTENANCE. THE BUREAU ENVIRONMENTAL OFFICER WILL ASSIST THE MISSION IN DEVELOPING SCOPES OF WORK FOR CONSULTANTS TO EVALUATE THE ENVIRONMENTAL IMPACT OF ROAD REHABILITATION OR RECONSTRUCTION ON LAND USAGE, CULTIVATION, ETC. FOR INCLUSION IN THE TECHNICAL ASSISTANCE RFP.

C. INITIAL ENVIRONMENTAL ASSESSMENT (IEE): GIVEN THE REVISIONS IN THE SCOPE OF THE ASSISTANCE FROM A PAAD TO A PP AND THE DECREASE IN THE LOP, AN AMENDED IEE IS BEING DRAFTED BY THE EEO. THIS NEW IEE WILL INCLUDE PROVISIONS FOR STUDYING AND MONITORING THE ENVIRONMENTAL IMPACT OF ROAD REHABILITATION AND MAINTENANCE, BUT THE ORIGINAL DETERMINATION FOR CATEGORICAL EXCLUSION STILL STANDS.

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M. Charles JOHNSON  
Directeur USAID  
à Kinshasa

Objet : Programme ITV

Monsieur le Directeur,

J'ai l'honneur de vous confirmer, par la présente, ma demande de participation de votre organisme de coopération bilatérale pour le financement d'un programme d'aide à la restructuration institutionnelle de l'Office des routes.

En conséquence, je vous renouvelle tout l'intérêt que porte l'Office des routes à la réalisation de votre programme "Initiative de Transport Viable" (ITV).

En effet ce programme s'inscrit parfaitement dans le cadre de la reorganisation actuelle de l'Office, avec l'aide de différents bailleurs de fonds (BIRD/IDA, BAD, etc..).

La teneur de votre programme, élaboré en collaboration avec mes services techniques, s'harmonise totalement avec le programme de reconversion 1990-1999 présenté dernièrement aux autorités de la Banque Mondiale à Paris. Il servira de support pendant la période de transition devant permettre à l'Office des routes d'assurer ses responsabilités stratégiques dans les secteurs institutionnels de la planification, de la programmation et du contrôle. Ce programme permettra, très certainement, le développement harmonieux du secteur des transports routiers, lui-même nécessaire à une bonne circulation des différents flux commerciaux au sein de la République du Zaïre.

Je me permets d'attirer votre attention sur l'importance que j'accorde au démarrage rapide de ce programme, en particulier à la mise en place des experts de l'équipe d'assistance technique, afin que ceux-ci puissent être associés, dès l'origine, à la définition des orientations générales qui serviront de support à l'ensemble de la reconversion.

En vous renouvelant l'intérêt que je porte à votre programme, veuillez agréer, Monsieur le Directeur, l'expression de ma considération distinguée.

REPUBLICQUE DU ZAIRE  
MONICA Mibindo

REPUBLICQUE DU ZAIRE

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SUBJECT: CONGRESSIONAL NOTIFICATION, TRANSPORT  
REFORM PROGRAM (362-3126)

CONGRESSIONAL HOLD FOR SUBJECT ACTIVITY WAS LIFTED ON  
9/12/92. MISSION MAY OBLIGATE DOLS 2 MILLION FOR 0126.  
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ANNEX I Project - LOGFRAME

**Transport Reform Project (660-0126) Project Assistance**

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<b>PROJECT GOAL:</b>	<b>Measures of Goal Achievement:</b>		Concerning long term value of program/project:
Improve the flow of goods and services on Roads and Rivers.	1) Increased volume of goods and services moving over road network corridors.	Data provided by parastatal and private sector transporters; road tax receipts.	1) Foreign exchange availability and fuel pricing policy maintain general fuel availability.
	2) Decreased transport costs in constant terms; increased competition of transporters	Local surveys and impact studies PEV/SANRU statistics	
	3) Decreased prices of transported goods at destination and increase farm gate prices and sales of farm products.	COL index World Bank studies	2) Complementary agriculture, health, and private sector development activities increase demand for transport services.
	4) More movement of consumer goods to rural areas.		3) Private transport industry expands to meet increased demand for services and become more competitive.
	5) Improved quality of and access to health and educational services.		4) GOZ continues market-oriented structural adjustment process.

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PROJECT PURPOSE:

To improve institutional planning capability, resource allocation decisions, and managerial performance.

END OF PROGRAM STATUS INDICATORS

- 1) ODR and SNRDA budget priorities focused on maintenance and restoration of priority networks.
- 2) By 1994 ODR has reduced operating costs.
- 3) By 1994, ODR has increased contracting of maintenance, rehabilitation, and management functions to private sector.
- 4) Regional organizations assume more programming/contracting responsibility for road rehabilitation and maintenance.

MEANS OF VERIFICATION

- OFIDA, OR/SNRDA records  
Official Bulletin  
Fuel companies/distributors  
Regional Governors' offices  
Dept. of Plan  
Donor Liaison  
Evaluations, PIRs, and studies

IMPORTANT ASSUMPTIONS

- 1) Fuel prices reflect internal and external market forces.
- 2) GOZ pays its fuel consumption bills on time.
- 3) Petroleum companies pay taxes on time.
- 4) GOZ implements reorientation/reform/decentralization of OR & SNRDA.
- 5) USAID & WB agree to complementary programming for OR and SNRDA.
- 6) Donors and GOZ will emphasize rehab/maintenance of existing network.
- 7) Private road construction/maintenance industry is able and willing to perform necessary work, is competitive, and accountable.
- 8) Import regulations for construction equipment and materials allow road maintenance organizations to function effectively.

<u>OUTPUTS:</u>	<u>OBJECTIVELY VERIFIABLE INDICATORS</u>	<u>MEANS OF VERIFICATION</u>	<u>IMPORTANT ASSUMPTIONS</u>
1) Road network maintenance and rehabilitation focus on priority roads with highest social and economic returns.	1.1 Decisions based on more accurate and current traffic and road quality data from Cellule d'Information (CI).	GOZ records; official bulletin OFIDA statistics Local surveys World Bank data OR/SNRDA records and bank statements	1) World Bank & USAID coordinate efforts to insure functioning transport financing system.
	1.2 ODR and SNRDA long-term plans developed that are consistent with available resources.	Official GOZ communications to USAID/World Bank/UNDP	2) GOZ political will and organizational capacity exists to set (a) adequate funding levels for transport institutions and b) emphasize maintenance of priority road network.
	1.3 Coordinated GOZ road maintenance national and regional priority network.		
	1.4 Donor coordination maintains priority on maintenance and restoration of priority network.	Reports by S/T consultants Private sector contacts  Reports by L/T TA personnel	3) OR willing and able to implement reforms recommendations.
		Evaluations PIRs Audits	4) OR/SNRDA capable of supervising expanded private construction industry activities.
2) Increased private sector involvement in road maintenance and rehabilitation; reduction of ODR fixed costs.	2.1 Manual and light mechanical contracts by ODR and SNRDA for earthen roads increase from 17,000 Km annually at present to 34,000 Km by 1994.		
	2.2 By 1994 ODR and SNRDA are contracting annually for 1000 Km of earth road rehabilitation.		5) Minister of Territorial Administration, Deputy Prime Minister of Public Works facilitate OR/SNRDA collaboration.
	2.3 ODR personnel reduced from 6000 in 1990 to 4000 by 1994.		USAID and World Bank donor coordination efforts succeed in limiting new construction.

Footnote:

S/T Short Term  
L/T Long Term

<u>OUTPUTS:</u>	<u>OBJECTIVELY VERIFIABLE INDICATORS</u>	<u>MEANS OF VERIFICATION</u>	<u>IMPORTANT ASSUMPTIONS</u>
3) Regional institutions receive increased authority for planning, procurement and personnel.	3.1 ODR Restructuring Results in increased Delegation of Authority to the Regions.	GOZ records; official bulletin OFIDA statistics Local surveys World Bank data OR/SNRDA records and bank statements	3) OR/SNRDA capable of supervising expanded private construction industry activities.
	3.2 SNRDA improves contractor supervision using local Engineers.	Official GOZ communications to USAID/World Bank/UNDP  Reports by S/T consultants	
4) Alternative national and regional funding sources for road maintenance identified, recommended to GOZ, and accepted in principle.	4.1 Road user cost and damage research completed; recommendations discussed with GOZ and accepted.	Private sector contacts  Reports by L/T TA personnel	4) Minister of Territorial Administration, Deputy Prime Minister and Ministry of Public Works facilitate OR/SNRDA collaboration.
	4.2 National and regional fiscal reform analysis completed and recommendations presented to GOZ and approved.	Evaluations PIRs Audits	USAID and World Bank donor coordination efforts succeed in limiting new construction.

<u>INPUTS:</u>	<u>OBJECTIVELY VERIFIABLE INDICATORS</u>		<u>MEANS OF VERIFICATION</u>	<u>IMPORTANT ASSUMPTIONS</u>
		<u>CPF</u>		
1) Project Management (PSC)	1) \$720,000	240,000	Ministry of Public Works, Ministry of Plan, USAID, Controller and Program CIP Office, L/Cs issued	1) AID/W provides funds.
2) Technical assistance	2) \$2,660,000	887,000	USAID Controller records PIRs Audits Evaluations	2) Mission has capacity to program and manage funds. 3) Local audit firms able to undertake reviews of CPF uses.
3) Research and Analysis	3) \$ 720,000	240,000		4) GOZ willing to allocate CPF
4) Commodities (to support)	4) 362,000	120,000		
5) Evaluations and audits	5) 56,000	19,000		
Contingency	282,000	94,000		
Totals:	\$4,800,000	1,600,000		

**ANNEX 2**

**FUEL SECTOR ANALYSIS**

USAID/Zaire  
May 1990

TRANSPORT REFORM PROGRAM (TRP)  
(Project No. 660-0126)

PRE - PAAD ANALYSIS  
FUEL/ENERGY SECTOR REPORT

March 31, 1990

LOUIS BERGER INTERNATIONAL INC.,  
(Contract No. 660-0510-C-00-0276)

PREPARED BY :

CHRISTIAN BUZENET  
Energy and Fuel Expert  
LOUIS BERGER INTERNATIONAL INC.,  
100 Halsted Street  
East Orange, NJ 07019 USA

PRE-PAAD ANALYSIS

ENERGY - FUEL SECTOR

SUMMARY AND CONCLUSION

1. Introduction and objectives

Zaire's distribution sector has been in a crisis situation for the past few years, characterized by a lack of supplies and a shortage of petroleum products in most regions, particularly in the southern (SHABA) and eastern (KIVU) parts of the country.

Moreover, the distribution companies responsible for collecting the parafiscal taxes included in the pricing structure for petroleum products have not been able to pay their taxes regularly, in particular those owing to the National Roads Office (Office des Routes), due to their own financial difficulties.

Many factors including obstacles at the institutional level, inadequate provision for distribution costs in the petroleum pricing structure, the chronic shortage of hard currency, and the mounting arrears for the government's consumption have contributed to this situation.

Following a request by the Conseil Exucatif, USAID is prepared to support the fuel sector and set up a \$30 million foreign exchange assistance program to finance petroleum product imports. The corresponding local currency generated by these imports would be earmarked for investment in the road sector.

The objective of this report is to prepare an analysis of the fuel sector and present a set of recommendations on which to base the USAID program.

## 2. Supply and distribution system

### 2.1 The infrastructure

The existing infrastructure does not permit a regular distribution of petroleum products throughout the country. Some facilities are run down and poorly maintained. A single large investment of \$30 million for repairs to the two Matadi-Kinsasa pipelines in 1984-1987 has been made during the last fifteen years.

### 2.2 The participants

Until 1989 the distribution of fuel in Zaire was carried out by four companies: the government-owned PETROZAIRE and three mixed-capital ownership firms (40% state, 60% private): FINA, MOBIL, and SHELL. The liberalizing of the distribution sector has opened up the internal market to other participants:

- joint ventures between PETROZAIRE and the corporations ELF-AQUITAINE for the western and southern markets and AGIP for the eastern region. PETROZAIRE has become a holding company which will manage the government's participation in the distribution companies.
- the creation of small private Zairian companies: ZAIRE OIL, LUBINJI, YOSHAD, MADOVA. The commercial activities of these companies are limited to the SHABA region in southern Zaire where they serve the large state-owned company (GECAMINES).

Finally there are a number of small retailers who buy petroleum products in 200 liter drums from the distribution companies (minimum purchase 5 drums per transaction). These small retailers mainly supply the areas in the interior of the country not covered by the distribution firms.

### 2.3 Organization of imports

Until 1985 PETROZAIRE had a monopoly on the importing of petroleum products; distribution companies were only involved in marketing activities. In June 1985, the Conseil Executif decided to liberalize this sector by allowing distribution companies to import refined products for themselves. However, given the rigidity of the market, the financial problems of the distribution companies and the need to import in bulk, imports are pooled. The Comité d'achat was thus created as a coordinating body for importers. It is responsible for putting out calls for tender, choosing suppliers, negotiating prices, insuring purchase planning, and overseeing supply contracts.

In practice, PETROZAIRE, which holds the position of secretary on the committee since May 1988, is in charge of petroleum products supplies throughout the country. Distribution companies only play an advisory role which considerably limits their choices.

In actual fact, the Comité d'achat does not ensure the easing of import restrictions as touted by the authorities nor does it favor competition between the distributors by allowing them to choose their suppliers.

### 3. Oil consumption in Zaire

#### 3.1 Fuel

Petroleum products make up a small part of the country's energy requirements, accounting for only 7% of total consumption. If only commercial energy consumption (charcoal, fuel, and electricity) is taken into consideration, fuel represents 57%, equivalent to 30 kg of oil per person per year. This is very low compared to other sub-saharan African countries where the average is 140 kg OE. The situation is all the more disturbing because Zaire's oil consumption has remained almost static at 700,000 tons over the last ten years. This is due to several factors:

- low level of industrial development
- shortage of hard currency to buy imported products
- lack of an adequate transportation infrastructure
- a freeze on oil prices

#### 3.2 Consumption of products by region

Consumption varies considerably from region to region. Together, Kinshasa and Bas-Zaire account for 65.5% of the country's total consumption while the southern (SHABA) and eastern (KIVU) regions account for 13.5 and 2% respectively. To these regional disparities is also added a marked difference in the type of product consumed.

Gasoline, kerosene, and fuel oil make up 18.5%, 25%, and 6% respectively of total consumption.

An examination of product consumption by region reveals that the differences are very marked in the southern and eastern regions. In the south, this is due to the presence of the state mining company (GECAMINES) which consumes 80,000 m<sup>3</sup> of diesel fuel or almost 70% of the total consumption in the south.

### 3.3 The parallel market

It is extremely difficult to estimate the size of the parallel market. Two factors, however, have been essential to the development of a black market in the southern and eastern regions of Zaire:

- the changes in official oil prices
- the shortage of supplies.

The first often leads to the second which has been the case in recent years. The variation in the pricing formula due to changes in taxation has been the major factor in interrupting supplies in these regions.

According to some estimates for 1989, the parallel market accounted for 50% of gasoline and diesel sales and 80% of kerosene sales in the Kivu region. In the Shaba region, black market sales represent about 10 to 20% of total consumption.

## 4. Supply structure for petroleum products

Petroleum product supplies enter the country by three different routes:

### 4.1 The west

The western route which accounts for 85 to 90% of the country's needs is supplied by local production from the SOZIR refinery (40%) and direct imports (60%). Although the refinery has a nominal refining capacity of 750,000 tons per year, the output attained from treating crude oil limits the actual capacity of the facility to 300,000 tons. This is enough to saturate the internal fuel oil market without producing surplus fuel requiring exportation.

The remainder of supplies entering the west (50%) are direct imports from other African countries (Ivory Coast, Gabon, and the Congo).

### 4.2 Southern and eastern regions

The southern route accounts for 7% of the country's needs and is supplied via South Africa (Durban): 80% and Tanzania (Dar es Salaam): 20%.

The eastern route, 3% of the country's needs, is supplied mainly via Kenya (Nairobi).

#### 4.3 Cost of imports

Due to the high cost of freight, import costs for the eastern and southern routes (approx. 350 \$/m3) are double the import costs for the western route. This doubling of costs can be explained by the high cost of transport: 120-145 \$/m3 from Durban, 160 \$/m3 from Nairobi, but also by the supplier's mark-up of 40 to 90 \$/m3 depending on the product. This mark-up, which is separate from the usual refinery margin, is related to the export opportunities available to the suppliers but may also be the result of overcharging by the importers.

### 5. Price structure for petroleum products

#### 5.1 Evolution of prices

Prices for petroleum products in Zaire have undergone two phases:

- A. A price freeze from 1974-1988. During this period the selling price to consumers did not cover the actual costs in real terms. Consequently, the distribution companies gave precedence to supplying the western regions of the country (Kinshasa, Bas Zaire) while neglecting the outlying regions (east and south) where the high cost of distribution was not covered by the selling price. As a result, these regions suffered an interruption in supplies and shortages.
- B. a price adjustment phase beginning in November 1988 which resulted in two large price hikes, the first in November 1988 (an average of +50%), the second in February 1989 (+100% for prices in the west and +300% for prices in the south and east).  
As of November 1988, the price of petroleum products is adjusted monthly according to the change in the import costs and the exchange rate between the Zairian currency and the American dollar.

#### 5.2 Comments on the current pricing system

The current price-fixing system has been working relatively well since November 1988. However, several factors should be noted:

- the pricing system is controlled.  
The Conseil Executif reserves the right to refuse price adjustments for political or non-economic reasons.

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- the system does not promote open competition; uniform prices are set for consumers. Consequently, distribution companies are not encouraged to increase productivity within the sector.
- Sunk costs should be recovered and not the economic costs through a rationalization of the sector. In this way the system undergoes a standardization of prices according to region (cross subsidy).

## 6 The price maxima system for petroleum products

### 6.1 The principles of the system

To overcome the inadequacies of the current price structure, the Conseil Executif has proposed a new pricing system based on the following principles:

- the price of refined products will be determined simply and objectively, taking into account the actual costs. This includes the cost of imported raw materials calculated with import costs (CIF international port price), the actual distribution costs adjusted to inflation and the Zaire/dollar exchange rate.
- this is the price maxima (or ceiling price) which distribution companies are authorized to charge. All companies can offer rebates to their clients in the spirit of competition.
- there will be no more standardization of prices in advance by the Conseil Executif. Prices are adjusted monthly. Nevertheless, the government reserves the right to retroactively control the companies' profit margin.

### 6.2 Expected results of the system

The price maxima system is a compromise between a complete freeing of prices and the current system. It is nonetheless a decisive step towards liberalizing Zaire's oil prices in that it addresses the problem of implementing a long-term recovery process for the distribution sector on the one hand and of supplying the internal market under the most favorable cost and quality conditions for the country on the other.

The price maxima system should have the following positive effects: rebuilding of the companies' financial situation,

revitalizing sales in the interior of the country, rebuilding of 15-45 day working stocks, shrinking of the parallel market, increased competition.

However, the expected positive results of the price maxima system could be impeded over the short term by certain factors, particularly by the presence of cartels within the sector, the necessary financial adjustments of the oil companies who suffered substantial losses during the period when prices were frozen, the chronic foreign exchange shortage, and the high cost of transport.

## 7. Taxation

### 7.1 Calculation of the tax basis

Until the end of 1989 petroleum taxes were calculated on the basis of the average price of imported products and included an import duty of 15%, an excise tax of 15%, and a transportation surtax of 15-55% depending on the product.

This method of calculating prices had two major drawbacks:

- it amplified international price variations and projected them onto internal prices;
- tax revenues varied according to international market price fluctuations.

To eliminate these drawbacks, the IMF recommended isolating the calculation of the tax basis from the international market. Since February 1990, the tax basis is calculated on the market price list in \$/ton.

### 7.2 Terms of payment for taxes

Since February 1989, the Office des Douanes et Accises (OFIDA) is responsible for collecting all petroleum taxes for the Tresor Publique and the transportation agencies.

An agreement between the tax office and the oil industry states that taxes must be paid within 90 days after the product's date of entry. This period will be shortened to 60 days on April 1, 1990.

The Conseil Executif undertakes to pay for government consumption within 90 days of the billing date. However, this commitment has not been honored and arrears have been accumulating as a result of the government's delay in paying.

Upon receipt of the taxes from the companies, OFIDA conveys the taxes to the various beneficiaries within 15 to 30 days

according to the following scale:

- Public treasury: 44%
- Department of Roads: 43%
- others 13%

## 8. Recommendations for the implementation of PAAO

The fuel-energy sector's reform program has two objectives:

- to supply the internal market at the lowest possible cost to the country as a whole.
- to effect the payment of the parafiscal petroleum taxes to the transportation agencies responsible for the management and maintenance of the transportation infrastructure.

In order to meet these objectives, several steps must be taken to eliminate the obstacles that remain throughout the distribution sector on the one hand and to insure that the transportation agencies receive their tax revenues on the other.

Consequently, the USAID program for financing the importing of petroleum products should only be implemented after certain conditions in the fuel and particularly the transportation sector have been met.

These prerequisites can be grouped into major and minor categories. The major conditions are essential if the objectives set out by USAID are to be met. The minor conditions, on the other hand, will not jeopardize the project if they remain unfilled.

### 8.1 Prerequisites for the fuel sector

#### 8.1.1 Major conditions

##### A. Liberalization of petroleum product prices.

The implementation of the maxima price system is essential to rebuilding the distribution sector and constitutes an intermediate step towards freeing product prices. Priorities include:

- ensuring that the maxima price system is put into place to avoid the prior standardizing of prices by the Conseil Executif
- establishing a timetable for the liberalization of prices

It should be noted, however, that the price maxima system can be substituted for a completely liberalized system over the medium term insofar as it takes into account the actual costs

of importation and distribution, these costs being adjusted annually in \$/ton according to the US consumer price index.

#### B. Lifting of import restrictions on petroleum products

In order to ensure that the selling and financing of imported products are carried out under optimal conditions, competitive bids should be opened up to all supplier members of the World Bank and not limited, as they are now, to members of the Communauté Economique des Etats de l'Afrique Centrale.

#### C. Operation of the Comité d'achat

The Comité d'achat must be independent of the government-owned PETROZAIRE. To this end:

- distribution companies must have a real say in the Comité d'achat. The dominant role of PETROZAIRE must be curtailed so that other companies are placed on an equal footing with the government-owned company.

- the Comité d'achat must be the sole body responsible for releasing international calls for tender and for signing supply contracts.

### 8.1.2 Minor prerequisites

#### A. Liberalization of the internal market distribution.

Two steps could be taken by the authorities in order to ensure a better supply to the interior of the country:

- legalizing the resale of products by small merchants, subject to certain regulations
- reducing the required minimum purchase of 5 drums to 1 drum for small merchants

#### B. Operating procedures for Zaire-Oleoduc

Distribution companies must be allowed to participate in the managing of the proposed company Zaire-Oleoduc, whose role will be to manage the planned Muanda-Matadi pipeline.

#### C. Sectorial studies

Zaire's fuel sector is poorly understood due to the lack of studies or sectorial analyses. The following studies are recommended:

- A study of distribution and transportation costs

Distribution and transportation costs contained in the oil pricing structure are very high compared with other African countries and there is a potential for increased productivity in this area. An indepth study of these costs would reveal the relevant factors.

- A study of fuel consumption

No reliable statistics are currently available on the consumption of petroleum products based on the branch of industry and the region. Consequently, it is impossible to make accurate projections or to measure the effects of price fluctuations on sectorial demand on a regional and national level. This last point is especially important given the nominal change in prices.

Such a study should, therefore, gather statistics according to the demand in specific sectors (transportation, industry, mining, energy) and according to region.

## 8.2 Prerequisites for the transportation sector

### 3.2.1 Major conditions

#### A. Honoring of the terms of payment for parafiscal taxes.

The strict honoring of the terms of payment for petroleum taxes by the distribution companies to OFIDA is imperative to the proper functioning of the transportation agencies. Therefore, taxes must be paid within 60 days of the entry date of the product. These terms can only be respected by distribution companies if consumption by the government and parastatal companies is also promptly paid, within 120 and 90 days respectively of the date the product was placed at their disposal.

#### B. Remittance of taxes by OFIDA to the transportation agencies

OFIDA must redistribute the petroleum taxes to the transportation agencies within 15 days of receipt of payment from the oil companies.

#### C. Payment procedures for government consumption

To avoid delays in payments for government consumption, the Budget Department must set up a special budget procedure:

- by instituting a rapid payment dispersement system, on a monthly basis for example

- by giving priority to the allocation of petroleum taxes to transportation agencies in case of a default by the government on its payments for 30 consecutive days.

#### 8.2.2 Minor prerequisites

##### A. Establishment of new buying procedures

Government consumption must be open to competitive bids in order to benefit from optimal buying conditions, in keeping with the maxima price system.

##### B. Paying of arrears

The current situation of arrears between the government, the parastatal companies, and the participants in the distribution system must be resolved and a timetable set up for the paying of arrears.

PRE-PAAD ANALYSIS  
ENERGY - FUEL SECTOR  
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## CHAPTER 1

### INTRODUCTION AND OBJECTIVES

Zaire's economic reforms, undertaken with the support of its financial backers, are aimed at stimulating the country's economic growth. This growth is only possible particularly in agriculture, if an adequate infrastructure is in place.

Since 1987, the National Roads Office (Office des Routes), the main body in charge of managing the country's road network, has dramatically curtailed the amount of maintenance and rehabilitation work carried out as a result of an acute financial crisis.

The crisis situation was mainly caused by the difficulties in collecting parafiscal taxes contained in the pricing structure of petroleum products, which make up 75% of the department's revenues.

The fuel distribution companies who are responsible for collecting and remitting the surtax have had financial problems of their own over the last few years. These difficulties are the result of a malfunctioning of Zaire's distribution sector, characterized by obstacles at the institutional level, inadequate provision for distribution costs in the fuel pricing structure, arrears in payments for public and semi-public consumption, and the chronic shortage of hard currency.

Despite some measures undertaken by the authorities, a major restructuring of the energy-fuel sector in order to increase efficiency has not been forthcoming.

Following a request by the Conseil Executif, USAID is prepared to support the fuel-energy sector and set up a \$30 million hard currency assistance program to finance petroleum product imports. The corresponding local currency generated these imports would be earmarked for road maintenance and rehabilitation as well as improving management of regional agencies involved in the transport sector.

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To meet this objective USAID will examine the conditions for implementing such a program. The objective of this report is to prepare an analysis of the fuel sector and present a set of recommendations on which to base the USAID program.

This study will examine the fuel sector by concentrating on the following elements:

- the supply and distribution system
- consumption
- the supply structure
- the pricing system for petroleum products
- taxation

## CHAPTER 2

### THE SUPPLY AND DISTRIBUTION SYSTEM FOR PETROLEUM PRODUCTS

The distribution sector has been in a crisis situation for the past few years, characterized by a lack of supplies and by a shortage of petroleum products in most regions, particularly in the southern (SHABA) and eastern (KIVU) parts of the country.

Many factors including the inadequate infrastructure, the lack of a permanent working arrangements, and incomplete legislation to allow for the normal functioning of this sector have contributed to this situation.

#### 2.1 Infrastructure

The infrastructure for Zaire's fuel supply and distribution system is composed of the following major installations:

- unloading facilities for tankers in Matadi and Muanda;
- the SOZIR refinery in Muanda with a nominal capacity of 750,000 tons per year and a storage tank capacity of 160,000 m<sup>3</sup>;
- a fleet in the coastal zone of the Zaire River consisting of 3 push boats and 6 - 1800 m<sup>3</sup> barges, which are used for unloading the tankers and transporting the refined products between Muanda and Matadi;
- transit depots in Matadi (76,000 m<sup>3</sup>) and Kinshasa (75,000 m<sup>3</sup>);
- two six-inch pipelines from Matadi to Kinshasa with a nominal capacity of 1.4 million m<sup>3</sup> per year;
- thirty or so regional depots totalling 90,000 m<sup>3</sup>, including Ilebo 23,000 m<sup>3</sup>, Kisangani 11,500 m<sup>3</sup>, Akati 13,000 m<sup>3</sup>.
- river, rail, and road transportation networks for the interior of the country.

The existing infrastructure does not allow for a regular distribution of petroleum products throughout the country. Some facilities are run down and poorly maintained. A single large investment - repairing the two Matadi-Kinshasa pipelines in 1984-1987 for \$30 million - has been made in the last fifteen years.

A 1987 study by the French research group TECHNIP states that the existing infrastructure must be expanded by:

- constructing an off-shore unloading facility for tankers. Tankers are currently unloaded by barges which takes an average of three days.
- placing a buoy off Muanda
- constructing an undersea pipeline from Muanda to the SOZIR site
- constructing a 125 km pipeline from Muanda to Matadi

Among these projects, the most urgently needed as well as the most profitable would be the Muanda-Matadi pipeline at an estimated cost of \$22 million. This investment would reduce transportation costs by approximately \$8 million per year at present rates of traffic by eliminating the tanker run between Muanda and Matadi.

According to the World Bank the project would be a joint venture between state and private companies, the financing provided jointly with the Italian government through a Energy Sector Adjustment Credit.

## 2.2 Distribution

### 2.2.1 Jurisdiction

The distribution of petroleum products falls mainly under the jurisdiction of the National Economy and Industry Department and the Department of Mines and Energy, which provides a link between the administration and the other participants. This authority extends over:

- supplies
- product prices

The Department of Mines and Energy is more specifically involved with:

- security for supplies
- quality control of the products
- organizing the distribution

The National Economy and Industry Department is the body which fixes prices.

### 2.2.2 The Participants

The distribution of petroleum products in Zaire is carried out by two categories of participants: distribution companies and the Zairian company SEP which handles the transport of petroleum products for the whole country.

#### A. The distribution companies

Until 1989, petroleum products were distributed by four companies:

- the crown corporation PETROZAIRE which was created in January 1978
- three business corporations with mixed capital (40% state, 60% private): FINA, MOBIL, and SHELL

The market share of each company in 1989 was as follows: FINA 40%, MOBIL 24 %, SHELL 21 %, PETROZAIRE 15%. These figures will change considerably over the next few years due to the 1989 opening up of the distribution market to other participants:

- two joint ventures, the PETROZAIRE corporation with the international corporations ELF-AQUITAINE for the western and southern markets and with AGIP for the eastern markets. PETROZAIRE has become a holding company which will manage the government's share in the distribution companies;
- small private Zairian companies: ZAIRE OIL, LUBINJI, YOSHAD, MADCOVA. The commercial activities of these companies are limited to the SHABA region in southern Zaire where they mainly work for the large government corporation (GECAMINES);
- there are a number of small retailers who buy products in 200 litre drums from the large companies. Current regulations stipulate that these retailers must buy a minimum of 5 drums per transaction. These small retailers mainly supply the market in the interior of the country which is not covered by the distribution companies.

#### B. Transport-Storage

Zaire-SEP, a mixed company which is 42.6 % state owned and 57.4% privately owned by international corporations: PETROFINA (36.6%), MOBIL (7.8%), and SHELL (13%), enjoys a monopoly of the storage, transport, and distribution of petroleum products throughout the country for the distribution companies;

The State effectively controls the corporation since it provides 4 out of the 10 administrators (including the President du conseil). Furthermore, the company statutes stipulate that no decision can be made if two administrators vote against the proposal.

PETROFINA plays a dominant role in the current management of the company because of the technical assistance it provides to Zaire-SEP.

### 2.3 Organization of imports

Until 1985 PETROZAIRE had a monopoly on the importing of petroleum products; distribution companies were only involved in marketing activities. In June 1985, the Conseil executif decided to liberalize this sector by allowing distribution companies to import refined products for themselves.

Nevertheless, given the rigidity of the market, the financial problems of the distribution companies and the need to import in bulk to reduce freight costs, imports are pooled.

In this capacity the Comité d'achat, created as a coordinating body for importers and under the auspices of the Department of Mines and Energy, puts out calls for tender, chooses suppliers, negotiates prices, ensures purchase planning, and oversees the supply contracts. This procedure applies only to shipments entering via the west via Matadi; these measures are not applied to imports in the east or the south. Import contracts in the west are open to competitive bids according to the provisions governing procurement contracts. Despite the fact that any foreign company can submit a bid, there is a clause which states that international participation must be limited to companies from the "Communauté Economique des Etats de l'Afrique Centrale" (CEEAC) Unofficial translation: Economic Community of Central African States. This provision does not guarantee the lowest priced supply of petroleum products and is, moreover, contrary to IDA regulations.

In practice the government-owned company PETROZAIRE, which holds the office of secretary since May 1988 (circular May 23 1988), is in charge of petroleum product supplies throughout the country. Distribution companies only play an advisory role in striking deals and in managing supply contracts. Thus, the established practices of the Comité d'achat limit the choices of the participants.

In actual fact, the Comité d'achat does not promote the easing of import restrictions as touted by the authorities nor does it favor open competition between distributors.

## 2.1. Present legislation

The production and distribution sector of petroleum products is governed by an incomplete body of legislation (lack of an outline law for imports and distribution). There is some confusion as to which laws are in force. Thus some provisions created by ordinances before 1985 were later modified by circulars at the time when import restrictions were being eased. No ordinance was ever issued to confirm the changes. Particularly:

- the "Ordinance 81-004" of February 14, 1981 which stipulates that importing and exporting of hydrocarbons and their derivatives are the monopoly of the State and shall be carried out by PETROZAIRE. Nonetheless, companies or persons may import or export certain products under the conditions set out in the specifications and with the authorization of PETROZAIRE. The gouverneur of the Banque du Zaire released a circular on June 5 1985 announcing that in accordance with the decision of the Executive Council, oil companies could now import without the prior authorization of PETROZAIRE.
- the "Ordinance 84-145" of July 2 1984 surrendering the State's participation in petroleum distribution companies to PETROZAIRE which was invalidated by a letter (no. 134/cab/MINES) on August 19, 1985.

Appendix 1 gives the main legal texts concerning the distribution sector.

In order to compensate for inadequacies and to correct the anomalies in the supply and distribution system of petroleum products, a study of the operating procedures and of the institutional structure of the sector carried out by the research group TRANSENERG in March 1988 which made the following proposals:

1. importing, marketing, and distributing of petroleum products should only be undertaken with the authorization of the Conseil Executif for a renewable period of 5 years. The territory should be specified.
2. the price maxima will be set according to the rules set up by the administration, changes in international prices, and in the cost of distribution. Distribution companies can give rebates on the price maxima in the spirit of competition.

These two proposals form the basis of the reforms prepared by the Conseil Executif with the aim of improving the distribution sector in Zaire.

## CHAPTER 3

### PETROLEUM PRODUCT CONSUMPTION

#### 3.1 Position of fuel in energy consumption

Total energy consumption in Zaire is 10.4 million tons oil equivalent which represents an annual per capita consumption of 300 kg OE. Fuelwood is the principle form of energy used by households and provides 87.5% of the country's total energy supplies. Petroleum products account for only 7% and electricity for 4.5% (see table 3.1).

If only commercial energy consumption (charcoal, hydrocarbons, and electricity) is taken into consideration, hydrocarbons represent 57% of the total or 30 kg OE per person per year. This is very low compared to other sub-saharan African countries where the average is approximately 140 kg OE.

The low level of oil consumption in Zaire is mainly a reflection of the low level of development of commercial activities which require petroleum products such as transportation, industry, and mechanized agriculture.

Table 3.1 : TOTAL ENERGY CONSUMPTION

	(in thousands of TOE)					
	1983	1984	1985	1986	1987	Percent
Petroleum Products	796	704	730	825	733	7.1%
Coal	169	104	72	90	89	0.9%
Electricity	<u>405</u>	<u>422</u>	<u>437</u>	<u>457</u>	<u>466</u>	<u>4.5%</u>
Total Commercial	1370	1230	1239	1372	1288	12.5%
Wood Fuel	<u>8400</u>	<u>8331</u>	<u>8581</u>	<u>8838</u>	<u>9103</u>	<u>87.5%</u>
Total Energy	9770	9561	9820	10210	10391	100.0%

Source: Département de l'Economie Nationale.

The situation is all the more disturbing because Zaire's petroleum product consumption has remained almost static at 700,000 tons over the last ten years. This is mainly due to the following factors:

- foreign exchange shortages to buy imported products
- inadequate transportation infrastructure
- a freeze on retail prices for petroleum products

### 3.2 Consumption by region

Consumption varies considerably from region to region. Together, the KINSHASA and BAS-ZAIRE regions account for 65.5% of the country's total consumption while the southern (SHABA) and eastern (KIVU) regions account for 13.5 and 2% respectively. (See tables 3.2.a and 3.2.b).

To these regional disparities is also added a marked difference in the type of product consumed.

The demand for oil products centers mainly on diesel fuel which represents 50% of total consumption. Gasoline, kerosene, and fuel oil make up 18.5%, 25%, and 6% respectively.

This situation is due to the fact that diesel is used in both the transportation sector and the industry and mining sectors, particularly for stationary motors.

An examination of product consumption by region reveals marked differences in the southern and eastern regions. In the south, this is due mainly to the presence of the state mining company (GECAMINES) which consumes 80,000 m<sup>3</sup> of diesel fuel or 70% of the total consumption in the south.

TABLE 3.2.a FUEL CONSUMPTION BY REGIONS, 1986 - 1989 (cubic meters)

YEAR	KINSHASA	BAS-ZAIRE	BANDUNDU EQUATEUR	HAUT-ZAIRE	KIVU	KASAI	SHABA	TOTAL
1986	448650	105455	50661	40959	26765	63858	132088	868436
1987	444361	108553	48461	35413	29796	25074	121590	813248
1988	510230	121999	49155	28743	34890	68679	116518	930214
1989	490271	110094	47403	32794	17597	71297	121956	891412

Sources : 86-87 Conjoncture Economique  
88-89 Marketing Companies.

Table 3.2.b : PETROLEUM BY PRODUCTS CONSUMPTION BY REGION: 1989

(thousand m<sup>3</sup>)

	Gasoline	Kerosene	Jet Fuel	Diesel	Fuel Oil	Avgas	Total	%
Kinshasa	123,1	20,3	169,9	167,7	14,3	3,8	490,3	53
Bas-Zaire	10,4	5,7	-	47	46,9	-	110,1	12,5
Bandundu Equateur	6,0	4,0	1,5	34,7	-	-	47,4	5
Haut-Zaire	5,4	2,1	4,3	2,9	-	-	32,8	4
Kasai	6,7	3,6	1,6	59,3	-	-	71,3	8
Kivu	5,1	1,1	1	10,2	-	-	17,6	2
Shaba	10,3	1,1	4,4	106,1	-	-	121,9	13,5
(Columines	0,5	-	0,1	64	-	-	64,6	7,2
(others	9,8	1,1	4,3	22,1	-	-	37,3	4
Total	166,9	36,4	187,1	466	51,2	3,8	891,4	
Percent	18,5	4	21	50	6	0,5		100

Source : ZAIRE SEP, Marketing Companies

N. B. The totals are not quite accurate because they are rounded off.

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## SHARE OF PETROLEUM PRODUCTS IN THE SOUTH AND EAST

	national average	SHABA average	KIVU average
Gasoline	18.5%	8.5%	29.0%
Diesel	50.0%	87.0%	58.0%
Kerosene/jet	25.0%	4.5%	58.5%
Fuel Oil	6.0%	-	-
Avgas	0.5%	-	-

3.3 Parallel market estimates

It is extremely difficult to estimate the size of the parallel market because of the many factors which have led to its creation. Two factors, however, have been essential to the development of a black market in Zaire's eastern and southern regions: the changes in official prices for refined products and the shortage of supplies. The first often leads to the second which has been the case in recent years. Variations in the pricing structure due to changes in taxation have been one of the major factors in interrupting supplies in the southern and eastern regions.

To compensate for differences in import costs from one area of the country to another, a uniform selling price was introduced by means of a negative tax on prices in the east and the south. These subsidized products were consequently reexported to the neighboring countries (Burundi, Rwanda) exacerbating the shortage.

Tax revisions in 1988, on the other hand, led to a sharp rise in prices and encouraged parallel market sales of lower priced, illegally imported products.

Finally, the steep price increases since November 1988 have accentuated this phenomenon, particularly in the east. The price hikes have destabilized sales which almost collapsed during 1989. Diesel and gasoline sales have fallen by half and kerosene sales by a factor of 7 as shown in the following table:

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Evolution of sales in the eastern (KIVU) region  
(m3)

Year	Gasoline	Kerosene	Diesel
1987	7719	1576	16593
1988	9527	2537	19503
1989	5060	364	9855

An analysis of the sales figures for petroleum products in the east reveals a sharp decline in monthly sales after June 1989 (See table 3.3), particularly for kerosene. Of note is the fact that the retail price for kerosene in Rwanda is lower than it is in Bukavu (see table 3.4).

According to the oil industry, the decline in sales in 1989 compared to 1988 were taken up entirely by the parallel market, bolstering its share of sales to 50% for gasoline and diesel and 60% for kerosene.

Sales in the SHABA region, however, have not followed the same trend. Sales figures for 1989 attained 1987 levels.

Evolution of sales in the south (SHABA)  
(m3)

Year	Gasoline	Kerosene	Diesel
1987	9414	4165	107991
1988	7521	4179	104818
1989	10269	5575	106112

Nevertheless, a parallel market does exist but it is not as large as in the one in the east despite the substantially lower prices on the parallel market for diesel and kerosene (see table 3.5). Some estimates put sales at 10-20% of regional consumption.

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Given the hypotheses that the retail prices for petroleum products are to be adjusted according to the parallel market prices in the eastern and southern regions, taxes on diesel and kerosene would have to be zero or even negative (subsidy) depending on the product.

Table 3.3: Fuel sales in the east: 1989  
(m3)

	Gasoline	Kerosene	Diesel
January	899	50	1874
February	1180	33	1158
March	359	5	1568
April	350	7	852
May	640	8	610
June	121	43	1209
July	276	2	300
August	211	20	321
September	95	124	221
October	130	47	367
November	471	5	780
December	327	12	595
Total	<u>5059</u>	<u>364</u>	<u>9895</u>

Source: FINA-ZAIRE

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Table 3.4 : OFFICIAL PRICE AND BORDER PRICE : KIVU  
(Z/liter)

	EAST (Bukavu)	Rwanda border
Gasoline	336	335
Diesel	354	322.5
Kerosene	335	268

Table 3.5 : OFFICIAL AND BLACK MARKET PRICES : LUBUMBASHI  
(Z/liter)

	Official price Feb. 1990	Black Market price Feb. 1990
Gasoline	371	360
Diesel	361	290
kerosene	342	225

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Source : Marketing Companies

TABLE 3.6 : ADJUSTMENT OF OFFICIAL PRICES COMPARED WITH BLACK MARKET PRICES

<u>Eastern Price</u>	<u>Gasoline</u>	<u>Kerosene</u>	<u>Diesel</u>
Official Price	345	343,5	363
Official Price w/rebate (3)	310,5	309,15	326,7
Black Market Price	<u>325</u>	<u>298</u>	<u>320,5</u>
Difference	- 24,5	11,15	4,2
Fiscal Tax	112,7	57,8	101,5

<u>Southern Price</u>	<u>Gasoline</u>	<u>Kerosene</u>	<u>Diesel</u>
Official Price(2)	371	342	361
Official Price w/rebate (3)	333,9	307,8	324,9
Black Market price	<u>360</u>	<u>225</u>	<u>250</u>
Difference	- 26,1	82,8	74,9
Fiscal Tax	112,7	57,8	101,5

(1) Bukavu price

(2) Lubumbashi price

(3) This price takes into account a 10 % rebate:

This rebate is the maximum difference between the official and parallel market prices, below which it is no longer profitable to sell.

Given the expected nominal price changes for refined products (see Chapter 5) and the continuing price difference between the official price and the parallel market price, we believe the projected demand for petroleum products will stabilize at 1989 sales levels on the parallel market in the south and the east.

### 3.4. Projections for petroleum product consumption: 1990-1995

It is extremely difficult to predict a trend towards an increased demand for petroleum products in Zaire because of the many uncontrollable factors involved.

#### 3.4.1 Uncertainties in demand projections

Several uncertainties remain such as:

a) the meeting of macro-economic objectives in the country:

- expected growth rate of the GNP in volume: 3.5% per year (1990-1992)
- drop in the inflation rate: 1989 : 75%  
1990 : 38% end of march  
20% year end  
1991 : 15%

b) the availability of foreign exchange due to:

- a decrease in Gecamines's copper production in 1990-1991
- the stalemate in negotiations between Zaire and the world Bank on the Energy Sector Adjustment Credit (Energy 1) which would allow for the financing of \$75 million worth of petroleum products.

c) the deregulation of prices and of the distribution sector,

d) the effect of the expected price increases on demand,

e) the rebuilding of working stocks of distribution companies,

f) changes in public consumption,

g) the consumption of refined products on the parallel market,

h) the improvement of the transportation infrastructure,

i) the absence of reliable, detailed statistics. Depending on the source (suppliers or consumers), differences in quoted volumes can run as high as 20%.

Variations in the figures for the projections for the next 5 years demonstrate the difficulty of making predictions, all the

more so because the underlying assumptions are not always explicit. Scenarios for the petroleum product demand can, however, be grouped into three categories:

1. optimistic outlook: average annual increase in demand : 3%.
  - World Bank
  - Oil industry
2. pessimistic outlook: average annual increase in demand: level throughout the period.
  - Oil Industry
  - Government ministries: Office des Douanes; Département des Mines et de l'Energie (only for 1990 projections)

This scenario presupposes that the constraints within the system will remain over the medium term.
3. intermediate outlook: average annual increase in demand: 1.5%.
  - \* African Development Bank (Energy Sector Loan; April 1988).

#### 3.4.2 Demand projections for 1990-1995.

The demand projections for this study will be established using the following methodology:

- the demand for each product will be divided, as far as possible into three sectors: public, parastatal, and private.
- for each sector the following assumptions are made concerning consumption of specific products:
  - a) public sector: volume of gasoline and jet fuel consumed will remain stable

## b) parastatal sector:

- Gecamines: 15% reduction in diesel consumption in 1990-1991 because of an anticipated drop in activity during this period and a recouping in stages to 1989 levels over 4 years.
- Onatra: the supplier SONATRAD has projected 33,500 m3 in their planning for 1990, a drop of 9% over 1989 and a stable consumption at this level for 1991-1995.
- SNCZ: SONATRAD predicts a need for 29,000 m3 of diesel for 1990 which represents a reduction of 10% over 1989. Stable consumption at this level for 1991-1995.
- others: estimated annual rate of increase is 1.5%.

## c) private sector: consumption projections by product are as follows:

- Gasoline: 1990-1991: stable at 1989 volume levels.  
1992-1995: annual increase 1.5%

This hypothesis, which presupposes a neutral price effect on the demand, may be optimistic given the present inflation rate.

- Diesel: increased consumption in relation to the 1.5% expected average growth in the transport sector.
- Kerosene: stable consumption at 1989 levels. A likely increase in consumption will be offset by the substitution of kerosene by electricity.
- Fuel oil: annual decrease in consumption of 2% throughout the entire period because of the conversion by large companies (breweries, cement plants) from fuel oil to electricity.

- Rebuilding of working stocks:

Given the low level of working stocks of distribution firms (average of 15 days), the assumption is made that there will be a return to 45-day working stocks, which is equivalent to the average supply delay required for a steady supplying of the market. The building up of 30 extra days of stock would probably be carried out in two stages: 15 days in 1990 and 15 days in 1991.

- Strategic stocks:

Propositions for the creation of a strategic stockpile have not been made on the assumption that foreign exchange will be used to meet present needs as a priority.

Taking these hypotheses into consideration, two demand projections are presented: the first includes a rebuilding of working stocks, the second does not (see table 3.7, trans. note: stocks = inventories)

### 3.4.3 Sales projections for 1990-1991 for the southern and eastern regions

In order to determine the volume of imports by product for the southern and eastern routes, the following is assumed:

- Eastern region: A maintaining of sales volumes at 1989 levels, which also presupposes that sales on the parallel market also remain stable at present levels. This may seem optimistic given the fact that certain selling outlets may close if new government initiatives are not taken.
- Southern region: According to the oil industry a large demand potential exists that is not currently met by the retail network, particularly for gasoline. Therefore, if supply conditions were improved (i.e. availability of hard currency), sales in this region should climb to 1986 levels, approximately 13,000 m3 of gasoline and 6,100 m3 of kerosene. Diesel sales should decline following a drop in consumption by Gecamines of -12,600 m3 and by SNCZ of -600 m3 due to the maintenance of locomotives and other traction equipment. This drop should, however, be partly offset by an increase in diesel consumption in the private transport sector.

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TABLE 3.7 : DEMAND PROJECTIONS : 1990 - 1995

	(000 M3)						
	1989	1990	1991	1992	1993	1994	1995
<b>GASOLINE</b>							
- Consumption	166.9	168.1	168.7	169.9	171.1	172.3	173.5
- Public	50.6	50.6	50.1	50.1	50.1	50.1	50.1
- Private	116.3	117.5	118.6	119.8	121.0	122.2	123.5
- Inventories		7.0	7.0	0.1	0.1	0.2	0.2
TOTAL	166.9	175.1	175.8	170.1	171.3	172.5	173.7
<b>DIESEL</b>							
- Consumption	446.0	430.3	434.8	442.9	451.2	459.7	468.8
- Public	0	0	0	0	0	0	0
- Gecamines	84.0	71.4	71.4	75.0	78.7	82.6	87.0
- SNCZ	32.0	29.0	29.0	29.0	29.0	29.0	29.0
- ONATRA	36.5	33.5	33.5	33.5	33.5	33.5	33.5
- Private	293.5	296.4	300.9	305.4	310.0	314.6	319.3
- Inventories		17.9	18.1	1.0	1.0	1.1	1.1
TOTAL	446.0	448.3	452.9	443.9	452.2	460.8	470.0
<b>KEROSENE</b>							
- Consumption	36.3	36.3	36.3	36.3	36.3	36.3	36.3
- Inventories		1.5	1.5	0	0	0	0
TOTAL	36.3	37.8	37.8	36.3	36.3	36.3	36.3
<b>JET FUEL</b>							
- Consumption	187.1	188.5	190.7	192.9	195.1	197.3	199.6
- Public	45.0	45.0	45.0	45.0	45.0	45.0	45.0
- Private	142.1	143.5	145.7	147.9	150.1	152.3	154.6
- Inventories		7.9	7.9	0.3	0.3	0.3	0.3
TOTAL	187.1	196.4	198.6	193.1	195.4	197.6	199.9
<b>FUEL OIL</b>							
- Consumption	50.7	49.7	48.7	47.7	46.8	45.8	44.9
- Inventories		2.1	2.0	-0.1	-0.1	-0.1	-0.1
TOTAL	50.7	51.8	50.7	47.6	46.6	45.7	44.8
<b>OTHERS</b>							
- Consumption	4.3	4.4	4.4	4.5	4.6	4.6	4.7
- Inventories		0.2	0.2	0	0	0	0
TOTAL	4.3	4.5	4.6	4.5	4.6	4.6	4.7
TOTAL (stocks) (increase)	891.3	913.8 2.5	920.4 0.7	895.5 -2.7	806.3 1.2	917.5 1.2	929.4 1.3
TOTAL (no stocks) (increase)	891.3	877.3 - 1.6	883.6 0.7	894.2 1.2	905.0 1.2	916.1 1.2	927.9 1.3

Tables 3.8 and 3.9 give the sales projections by product for the Shaba and Kivu regions for 1990-1991. The projected consumption for Shaba is 113,900 m<sup>3</sup> (compared with 121,956 m<sup>3</sup> for 1989) and for Kivu 18,370 m<sup>3</sup> (compared with 17,597 m<sup>3</sup> for 1989). These projections presuppose the rebuilding of working stocks.

Table 3.8 : PROJECTED SALES SHABA REGION

(m<sup>3</sup>)

	Consumption 1989	Consumption 1990-1991	Stock	Total 1990-1991
Gasoline	10269	13000	550	13550
Kerosene	5575	6100	250	6350
Diesel	106112	93200	800	94000
GECAMINES	84000	71400	-	71400
SNCZ (SHABA)	2400	1800	-	1800
Autres	<u>19712</u>	<u>20000</u>	<u>800</u>	<u>20800</u>
Total	121956	112300	1600	113900

TABLE 3.9 : PROJECTED SALES KIVU REGION  
(m<sup>3</sup>)

	Consumption 1989	Consumption	Stock	Total 1990-1991
		1990-1991		
Gasoline	5056	5100	200	5300
Kerosene	2288	2300	95	2395
Diesel	<u>10249</u>	<u>10250</u>	<u>425</u>	<u>10675</u>
Total	17593	17650	720	18370

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## CHAPTER 4

### SUPPLY STRUCTURE FOR PETROLEUM PRODUCTS

Petroleum product supplies enter the country by three different routes:

- the western route, which accounts for 85 to 90% of the country's needs, is supplied by local production from the SOZIR refinery and direct imports.
- the southern route accounts for 7% of the country's need and is supplied via South Africa and Tanzania (Dar es Salaam), as well as from Zambia.
- the eastern route which accounts for 3% of the country's needs is supplied mainly by Kenya (Nairobi).

Table 4.1 shows the division of the country's fuel supplies for 1979-1989.

#### 4.1 Domestic production of petroleum products

The Muanda refinery is run by a mixed capital Italian-Zairian concern (SOZIR) 50% government-owned and 50% owned by AGIP.

##### 4.1.1 Current situation

The refinery, with a nominal annual capacity of 750,000 tons, could in principle cover the country's total needs of 730,000 tons. In reality, the refinery has never operated at maximum capacity since 1979. It operated at 90% capacity between 1968 and 1977 and then dropped to an average of 56% capacity from 1979-1988.

Two factors have led to this situation: one structural and the other circumstantial:

1. the refinery, which was originally designed to refine light crude, is not suited to meet domestic consumption needs. The refined product yield obtained by the initial refining of crude is disproportionate to the internal demand in that it produces a surplus of fuel oil and a shortage of kerosene and diesel. To minimize financial losses, the refinery must limit its capacity to 300,000 tons/year of light Nigerian crude, which yields enough to saturate internal consumption of fuel oil and avoids producing surplus fuels requiring export. Table 4.2 shows the product yield of crude and the domestic consumption of each product. ....

Table 4.1 : Fuel Supply and Utilization, 1979 - 1989, metric tons

	Local Production	Imports Via			Total	Total Prod. + Imports	Consumption	Fuel Oil Exports	Stock Change
		Matadi	South	Est					
1979	402,606	338,100	50,960	11,480	400,549	803,157	688,639	138,422	(23,904)
1980	429,796	385,777	45,135	14,001	444,913	874,709	720,463	137,224	17,022
1981	286,544	457,163	13,129	23,440	493,722	780,266	763,979	60,640	(44,353)
1982	102,481	594,229	0	12,094	596,323	608,804	663,086	12,537	33,181
1983	46,685	679,162	2,004	11,902	893,068	739,753	691,027	2,627	46,099
1984	182,023	467,000	678	16,305	483,983	666,006	656,805	7,002	2,199
1985	5,049	672,482	20,673	9,206	702,361	707,410	678,928	0	28,482
1986	60,693	559,180	64,580	17,773	641,533	702,226	721,585	0	(19,359)
1987	203,494	437,589	54,044	21,447	513,080	716,574	666,875	504	49,195
1988	272,470	479,110	53,905	25,607	558,622	831,092	761,876	548	68,668
1989	310,376	324,660	60,786	12,002	397,428	707,795	728,702	0	(20,907)

Source : Département de l'Economie Nationale et de l'Industrie,  
Conjoncture Economique, various issues.

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Table 4.2 SOZIR PRODUCTION BY PRODUCT: 1989

Product	Production		Consumption
	(Tons)	(%)	(%)
Diesel	126,507	40.8	50.1
Kerosene	67,519	21.7	25.2
Gasoline	62,517	20.2	18.2
Fuel Oil	53,445	17.2	5.8
Others	380	0.1	0.1
	<hr/>	<hr/>	<hr/>
Total	310,367	100.0	100.0

Source: Comite d'achat

2. The development of a world wide, over-capacity in the area of refining over the last ten years has caused a drop in the relative price of refined products in relation to crude oil. It has become much more profitable for the country to import refined products directly rather than import crude and refine it locally.

This situation led to the temporary shutdown of the refinery in 1985.

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#### 4.1.2 Outlook for domestic production

Profitability studies of the refinery have revealed several possible courses of action: the closing of the plant, maintaining present services or modernizing the facilities.

- A. Modernizing the refinery: feasibility studies have shown that the installation of a secondary conversion unit (thermocracker or hydrocracker for an estimated cost of \$40-80 million), which would allow for a more efficient use of heavy crude by producing more highly refined products and less heavy fuels, would not be profitable. This alternative has therefore been rejected.
- B. A complete shutdown of the refinery has also been rejected by the authorities. The refinery in fact insures:
  - greater security in providing fuel supplies to the country.
  - a better adaptation of domestic production to internal market demands.
- C. Consequently, the government has opted for the solution of keeping the refinery running under the following conditions:
  - a minimum investment to improve the efficiency of its storage procedures to meet the distribution needs of the future Muanda-Matadi pipeline.
  - internal reorganization in order to reduce excessive operating expenses. Current operating expenses are \$22.1/ton for the refining of 300,000 tons per year. These costs could be brought down to \$15/ton after reorganization. This would - taking into consideration the \$9/ton fee contained in the processing contract - result in a net loss of \$6/ton as compared with the present \$13/ton. SOZIR's services are presently covered by two royalties contained in the pricing structure for petroleum products: one on the unloading of boats and storage, the other on the refining process.
  - optimization of the production at 300,000 tons per year through processing, which would leave an annual balance of 400,000 tons to be imported.

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## 4.2 Import structures

### 4.2.1 Import structure according to source

#### A. Importation via the western route

Imports via the western route account for 55% of total refined-product imports. These imports travel via the Atlantic ports of the African countries, Ivory Coast, Gabon, and the Congo.

In July 1988, following a decision at the summit of the "Economie Communauté des Etats de l'Afrique Centrale (CEEAC)" to strengthen inter-community trade, the contract with the company PETROBAS was cancelled and a limited international call for tenders was launched among suppliers within the CEEAC. This led to an agreement with a supplier which groups together Elf Aquitaine, the Société Gabonaise de Raffinage, and the Société Congolaise de Raffinage.

#### B. Importation via the southern route (SHABA)

Imports in the south arrive mainly from two sources:

- imports from South Africa (Durban) account for approximately 80% of imports entering the south. The products are transported by rail from Durban to the border town of SAKANIA, in Zaire.
- Tanzanian imports originate in the port of Dar es Salaam and travel to LUBUMBASHI by road. Imports from the NDOLA refinery in ZAMBIA have almost completely stopped because of the impossibility of ensuring regular shipments from this source.

#### C. Importation via the eastern route (KIVU)

Because of the region's isolation from the rest of the country, imports via the eastern route are used exclusively in the eastern region of the country (KIVU). Imports are transported by means of tanker trucks:

- either from Nairobi, Kenya via Uganda
- or from El-Doret, border town between KENYA-UGANDA

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The following table shows the flow of imports according to region.

	Participant	Origin	Volume(m3)	Percent
Western route:	Elf contract	Ivory Coast	406,250	100%
		Gabon		
		Congo		
Eastern route:	Local oil companies	Kenya	17,600	100%
Southern route:	Local oil companies	South Africa	58,000	80%
		Tanzania	14,500	20%

#### 4.2.2 Supply by product for Zaire's southern and eastern routes

The south is supplied from two sources: the western route eg. Matadi and imports originating from the south.

Petroleum product imports entering the west account for almost the south's entire requirement for gasoline (90%) and for jet fuel (100%). Diesel supplies account for about 36%. (see table 4.3). Imports entering the south make up the rest: gasoline (10%) and diesel (64%).

The following table gives the percentage of each product imported to the south according to import route

	West Matadi	South
Gasoline	90%	10%
Jet fuel	100%	0%
Diesel	36%	64%

The eastern route is exclusively supplied via Kenya (see table 4.4)

Table. 4.3 : SOUTH FUEL IMPORTS ,(cubic meter)

1986	Ex-West	Ex-South	Total Consumpt.	
Gasoline	11484	2376	13860	11484
Diesel	60828	74712	135540	112055
Jet/Kero.	5964	0	5964	6248
	-----	-----	-----	-----
	78276	77088	155364	129787
1987	Ex-West	Ex-South	Total Consumpt.	
Gasoline	8448	1612	10060	9414
Diesel	45756	62918	108674	107991
Jet/Kero.	3780	0	3780	4185
	-----	-----	-----	-----
	57984	64530	122514	121590
1988	Ex-West	Ex-South	Total Consumpt.	
Gasoline	7380	703	8083	7521
Diesel	41264	63554	104818	104818
Jet/Kero.	4416	0	4416	4179
	-----	-----	-----	-----
	53060	64257	117317	116518
1989	Ex-West	Ex-South	Total Consumpt.	
Gasoline	10157	1528	11685	10269
Diesel	42385	75998	118383	106112
Jet/Kero.	5034	0	5034	5575
	-----	-----	-----	-----
	57576	77526	135102	121956

Source : Petrozaire,Comite d'Achat

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Table 4.4 : EAST FUEL IMPORTS (cubic meter)

	1986	Ex-East	Consumpt.
Gasoline		6565	6455
Diesel		17380	16813
Jet/Kero.		3625	3497
		-----	-----
		27570	26765
	1987	Ex-East	Consumpt.
Gasoline		7080	7719
Diesel		15358	17602
Jet/Kero.		4186	4475
		-----	-----
		26624	29796
	1988	Ex-East	Consumpt.
Gasoline		8754	9527
Diesel		18051	19512
Jet/Kero.		5021	5651
		-----	-----
		31826	34890
	1989	Ex-East	Consumpt.
Gasoline		5153	5056
Diesel		10971	10249
Jet/Kero.		2204	2288
		-----	-----
		18328	17593

Source : Petrozaine,Comite d'Achat

#### 4.3 Cost structure according to source

The cost of products are compared according to their origin. The comparison is made based on the official price structure for petroleum products on February 5, 1990.

The average CIF balanced border cost is calculated as follows:

##### A. Imports via the western route:

The average balanced cost for eastern imports is \$207.76 per ton or 153.75 per m<sup>3</sup>. The cost is determined by the following factors:

- the transfer price from the refinery of CHEVRON products calculated on the basis of Platt's CIF NWE quotation which equals \$195/ton, for 60% of total imports.
- the import transfer price for Elf-Aquitaine products calculated on the basis of Platt's CIF NWE quotation which is \$226.91/ton for 40% of total imports.

Although the reference quotes are the same for both sources (CHEVRON and Elf-Aquitaine), a difference in transfer prices exists.

This difference is due to variations in international prices between the unloading dates of shipments and to the fact that shipments from Elf Aquitaine are delivered to Matadi while those from Chevron are delivered to Muanda.

The freight cost difference between Muanda and Matadi is around \$7.50/ton.

##### B. Imports via the southern and eastern routes:

The average weighed cost for imports arriving via the southern and eastern routes is determined on the basis of the border price, Sankia, for the southern route and Bukavu for the eastern route. These prices include the refinery price plus the transport costs to the Zairian border. From information given by the import firms, the import cost can be reconstructed from the purchase and transport costs.

The transport costs according to origin are given below:

Eastern route: average freight cost Nairobi - Kivu = \$180/m<sup>3</sup>

Southern route: average freight cost Durban - Sakania = \$120-145/m<sup>3</sup>

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Based on the average balanced price of imports as calculated in the price structure for February 1990 and on the real cost of transport given above, the transfer price charged by the suppliers can be calculated as follows :

COMPARISON OF IMPORT COSTS FOR WESTERN, SOUTHERN AND EASTERN ROUTES

US\$/m <sup>3</sup>	Import cost Western Route	Base price Platt's CIF	Import cost Eastern Route		Ratio (2)/(1)	
	(Platt's CIF) (1)	Platt's CIF	Suppliers Margin	Transport Ex-Nairobi		
				Average total cost Price structure (2)		
Gasoline	153.75	153.75	58.25	160	372	2.4
Kerosene	182.78	182.78	47.22	160	390	2.1
Diesel	166.9	166.9	42.9	160	369.8	2.2

US\$/m <sup>3</sup>	Import cost Western Route	Base price Platt's CIF	Import cost Southern Route		Ratio (2)/(1)	
	(Platt's CIF) (1)	Platt's CIF	Suppliers Margin	Transport Ex-Durban		
				Average total cost Price structure (2)		
Diesel	166.9	166.9	86.7-61.7	120-145	373.6	2.2

According to Platt's International CIF quotation which determines the average price for imports entering via the western route, the cost of importing from the east and the south is double the cost of importing via the west. This doubling of costs is a result of the high freight costs but also of the suppliers' mark-up of \$40-90/m<sup>3</sup> depending on the product. This mark-up, which is separate from the usual refinery margin, is mainly related to the export opportunities in the supplying countries such as Kenya, South Africa or Tanzania over which the importing firms have no control, but apparently, the mark-up could well be the result of overcharging by importers.

This fact has prompted the Zairian government to favor imports entering via the western route, which are less expensive, and to discourage those entering the south and east.

In practice, the opposite is taking place for diesel fuel: the volume imported via the south is increasing while those from the west are decreasing.

It would seem, therefore, that the actual cost of importation via the southern, eastern route is lower than the invoiced costs contained in the official pricing structure, leaving a substantial profit for import companies.

This would explain the proliferation of private companies such as Zaire Oil, Madova, Lubunji, and Yoshad in the Shaba province. In 1989 Zaire Oil imported 22,000 m<sup>3</sup> of diesel via the south for Gecamines or 25% of the company's consumption.

#### 4.4 Import projections for the eastern and southern regions

Using the consumptions projections given in chapter 3.5.3 and based on the distribution of imports according to source in 1989, the volume of imports for the southern and eastern regions of the country can be determined.

Tables 4.5 and 4.6 give the estimated volume of imports for 1990/1991.

The annual cost of importing via the south and the east are \$23 and \$6.9 million respectively, an accumulated monthly average of approximately \$2.5 million. These costs are calculated on the basis of import costs stipulated in the pricing structure for petroleum products.

Table 4.5 : IMPORTS PROJECTIONS, SHABA: 1990/1991

	Consumption 1990/1991 (M3)	Import 1990/1991		Value (mio.S)
		ex_west (M3)	ex_South (M3)	
Gasoline	13550	11780	1770	619.5
Jet/Kero.	6350	6350	0	0
Diesel	94000	33365	60345	22544.9
(Zaire oil)	(25000)		(25000)	9340.0
	-----	-----	-----	-----
	113900	51495	62115	23164.4

Table 4.6 : IMPORTS PROJECTIONS, KIVU: 1990/1991

	Consumption 1990/1991 (M3)	Import ex_East (M3)	Value (mio.S)
Gasoline	5300	5300	1971.6
Jet/Kero.	2395	2395	934.1
Diesel	10675	10675	3949.8
	-----	-----	-----
	18370	18370	6855.4

Total imports by month : 2.5 million US\$

## CHAPTER 5

### PRICING STRUCTURE FOR PETROLEUM PRODUCTS

Prices for petroleum product in Zaire have undergone two phases:

- a price freeze from 1974-1988
- an adjustment phase since November 1988

#### 5.1 Evolution of prices from 1974-1988

In 1974, during the nationalization of private distribution company assets, the Zairian government introduced a price fixing formula for refined products under which:

- the retail price paid by consumers did not cover the cost of the product in real terms. (see table 5.1 and chart 5.2)
- transportation costs to the delivery point were calculated uniformly irrespective of the region or locality served. In this way, the prices of products sold in the interior of the country (east, south) were subsidized by prices in the west.

The application of this petroleum price fixing policy led the distribution firms to give precedence to supplying the western region, Bas Zaire and Kinshasa, while neglecting the outlying regions (east and south) where the high cost of distribution was not covered by the retail price. As a result, these regions suffered an interruption in supplies and oil shortages.

In September 1986, an agreement was reached between the government and the World Bank on the institution of the principles of liberalized prices and full cost recovery into the pricing formula for petroleum products.

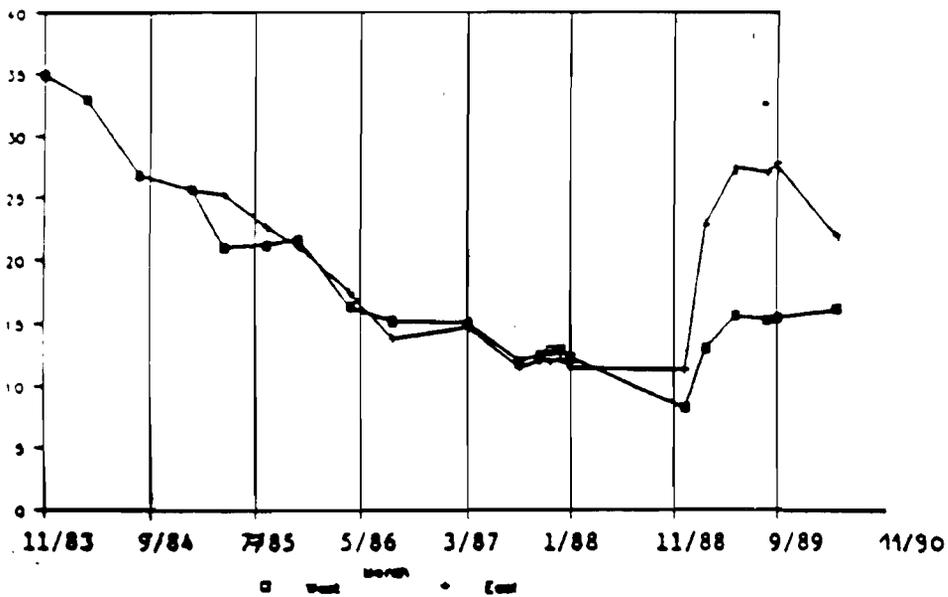
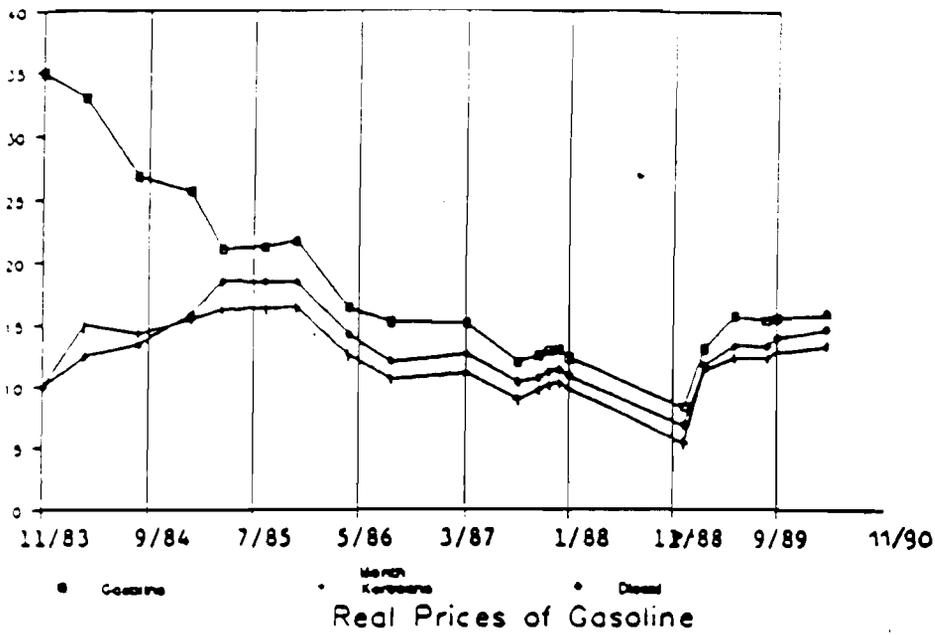
The principle, however, was not applied. From 1986 to November 1988 the retail price was still below actual costs. A marked difference between the retail price and the cost led to:

- financial difficulties for the distribution companies;
- a decrease in petroleum product imports and shortages in the interior regions of the country; priority was given to supplying the Kinshasa region which accounts for 55% of sales.
- speculation in the southern and eastern regions of the country, where prices on the parallel market climbed as high as 10 times the official price.

Table 5.1. Nominal fuel Prices (zaïres per liter)

Z/USD	Date	Gasoline		Kerosene		Diesel		South
		West	East	West	East	West	East	
	Jan-79	1.5	1.5	NA	NA	NA	NA	NA
	Sep-79	2.5	2.5	NA	NA	NA	NA	NA
	Mar-80	4.0	4.0	NA	NA	NA	NA	NA
	Jul-81	5.5	5.5	NA	NA	NA	NA	NA
	Dec-82	12.5	12.5	3.5	3.5	3.0	3.0	NA
30	Sep-83	35.0	35.0	15.0	15.0	15.5	15.5	NA
30	Nov-83	35.0	35.0	10.0	10.0	10.0	10.0	NA
33	Mar-84	33.0	33.0	15.0	15.0	12.5	12.5	NA
35.5	Aug-84	30.0	30.0	16.0	16.0	15.0	15.0	NA
40	Jan-85	30.0	30.0	18.0	18.0	18.5	18.5	NA
47	Apr-85	25.0	30.0	19.3	33.6	21.9	39.2	NA
52	Aug-85	30.0	32.0	23.0	31.0	26.0	31.0	NA
53	Nov-85	33.0	32.0	25.0	33.0	28.0	33.0	NA
56	Apr-86	30.0	32.0	23.0	30.0	26.0	30.0	30.0
60	Aug-86	33.0	30.0	23.0	30.0	26.0	30.0	30.0
105	Mar-87	46.0	45.0	33.5	45.0	38.5	45.0	50.0
122	Aug-87	51.0	49.0	38.0	47.0	44.0	50.0	47.0
126.6	Oct-87	54.0	52.0	42.0	50.0	46.0	52.0	NA
129.3	Nov-87	57.0	53.0	45.0	52.0	49.5	55.5	50.0
129.3	Dec-87	59.0	55.0	47.0	54.0	51.5	57.0	NA
129.3	Jan-88	59.0	55.0	47.0	54.0	52.0	58.0	NA
235	Dec-88	73.0	100.0	47.0	54.0	60.0	86.0	83.0
335	Feb-89	147.0	257.0	126.0	214.0	131.5	254.5	249.0
353.8	Apr-89	156.0	282.0	126.0	238.0	137.0	274.5	270.0
353.8	May-89	178.0	312.0	140.0	260.0	151.0	302.0	290.0
406	Aug-89	190.0	335.0	152.0	277.0	164.0	329.0	326.0
431.4	Sep-89	199.0	356.0	164.0	293.0	178.5	347.5	346.0
439.6	Oct-89	202.0	362.0	175.0	298.0	189.0	354.0	352.0
463.6	Dec-89	233.0	314.0	207.0	296.0	227.0	325.0	330.0
474.8	Feb-90	256.0	336.0	227.0	335.0	246.0	354.0	344.0

Figure 5.2 : Real Prices of Fuel



Source: Departement de l'Economie National et de Industrie, Arrête Departemental, various issues and Institut National de la Statistique, indice Officiel des Prix a la Consommation des Menages a Kinshasa, various issues.

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It should be kept in mind that the financial difficulties of the oil companies were not just the result of the unsuitable pricing structure but also of the government's failure to pay its back debts to the oil companies for products received. As a result, the oil companies were unable to pay their petroleum taxes (ref. oil taxation).

To check the continual erosion of petroleum product prices, the Conseil Executif introduced a structural price adjustment by announcing two price increases;

- \* the first in November 1988: an average of +50%,
- \* the second in February 1989: +100% for prices in the west; +300% for prices in the south and east.

These increases were just covered the effects of inflation

## 5.2 Price and cost analysis of petroleum products

Current selling prices for refined products are made up of three elements which determine the reference price for each route:

- the border entry price or average border price
- distribution costs
- taxes

The selling price at the pumps is determined by adding a geographical increment to the reference price to compensate for transport costs relative to supplying the various areas.

### 5.2.1 Average border price

For each of the three supply routes, west, south, and east, the average border price is calculated based on the following:

- the average weighted CIF import price in dollars per ton during the preceding month
- the Zaire/dollar exchange rate estimated for the month in which the price is being set
- bank interest related to the letter of credit, calculated on a 120-day basis at an annual rate of 80.1%.

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### 5.2.2 Distribution costs

The distribution costs combine:

- actual production expenses from the refining process, storage costs, and the marketing costs of the various participants in the distribution system. These costs are assigned according to a distribution scale by product and by region.
- the profit margin of the companies which represents 10% of the average border price.

### 5.2.3 Adjustment mechanism

In principle, the prices for petroleum products are adjusted monthly according to changes in the parameters on the suggestion of the participants in the distribution system. However, the adoption of the new pricing structure must be authorized by the Département de l'Economie Nationale et de l'Industrie.

### 5.3 Geographic differential

The geographic differential is an individualized cost which takes into consideration the cost of transport relative to each locality as well as some operating expenses of the ZAIRE SEP's transportation units not covered in the pricing structure. These expenses represent 10% of the total differential.

- all transportation costs are calculated by ZAIRE SEP, which controls all the transport of petroleum products for the distribution companies throughout the country.
- all means of transportation, by water, rail or road, are included in the transportation costs
- ONATRA only handles a small portion of the transport by water which is mainly handled by small private shipping companies and PETROZAIRE and ZAIRE SEP who run a fleet of barges for ZAIRE SHELL. Water transport costs are generally calculated using ONATRA's scale of charges.
- Rail transport is the exclusive domain of the "Société Nationale des Chemins de Fer Zairois (SNCZ)." Official rates are charged.
- Road transport is handled by private companies and by ZAIRE SEP. Rates for private companies are calculated on a ton/kilometre basis. ZAIRE SEP's operating expenses are

covered by the price structure, thus making it almost impossible to discern their actual costs for road transport.

- operating expenses not covered by the price structure are losses due to leakage, which are very high for rail transport (2% for the southern network, 10% for the northern network) and an operating margin.

Short of carrying out an indepth study of all the elements that contribute to the ZAIRE SEP's transport costs, it is difficult to get a clear idea of the actual economic costs.

The calculation of the geographic differential as given by ZAIRE SEP is the sum of all the actual financial costs of the participants. These costs are automatically included in the final price structure.

Table 5.4 shows the geographic differentials for February 1990 for the different localities of the country.

#### 5.4 Price structure comparison by origin

##### 5.4.1 Reference price structure

On the basis of the structure established on February 5, 1990 (see Annex 3), the price of petroleum products has been broken down for the different import routes (see tables 5.3 and 5.4). Of note is:

- the border prices of products entering the east and south are twice as high as the corresponding western price. This difference is due to the freight cost and to an inexplicable margin on products imported via the south and the east. (see 4.3).
- bank charges (letters of credit, finance charges) are extremely high. They account for 22% of the cost of importing;
- at the price reference level (not including the geographic differential, these differences are reduced by higher pick-up charges raising the cost of distribution for goods arriving through the western route in relation to the eastern southern routes. For this reason, the difference in product prices in these regions is only 30%, 47%, and 40% respectively for gasoline, kerosene, and diesel compared with products in the west.

Taking into account the geographic differential, in other words, the cost of transport to the final destination, the price differences between localities and regions are slightly larger.

Table 5.3  
 BREAKDOWN OF PRICES FOR PETROLEUM PRODUCTS ACCORDING TO ORIGIN  
 /US\$/m<sup>3</sup>

Feb. 1990	Gasoline		Kerosene		Diesel		
	Ex-West	Ex-East	Ex-West	Ex-East	Ex-West	Ex-East	Ex-South
Border price (1)	153,8	212	182,8	230	166,9	209,8	226,1
Transport (2)	-	160	-	160	-	160	147,5
Total border price	153,8	372	182,8	390	166,9	369,8	373,6
Bank charges (3)	36	87,1	42,8	91,3	39	86,6	87,5
Distribution costs (4)	183,2	83,9	158,6	129,7	159,2	138	111,6
Total	373	542,2	384,2	611	365,1	594,4	572,7
Parafiscal charges (5)	166	166	94,6	94,6	151,8	151,8	151,8
Real Reference price	539	708,2	478,8	705,6	516,9	746,2	724,5

(1) Bank charges not included.

(2) Transport from ex-refinery to Zaire border

(3) Bank charges :

- credoc : 13,33% border price

- others : 8,9% (border price + credoc)

(4) SEP, SOZIR and Distributors operating costs.

(5) Customs dut., Excise Tax and Transport Surtax.

Table 5.4

BREAKDOWN OF PRICES ACCORDING TO ORIGIN  
(US\$/percent)

Feb. 1990	Gasoline		Kerosene		Diesel		
	Ex-West	Ex-East	Ex-West	Ex-East	Ex-West	Ex-East	Ex-South
Border price	28,5	29,9	38,2	32,6	32,3	28,1	31,2
Transport (2)	-	22,6	-	22,7	-	21,4	20,4
Total border price	28,5	52,5	38,2	55,3	32,3	49,5	51,6
Bank charges	6,7	12,3	8,9	12,9	7,5	11,6	12,1
Distribution costs	3,4	11,7	33,1	18,4	30,8	18,5	15,4
Total	62,2	76,5	80,2	86,6	70,6	79,6	79,1
Parafiscal charges	30,8	23,5	19,8	13,4	29,4	20,4	20,1
Real Reference price	100,0	100,0	100,0	100,0	100,0	100,0	100,0

#### 5.4.2 Retail price structure

Taking into consideration the geographic differential applicable since February 1990, the retail price in the east and the south is 35-50% higher, depending on the product, than in the west (See tables 5.5.a and 5.5.b).

If the official price is compared to the current price on the parallel market, very large price differences are noted for both kerosene and diesel.

The prices of kerosene and diesel in Lubumbashi on the parallel market are 225 and 250 Z/litre compared with the official price of 342 and 361 Z/litre, for a difference of 31 and 34%.

#### 5.5 Comments on the current pricing mechanism

The current price-fixing mechanism has only been working relatively well since November 1988. The range of production costs (financial costs) are now entirely recuperated by the retail price.

However, several factors should be noted:

- the pricing system is controlled; the government reserves the right to refuse price adjustments for political or non-economic reasons. Thus, to limit prices at the pumps, variations in the rate can be deferred (the case for January and March 1990), with a devaluation rate of 10% per month.
- the system does not promote competition; uniform prices are set for consumers,
- thus distribution companies are not encouraged to increase productivity within the sector. Sunk costs should be recovered and not the economic costs through a rationalization of the sector.
- a certain equalization of prices takes place within the system according to product and region (cross subsidy) which does not reflect the actual economic costs of the product:
- SOZIR's transport, storage, and refinery costs are recovered entirely by the prices for goods on the western route; however, the south is also supplied with diesel and gasoline via the western route.
- the companies' profit margins are proportional to the average cost of supplies and not to the earning power of the capital, i.e. the investment capacity.

Table 5.5.a

CONSUMER PRICE IN KIVU  
(Z/liter)

	GASOLINE				%	KEROSENE				%	DIESEL			
	Ref. Price	Transport	Total (2)	(2)/(1)		Ref. Price	Transport	Total	(2)/(1)		Ref. Price	Transport	Total	(2)/(1)
KINSHASA	256 (1)	-	256			227	-	227			246 (1)	-	246	
KIVU (EAST)														
- BUKAVU	336	8,9	344,9	+ 35%		335	8,9	343,5	+ 51%		354	8,9	362,9	+ 47%
- GOMA	336	1,3	337,3	+ 32%		335	1,3	336,3	+ 48%		354	1,3	355,3	+ 44%
- KALEMIE (ex - West)	256	119,9	375,5	+ 47%		227	119,9	346,9	+ 53%		246	119,9	365,9	+ 49%
Rwanda price			335 (-3 %)					268 (-22 %)					322,5 (- 11 %)	

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Table 5.5.b

CONSUMER PRICE IN SHABA  
(Z/liter)

	GASOLINE				KEROSENE				DIESEL			
	Ref. Price	Transport	Total (2)	% (2)/(1)	Ref. Price	Transport	Total	% (2)/(1)	Ref. Price	Transport	Total	% (2)/(1)
SHABA (South												
- KOLMESI												
- ex-west	256	108,7	364,7	+ 42%	227	108,7	335,7	+ 48%	246	108,7	354,7	+ 44%
- ex-south	-	32,8	-		-	32,7	-		344	32,7	367,7	+ 53%
LUBUMBASHI												
- ex-west	256	115,3	371,3	+ 45%	-	115,3	342,3	+ 51%	246	115,3	361,3	+ 47%
- ex-south	-	16,7	-									
Black Market Price			360				225				250	
			(-1,5 %)				(- 34 %)				(- 31 %)	

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## CHAPTER 6

### THE PRICE MAXIMA SYSTEM FOR PETROLEUM PRODUCTS

To overcome the inadequacies of the current price structure, the Département de l'Economie Nationale et de l'Industrie has proposed a new pricing system based on the following principles:

- the price of refined products will be determined simply and objectively, taking into account the actual costs.
- the price thus calculated is the price maxima (or ceiling price) which the oil companies are authorized to charge. All companies can offer rebates to their clients in the spirit of competition.

This new pricing system, the introduction of which was initially planned for January 1, 1990, has not yet been implemented.

#### 6.1 Calculation of the price maxima

Calculation of prices in the price maxima system is based on the following principles:

- selling prices are determined annually by the oil companies in relation to the cost factors which make up the formula. The prices are decided upon in collaboration with the government. However, the latter no longer intervenes a priori in fixing the prices but rather retroactively by controlling the profit margin of the companies.
- all the elements which make up the price structure are fixed once and for all in \$US per ton (except the price of imports which changes according to world prices). The costs which make up the basis of the calculation are the "cout optima in real terms of all the participants in the refining, transport, and distribution sectors.
- a single price structure for petroleum products has been established called the reference price, applied uniformly throughout the country. Consequently, the price structure is no longer calculated on the basis of the entry route, west, east or south.
- to the reference price is added a geographic differential to cover the actual costs of transportation to the area served.

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## 6.2 Components of the retail price maxima

The retail price maxima is composed of four components:

- the entry price or reference border price
- distribution costs
- taxation
- the geographic differential.

### A. Border Price

The border price for each product is calculated monthly using an average of the world market quotes for the preceding month. To this is added a fixed increment of \$20 per ton and the sum is then multiplied by a coefficient which takes into account the bank charges.

- the reference quote for the products is Platt's CIF Rotterdam NWE base ARA quotation.
- the fixed increment covers freight costs to the unloading dock in Muanda.
- bank charges cover charges related to opening of lines of credit as well as the cost of transferring in hard currency. The rate charged on credit, imposed by the Central Bank, is 80.1% per year.

### B. Distribution costs

Distribution costs have remained in the same bracket as previously. The costs which make up a general base are related to the average of the highest distribution costs during the 1983-1987 period and converted to 1989 costs according to the US consumer price index.

- for ZAIRE SEP expenses: the average value for the 1983-1986 period.
- for the charges and income of companies: the average value in 1985 of oil, diesel and fuel oil and the average value included in the 1989 structures.
- for SOZIR's operating expenses: refining expenses are spread over all the products at an average of \$9.5/ton.

The distribution costs are adjusted at the beginning of each year according to the US consumer price index.

The following table gives the actual figures calculated for the distribution costs according to product for 1990 in \$US (as reported by the companies).

Distribution costs : maxima price

(\$US/m3)

	Gasoline	Kerosene	Diesel	Fuel Oil
ZAIRE SEP	53	75	77	54
Marketing Costs	111	65	63	51
SOZIR	10	9	10	9
	<hr/>	<hr/>	<hr/>	<hr/>
Total	174	149	139	114

C. Taxation

Taxes, including parafiscal taxes, are fixed according to the budget directives of the government. This aspect will be examined in chapter 7.

D. Geographic differential

Given the standard reference price for all import routes based on the world price, the geographic differential contained in the price maxima system takes all transport costs into account as follows:

- freight costs of imports arriving by the southern and eastern routes to the Zairian border. These costs are contained in the current system in the average border price.
- the distribution transport costs throughout the country as charged by ZAIRE SEP
- an geographic incentive given to the distribution firms to encourage them to supply the interior of the country.

The table in annex 4 gives the values for the new geographic differentials for each locality covered in the price maxima system.

### 6.3 Comparison of price maxima and current structures

Based on actual figures, comparisons of price maxima and prices calculated according to the structure in place on February 5, 1990 are given below:

PRICE \$US/m3	GASOLINE	KEROSENE	DIESEL	FUEL OIL
Current price structure	539.2	478.0	1518.1	385
Price maxima	606.4	513.7	546.5	405.4
Difference	+12.5%	+7.5%	+5.5%	+5%

As shown, the price maxima would be higher than the corresponding price in the current system: 12.5% for gasoline, 7.5% for kerosene, 5.5% for diesel, and 5% for fuel oil.

### 6.4 Comments on the price maxima system

The price maxima system is a compromise between a complete freeing of prices as proposed by the World Bank in its Sectorial Adjustment Program and by USAID and the old system of controlled prices which is currently in place. It is nonetheless, in principle, a decisive step towards liberalizing Zaire's oil prices insofar as it addresses the government's and the lending institutions' concern for a longterm rehabilitation of the distribution sector on the one hand and of supplying the market under the most favorable cost and quality conditions for the country on the other.

#### 6.4.1 The principles adopted

The principles adopted by the price maxima system are essential and will affect the operators by:

1. allowing them the complete freedom to fix the prices of petroleum products in relation to such uncontrollable factors as the world market price and the Zaire/dollar exchange rate. Under the proposed system, the government would no longer intervene "a priori" in the retail price adjustment process. Nevertheless, the government would reserve the right to control profit margins retroactively.

2. allowing for the incorporation of changes in cost of the elements that make up the price of refined products in real terms, particularly the distribution and transportation costs.

The effects of the system are analyzed below:

#### 6.4.2 Positive effects

The system should have five positive effects:

1. Rebuilding of the financial situation of the companies

The price freeze during the last few years resulted in a liquidity crisis for the distribution companies. It should be kept in mind that the oil companies wrote off 8 billion Zaires (10% of industry sales in 1987), corresponding to the amount of bad debts owed by the "Caisse de Stabilization". The liberalization of petroleum product prices will, therefore, have the immediate effect of restoring the financial position of companies in the transport and distribution sectors (ZAIRE SEP, oil companies).

2. Revitalizing sales in the interior of the country

The interior of Zaire, especially the east and the south, was hardest hit by the shortages of petroleum products over the last few years. Many gas stations were closed for good, others temporarily, despite storage and distribution capacities and a strong potential demand. Our study of the distribution companies clearly shows that the network sales for such products as gasoline and diesel could increase substantially, particularly in the Shaba region which could represent a volume increase of approximately 3-4,000 m<sup>3</sup> of products.

3. Rebuilding of working stocks

On average, the working stocks of the distribution companies are equivalent to 10-15 days of consumption, a level that is insufficient to ensure a regular supply to the eastern and southern regions of the country. With present delays of supplies by the various import routes (average 45 days), it is extremely important to rebuild stocks up to the equivalent of 45 days of consumption.

This objective, only attainable if the participants are in a strong financial situation, is essential to ensuring a constant supply to these regions and avoiding shortages.

#### 4. Reducing the size of the parallel market

Petroleum product shortages in the Shaba and Kivu regions have led to the creation of a parallel market in these regions, where the prices have reached as high as 10 times the official price.

This market would be reduced by regular supplies of diesel, oil, and gasoline.

Nevertheless the parallel market will not completely disappear, especially in the eastern region of the country given the differences between prices in the interior of the country and those in the neighboring countries.

#### 5. Increased competition

The price maxima system allows the distribution companies to give rebates for wholesale as well as retail sales. A measure of competition would be introduced among the companies in their attempt to boost sales, particularly in the south.

The system should therefore benefit the consumer not only in the area of prices but also through a better quality service.

The price maxima system should be considered as an intermediate step towards a total freeing of oil prices. It does not represent, in the short term at least, an efficient system of price economics allowing real competition among the various operators.

A certain number of structural and circumstantial factors could block the expected positive effects of the price maxima system.

#### 6.4.3 Limits of the system

##### 1. The presence of cartels

Zaire's distribution market suffers from too many cartels; four companies dominate: PETROZAIRE, FINA, MOBIL, SHELL. The recent entry of small operators in the south of the country (ZAIRE OIL, MADOVA, and since February 1990 LUBANJI, and YOSHAD) is limited to supplying bulk to a few large consumers, particularly Gecamines. The small companies do not have a retail distribution network and almost no fixed costs.

Moreover, the operating methods of these companies aren't always in keeping with the criteria for free competition as touted by the authorities. These companies work mainly for reserved markets (especially GECAMINES). In less than one year ZAIRE SHELL supplied almost 25% of GECAMINES diesel requirements.

## 2 Rebuilding the distribution sector

The distribution sector for petroleum products in Zaire was financially devastated in 1989. For the effects of real competition to be felt, three conditions must be fulfilled:

- the financial recovery of the sector must be completed, which means the rebuilding the financial base of the companies. This condition refers especially to the delayed payments of the government and parastatal companies: GECAMINES, SNCZ, ONATRA, Office des routes. At the moment, given the financial difficulties of these companies, the payment delays have had a tendency to rise appreciably (more than 120 days).
- the buildup of working stocks of the companies is essential to provide a constant supply to the market. This is of course linked to the rebuilding of the companies' financial base.
- the stockpiling of 30 extra days of supplies would represent a capital expenditure of 9 billion Zaires for the industry with an annual financial cost of approximately 560 million Zaires at a rate of 50% per year.
- One of the major constraints in the oil industry will be re-supplying markets in the interior of the country, particularly in the east and the south. Under these conditions, there can be little hope for lower retail prices in the immediate future until the financial base of the companies has been restored. A price war under present financial conditions would put these companies out of business in a very short time.

## 3. Availability of hard currency

The system cannot function properly unless there is enough hard currency to buy imported products. The current foreign exchange quota for the oil sector hinders the proper functioning of the distribution sector. Financing programs for the importation of petroleum products by the World Bank (\$75 million) and by USAID (\$30 million) will alleviate this problem in the short term.

## 4. Cost of transport infrastructures

Rehabilitation projects in the transport sector, particularly for ONATRA and SNCZ, will involve substantial investments. The economic and financial profitability of these projects as calculated by the World Bank involves raising the tariffs of these companies. The tariffs are collected for ZAIRE SEP which handles all the transport of petroleum products in the country.

## CHAPTER 7

## TAXATION

## 7.1 Evolution of petroleum taxes

Up until December 1988, fiscal petroleum taxes were calculated on an ad valorem basis on the average price of petroleum product imports for each import route, west, east, and south. As previously discussed (see chapter 5), the practice of fixing prices led to a bizarre situation where two official prices existed for the same product in the same locality. This was particularly true in the south which can be supplied either from the west or from the south. The average real cost of importation via the eastern and southern routes is twice as high as that of importing via the west.

To lessen the impact of these differences on the retail price in the eastern and southern regions, the government introduced a negative tax, in the interest of balancing prices, which amounted to a subsidy on products in these regions. This policy had two consequences:

- fraudulent re-exportation of products to the neighboring countries in the east and in the south where retail prices were higher,
- exacerbation of the shortages in these regions.

This situation was corrected in the February 1989 pricing structure. Subsidies were cut off for products imported via the east and the south. The tax basis was standardized for all import routes, in relation to a fixed rate calculated on the actual average price of imports. This new formula considerably raised the fiscal taxes for products imported via the east and the south as shown in the table below:

## Evolution of taxes within the pricing structure (Z/m3)

## Parafiscal charges:

- 1) Dec 3, 1988
- 2) Feb 1, 1989
- 3) March, 1990

	Gasoline		Kerosene		Diesel			Fuel Oil
	West	East	West	East	West	East	South	East
1)	21143	0	9370	(7418)	14853	(12800)	(16100)	782
2)	40343	96398	21747	44986	36173	83545	83545	25477
3)	112718	112718	57799	57799	101523	101523	101523	67330

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## 7.2 Role of taxation in the price structure

Despite tax rate increases for petroleum products, taxes are still relatively low (35% in March 1990) compared to certain African countries where taxes represent 50-60% of the retail price. A tax increase could, therefore, be forthcoming. It should be noted, however, that distribution and transport costs are twice as high in Zaire compared to those in these same countries. Short of raising the retail price, there could only be a tax increase if major improvements in productivity in the distribution and transport sectors were made.

### ROLE OF TAXATION IN THE PRICE STRUCTURE (WESTERN ROUTE) :

% of price	Dec. 1988	Feb. 1989	Feb. 1990	March 1990
Gasoline	29.0%	27.5%	31.0%	37.9%
Kerosene	20.0%	17.0%	19.5%	23.5%
Diesel	25.0%	27.5%	29.0%	35.2%
Fuel Oil	4.0%	27.5%	26.0%	32.4%
Total average	23.5%	27.0%	28.5%	34.8%

## 7.3 Calculation of the tax basis

The pricing structure contains two categories of taxes depending on their allocation:

A. Direct taxes which go to the Tresor Public. These include:

- an import duty
- an excise tax

B. Parafiscal taxes destined for the transport agencies such as the Office des Routes, the Service National des Routes de Déserte Agricoles, and the Regie des Voies Fluviales.

### 7.3.1 Former situation

Until December 1989, fiscal taxes were calculated in proportion to the average border price (average import cost of petroleum products) according to a fixed rate:

- import duty and excise tax: 10%
- transportation surtax: 55%, 15%, 45%, and 45% respectively for gasoline, kerosene, diesel, and fuel oil.

This method of calculating prices had two major drawbacks:

- it amplified and projected international price variations onto internal prices;
- tax revenues varied according to international market price fluctuations.

To eliminate these drawbacks, the IMF recommended isolating the calculation of the tax basis from the international market and from foreign exchange to local money.

### 7.3.2 Current Situation

The calculation of taxes has been simplified as of 1990 and takes into account the following parameters and principles:

- fiscal taxes are uniformly applied no matter the source of the import
- the basic value for a product is a fixed reference value calculated once and for all on the average world price of petroleum products during 1979-1988. This value can be put on a market price list.
- the reference value is given in \$US per metric ton. In this way it is isolated from the fluctuation of the Zairians currency. The reference values are: gasoline \$264/T, kerosene \$266/T, diesel \$241/T, fuel oil \$137 (see annex 5).

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- fiscal taxes are based on the reference value multiplied by an adjustment coefficient which varies depending on the product.  
The rates are: 0.85% for gasoline, 45% for kerosene, 75% for diesel and fuel oil (see table 7.1). The adjustment coefficients are stipulated in the finance regulations (eventually by ordinance) in relation to the tax revenue needs of the government.  
In March 1990, although the weighted coefficients had not been modified, fiscal taxes were raised by 35% for gasoline; 22% for oil and 33% for diesel and fuel oil (see table 7.1.b and annex 6).

#### 7.4 Collection of petroleum taxes

In the old system up to 1988, petroleum taxes allocated to the Tresor Public were collected by OFIDA as the products entered the internal market, while taxes destined for the transportation agencies were remitted directly by the oil companies after the sale of the products to consumers.

This procedure never worked properly due to the financial difficulties experienced by the distribution companies in 1987 and 1988 and caused large disturbances in the operation of the transportation agencies.

To rectify the situation, the tax authorities decided that as of February 1, 1989, all petroleum taxes would be levied by OFIDA at the time of importation, in other words:

- at the border for imported products,
- as the products left the refinery for products sold by SOZIR.

This stipulation which in essence asked the oil companies to pre-finance the tax revenues did not work. Given their financial situation, the companies could not absorb these costs because of the delays in payment by the government and the parastatal companies (120 days).

An agreement was then reached between the tax department and the industry whereby taxes would be remitted 90 days after the entry date of the product; the delay to be shortened to 60 days as of April 1, 1990.

The government agreed to pay for its consumption within 90 days of the billing date which actually represents 120 days given the administrative channels to be followed. These commitments have not been upheld; table 7.2 shows the arrears of the government and of the oil companies as of February 1990.

TABLE 7.1.a

Evolution of the Fiscal Structure

Fuel Price December 1988		Fuel Price February 1989	Fuel Price February 1990 Fix price in US\$
Excise tax	fix base	Excise tax (10% Import cost)	Excise tax 15%
Consumption tax	fix base	Duty customs (10% Import cost)	Duty customs 15%
Unique tax	fix base		
Stabilization Fund	fix base	Stabilization Fund 0 %	Stabilization 0%
Road Tax	fix base	Transport Surtax	Transport Surtax
Rivers Tax	fix base	. Gasoline 55% . Kerosene 15% Import cost . Diesel 45% . Fuel oil 45%	. Gasoline 55% . Kerosene 15% . Diesel 45% . Fuel Oil 45%
Local interest Road Tax	fix base		
Special Treasury Fund	fix base		

Table 7.1.b

Comparison of fiscal taxes February/March 1990

US\$/m3	Gasoline	Kerosene	Diesel	Fuel Oil
Fiscal base	195,46	210,14	202,4	134,3
Current rate	0,85	0,45	0,75	0,75
Fiscal tax February 1990	166,0	94,6	151,8	100,7
March 1990 increase	+56,6	+20,6	+50,5	+33,5
Fiscal tax March 1990	224,6	115,2	202,3	134,2
Increase	35 %	22 %	33 %	33 %

TABLE 7.2  
BALANCE OF PAYMENT ARREARS IN FEBRUARY 1990  
BETWEEN THE GOVERNMENT AND OIL COMPANIES

1. Government debt (Z millions) :

	Debt due	Payment	Net due
November 1989	1623,5	-	1623,5
December 1989	1701,8	2000	1325,3
January 1990	1798,6	1433,7	1690,2
February 1990	1819,3	-	3509,5
Current invoices	<u>1831,1</u>	<u>-</u>	<u>-</u>
Net due 120 days	8774,3	3433,7	5340,6

\* Debt due for one month corresponds to consumption for the Administration 135 days ago.

2. Oil Company debts (Z millions)

	Debt	Payment	Net due
Balance Jan 1990	290	-	290
February 1990	<u>4534</u>	<u>709</u>	<u>-</u>
Total due	4824	709	4115
Due by Administration	<u>-</u>	<u>1819,3</u>	<u>- 1819,3</u>
Net due 90 days	4828	2528,3	2299,7
Net due 120 days	8774,3	3433,7	5340,6

Upon receipt of tax payments from the companies, OFIDA is to pass on the taxes to the various beneficiaries within 15 to 30 days as shown below:

- 44.0% to the Tresor Public
- 43.0% Office des Routes
- 6.0% Service National des Routes de Déserte Agricoles
- 4.0% Regie des Voies Fluviales
- 1.5% Comité Nationale de l'Energie
- 0.54% Office Zairois de Controle
- 0.06% Comité de Répartition
- 0.60% Cellule d'Etudes et de Planification Industrielle
- 0.30% Office des Douanes et Accises

Current distribution rates will likely be modified with the arrival of another beneficiary: Offices des Voies et Drainages

#### 7.5 Tax revenue projections

On the basis of demand projections (see 3.5), two scenarios for calculating tax revenue projections have been followed. The first presupposes a rebuilding of working stocks, the second does not.

The average level of oil tax revenues for 1990 and 1991 is

\$141.2 and \$142.2 million respectively for the first scenario (see table 7.3)

\$135.6 and \$136.6 million for the second (see table 7.4).

Scenario 1 shows slightly higher revenues (+4%) compared to some government estimates. These estimates are calculated on the volume of sales for 1990 as equivalent to that of the previous year; not including the reguilding of working stocks. This volume is the one used in scenario 2.

With the current rates of distribution of tax revenues, estimates of revenues allocated to the Tresor Public and to the various transport agencies have been calculated (see table 7.5 and 7.6).

These figures show that the projected revenues paid to

- the Office des Routes (O.R.),
- the Service National des Routes de Déserte Agricoles (SNRDA),
- the Régie des Voies fluviales (RVF)

In 1990 these figures will be approximately

\$60.7 - \$8.7 - \$5.6 million for the scenario including a rebuilding of stocks.

\$58.3 - \$8.1 - \$5.4 million for the scenario without a rebuilding of stocks.

Revenues are calculated on a full fiscal year based on figures up to March 1990.

To calculate the real flow of revenues, the delays in collecting taxes (3 months) as well as the rates previous to March 1990 must be taken into account.

Calculated in this manner, total tax revenues in 1990 will be \$123 million of which \$53 million will be allocated to the Office des Routes at current allocation rates.

Revenue projections are calculated annually using the current allocation coefficients: These coefficients will be modified in the near future with the arrival of a new beneficiary, the Office des Voies et Drainages.

RESTRICTION

(Stocks included, US 0 million)

	GASOLINE	KEROSENE	DIESEL	FUEL OIL	TOTAL
					\$ mio.
1990					
----					
Tax rate Sus/m3	224.2	115.2	202.3	134.2	
Consumpt. M3	175.1	37.8	448.3	51.8	
TAX REVENUE	39.2	4.4	90.7	6.9	141.2
1991					
----					
Tax rate Sus/m3	224.2	115.2	202.3	134.2	
Consumpt. M3	175.8	37.8	452.9	50.7	
TAX REVENUE	39.4	4.4	91.6	6.8	142.2
1992					
----					
Tax rate Sus/m3	224.2	115.2	202.3	134.2	
Consumpt. M3	170.1	36.3	443.9	47.6	
TAX REVENUE	38.1	4.2	89.8	6.4	138.5
1993					
----					
Tax rate Sus/m3	224.2	115.2	202.3	134.2	
Consumpt. M3	171.3	36.3	452.2	46.6	
TAX REVENUE	38.4	4.2	91.5	6.3	140.3
1994					
----					
Tax rate Sus/m3	224.2	115.2	202.3	134.2	
Consumpt. M3	172.5	36.3	460.8	45.7	
TAX REVENUE	38.7	4.2	93.2	6.1	142.2
1995					
----					
Tax rate Sus/m3	224.2	115.2	202.3	134.2	
Consumpt. M3	173.7	36.3	470.0	44.8	
TAX REVENUE	38.9	4.2	95.1	6.0	144.2

Table 14

## TAX REVENUE (1990-1995 PROJECTIONS)

(Stocks not included, US \$ million)

1990 ----	GASOLINE	KEROSENE	DIESEL	FUEL OIL	TOTAL \$ mio.
Tax rate \$us/m3	224.2	115.2	202.3	134.2	
Consumpt. M3	168.1	36.3	430.3	49.7	
TAX REVENUE	37.7	4.2	87.1	6.7	135.6
1991 ----					
Tax rate \$us/m3	224.2	115.2	202.3	134.2	
Consumpt. M3	168.7	36.3	434.8	48.7	
TAX REVENUE	37.8	4.2	88.0	6.7	136.6
1992 ----					
Tax rate \$us/m3	224.2	115.2	202.3	134.2	
Consumpt. M3	168.7	36.3	442.9	47.7	
TAX REVENUE	37.8	4.2	89.6	6.5	138.1
1993 ----					
Tax rate \$us/m3	224.2	115.2	202.3	134.2	
Consumpt. M3	171.1	36.3	451.2	46.8	
TAX REVENUE	38.4	4.2	91.3	6.4	140.2
1994 ----					
Tax rate \$us/m3	224.2	115.2	202.3	134.2	
Consumpt. M3	172.3	36.3	459.7	45.8	
TAX REVENUE	38.6	4.2	93.0	6.3	142.1
1995 ----					
Tax rate \$us/m3	224.2	115.2	202.3	134.2	
Consumpt. M3	173.5	36.3	468.8	44.9	
TAX REVENUE	38.9	4.2	94.8	6.2	144.1

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Table 7.5

TAX REVENUES - 1990-1995 PROJECTIONS  
(stocks included)

(1990 \$ US Million)

	TAX REVENUE	TREASOR PUBLIC	OFFICE S PUBLIC ROUTES	N	D	R	A	R	V	F	OTHERS
		44	43								3
1990	141.2	62.1	60.7	8.5	5.6	4.2					
1991	142.2	62.6	61.1	8.5	5.7	4.3					
1992	138.5	60.9	59.6	8.3	5.5	4.2					
1993	140.3	61.7	60.3	8.4	5.6	4.2					
1994	142.2	62.6	61.1	8.5	5.7	4.3					
1995	144.2	63.5	62.0	8.7	5.8	4.3					

Table 7.6

TAX REVENUES - 1990-1995 PROJECTIONS  
(Ducks not included)

(1990 \$ US Millions)

	TAX REVENUE	TRESOR PUBLIC	OFFICE S ROUTES	N D R A	R V F	OTHERS
		44	43	6	4	3
1990	135.6	59.7	58.3	8.1	5.4	4.1
1991	136.6	60.1	58.8	8.2	5.5	4.1
1992	138.1	60.8	59.4	8.3	5.5	4.1
1993	140.2	61.7	60.3	8.4	5.6	4.2
1994	142.1	62.5	61.1	8.5	5.7	4.3
1995	144.1	63.4	62.0	8.6	5.8	4.3

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## CHAPTER 8

### RECOMENDATIONS FOR THE IMPLEMENTATION OF PAADD

The Energy Sectorial Adjustment program, to be implemented by the government, has two main objectives:

- to supply the internal market at the lowest possible cost of the country as a whole.
- to effect the payment of the parafiscal petroleum taxes to the transportation agencies responsible for the management and maintenance of the transportation infrastructure.

In order to meet these objectives, several steps must be taken to eliminate the obstacles that remain throughout the distribution sector on the one hand and to ensure that the transportation agencies receive their tax revenues on the other.

Therefore, the disbursements from the CIP program (see annex 7) should be contingent upon the fulfillment of certain prerequisites in the fuel and particularly in the transportation sector.

These prerequisites can be divided into major and minor categories. The major conditions are essential if the objectives set out by USAID are to be met. The minor conditions, on the other hand, will not jeopardize the project if they remain unfilled. They would nevertheless contribute to the efficiency of the program.

#### 8.1. Prerequisites for the fuel sector

##### 8.1.1 Major conditions

###### A. Liberalization of oil prices.

The implementation of the price maxima system is essential to rebuilding the distribution sector and constitutes an intermediate step towards freeing product prices. Priorities include:

- the implementation of the price maxima system (which is not currently in place) to eliminate the practice of uniformly applying prices to petroleum products and to replace it with a retroactive control on the profit margins of the companies.

- the setting up of a timetable which fixes the dates for the liberalization of prices. The World Bank, which agrees to the implementation of the price maxima system recommends that the time frame for this phase not exceed 4 to 6 months.

It should be noted that the price maxima system can replace a completely liberalized system over the medium term insofar as it takes into account the actual costs of importation and distribution.

These distribution costs are adjusted annually based on \$/ton, according to the US consumer price index.

#### B. Lifting of import restrictions on petroleum products

At the present time, calls for tenders for the importation of petroleum products via the western route are limited to member countries of the Communauté Economique des Etats de l'Afrique Centrale (CEEAC).

This situation does not allow for optimum buying and financing conditions of import products (see chapter 4).

One of the prerequisites of USAID's import finance program should be that competitive bids be opened up to all supplier members of the World Bank and that the supplying of the market be carried out under the optimal conditions for cost and supply delays.

It should be noted, however, that current imports entering via the south and the east are carried out exclusively for the oil companies.

#### C. The Comité d'achat

The Comité d'achat, responsible for the coordination of imports and the managing of contracts, must modify its operating procedures.

The Comité d'achat must become completely independent of the state-owned PETROZAIRE. To this end:

- distribution companies must have a real say in the Comité d'achat. The dominant role of PETROZAIRE must be curtailed and the government-owned company placed on equal footing with the other participants.
- PETROZAIRE must not take over the Comité d'achat's role of sending out international calls for tender and of signing petroleum product contracts (as in the case of the Elf-Aquitaine contract).

### 3.1.2 Minor prerequisites

#### A) Liberalization of the internal market distribution.

Several steps should be taken by the authorities in order to ensure a better supply to the interior of the country, particularly to remote areas not covered by the distribution companies:

- legalizing the resale of products by small merchants, subject to certain regulations,
- reducing the required minimum purchase of 5 barrels to 1 barrel for small merchants

#### B) Operating procedures for Zaire-Oleoduc

Distribution companies must be allowed to participate in the proposed company Zaire-Oleoduc, whose role will be to manage the planned Muanda-Matadi pipeline.

A preliminary agreement between the Conseil Executif and the oil industry concerning this matter has already been signed.

#### C) Sectorial studies

Zaire's fuel sector is poorly understood due to the lack of studies or sectorial analyses. The following studies are recommended:

##### 1. A study of distribution and transportation costs

Distribution and transportation costs contained in the oil pricing structure are very high compared with other African countries and there is possibly a potential for an increase in productivity in this area. An indepth study of these costs in relation to the rehabilitation programs for the sector (currently being negotiated) would reveal the relevant factors.

##### 2. A study of fuel consumption

No reliable statistics are currently available on oil consumption based on the branch of industry and the region. Consequently, it is almost impossible to make accurate demand predictions or to calculate the demand potential according to the branch of industry in order to measure the effects of price fluctuations on regional and national consumption. This last point is especially important given the nominal change of prices in Zaire.

Furthermore, these studies would measure the effect of USAID's program for financing petroleum product imports on the different socio-professional levels of society, particularly on low and middle-income households.

Such a study should, therefore, gather statistics according to the demand in specific sectors (transportation, industry, mining, energy), as well as region and income level.

## 8.2 Prerequisites for the transportation sector

### 8.2.1 Major conditions

#### A) Honoring of the terms of payment for the parafiscal tax.

The strict honoring of the terms of payment for the petroleum tax by the distribution companies to OFIDA is imperative to the proper functioning of the transportation agencies.

- Government expenditures on fuel must be paid within 90 days of the delivery date, actually 120 days given the administrative channels to be followed for the clearing of bills (approximately 30 days). It should be noted that administrative delays could be eliminated completely if a monthly disbursement system were introduced.
- Consumption by parastatal companies must be paid within 90 days of the delivery date.
- Delays in the payment of taxes by the oil companies to OFIDA, the current situation being for the payment of taxes to be made from 90 days to 60 days from the date the product was received. The distribution companies have agreed to honor this delay if, in turn, the government honors its 90-day payment commitment.

#### B) Remittance of taxes by OFIDA to the transportation agencies

OFIDA must redistribute the oil taxes to the transportation agencies (Office des Routes, Regie des Voies Fluviales, and the Service National pour les Routes de Desserte Agricoles) within 15 days of receipt of payment from the distribution companies. In general, the OFIDA's current payment delay is approximately 15-30 days. Of course, these delays can only be respected if the terms of payment for government and parastatal consumption are respected as well.

### C) Payment procedures for government consumption

To avoid delays in payments for government consumption, the Budget Department must set up a special budget procedure:

- by making the consumption of fuel a priority expenditure, on the same level as the salaries of civil servants;
- by instituting a rapid payment disbursement system, on a monthly basis for example with a regulation of invoices every quarter.
- by giving priority to allocations of petroleum taxes collected by OFIDA to transportation agencies in case of default by the government on its payments for 30 consecutive days (see annex 8).

These procedures could easily be put into place without interrupting the management procedures of the country's Public Finance Department. This same system was instituted in the Ivory Coast for the government consumption of electricity, water, and for use of the telephone system.

### 8.2.2 Minor prerequisites

#### A) Public consumption

The government's consumption of all types of petroleum products accounts for a large part of the country's total consumption. Procedures for allowing competitive bids should be set up for petroleum supply contracts for the various ministries and public companies. The World Bank applies this principle for quantities greater than 100 m<sup>3</sup>/month. With a free market-style system for petroleum products, a procedure for competitive bids would allow the government to benefit from rebates on its supplies.

#### B) Paying of arrears

The current situation of arrears between the government, the parastatal companies, and the participants in the distribution system must be resolved and a timetable set up for the paying of arrears.

**Conclusion:** Given the current situation in Zaire's petroleum distribution sector and the objectives of PAAD, a set of major prerequisites must be met. If these conditions are not fulfilled, the objectives set up by PAAD will be severely compromised.

Annex 1

MAIN LEGAL TEXTS CONCERNING THE DISTRIBUTION SECTOR

1. Ordinance no. 81-004 dated February 14, 1981 concerns the regulations for importing and exporting hydrocarbons and their derivatives.
2. Ordinance no 81-021 dated February 14, 1981 complements the law no. 78-004 dated January 20, 1978 relating to the creation and the statutes of the public company named "Entreprise Petrolière du Zaïre" (PETROZAIRE) and provides means of implementing the ordinance law no. 81-004 dated February 14, 1981 relative to the regulations for importing and exporting hydrocarbons and their derivatives.
3. Ordinance no. 84-145 dated July 2, 1984 surrenders the government's participation in the fuel distribution companies to PETROZAIRE.
4. Letter from the Gouverneur of the Banque du Zaïre no. 6417 dated June 5, 1985 relates to the lifting of import restrictions on petroleum products.
5. Letter no.1304/CAB.MINER/85 dated August 10, 1985 relates to the liberalization of imports and of the petroleum product market.
6. Letter no. 1622/CAB.MINER/85 dated November 30, 1985 relates to the creation of a "supply" department at ZAIRE SEP.
7. Letter no. 82/Dép. Portefeuille/86 dated January 30, 1986 relates to the management of the government's portion in the petroleum distribution companies.
8. Circular no. 31/BCAB.MINER/86 relates to the organization of calls for tender and the management of petroleum product supply contracts under a liberalized system.
9. Circular no. 1029/CAB.MINER/87 dated August 21, 1987 relates to the organization of calls for tender and the management of petroleum product supply contracts under a liberalized system.
10. Circular no. 929/CAB.MINER/88 modifies and complements the circular no. 1029/CAB.MINER/87 dated August 21, 1987 relating to the organization of calls for tender and the management of petroleum product supply contracts under a liberalized system.
11. Departmental order no. 52/CAB.MINER/88 dated April 8, 1989 relates to the institution of the Commission de verification des prix à l'importation des produits pétroliers (Commission for the verification of the import price of petroleum products).

N°	Dépôts S.E.P.	Fevrier 1990
O	AKULA	20,3
O	ANGO-ANGO	-
O	BANDUNDU	14,0
O	BENA-DIBELE	29,7
O	BOLENCE	18,7
O	BOMA	-
E	BUKAVU	8,9
O	BUMBA	22,7
O	BUNIA	170,0
E	BUNIA	9,9
O	BUSINGA	51,4
E	BENI	1,3
E	GOMA	1,3
O	ILEBO	28,0
O	ISIRO	84,2
O	INONGO	28,0
O	KALENIE	119,9
E	KALUNDU	-
O	KALUNDU	135,0
O	KANANGA	59,8
O	KINSHASA	-
O	KIKWIT	30,3
O	KISANGANI	42,0
O	KOLWEZI	108,7
S	KOLWEZI	32,8
O	LIKASI	109,1
S	LIKASI	23,5
O	LUKALA	-
O	LUBUMBASHI	115,3
S	LUBUMBASHI	16,7
O	MOANDA	-
O	MUNGBERE	90,8
O	MWENE-DITU	72,3

(1) Vole d'importation : O= Ouest ; E= Est ; S= Sud

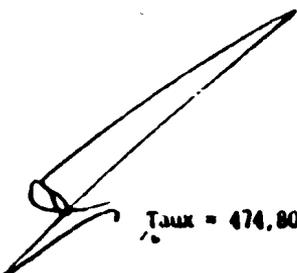
ANNEX 4

	COUT REEL SEP	COUT REEL PROFESSION	PROPOSITION MINER 1	PROPOSITION MINER 2	PROPOSITION ADOPTEE
01. AKULA	53		59	56	56
02. BANDOUNO	24		38	34	34
03. BENA OIBELE	68		75	85	85
04. BENI	-	245	238	245	245
05. BUKAVU	-	245	240	245	245
06. BUMBA	56		63	70	70
07. BUNIA	-	240	238	245	245
08. BUSINGA	89		148	135	135
09. GOMA	-	245	240	250	250
10. ILEBO	49		58	61	61
11. INONGO	49		58	61	61
12. ISIRO	137		128	172	172
13. KALEMIE	193		225	242	242
14. KALUNDO / UNIRA	230		245	265	265
15. KANANGA	98		117	122	122
16. KIKWIT	53		55	66	66
17. KINDU	205		230	250	250
18. KISANGANI	73		72	91	91
19. KOLWEZI	174	296	200	230	296
20. LIKASI	175	265	200	230	265
21. LULUMBASHI	183	242	215	250	242
22. MBANDAKA	33		45	44	44
23. MUENE OITU	118		137	150	150
24. MUNCHELE	147		138	184	184

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ANNEX : 3



STRUCTURE DE PRLC OUEST / EST / SUD au 05/02/1990.

	ESS ENCE		PET ROLE		CASOIL		PULI		TOTAL
	Ouest	Est	Ouest	Est	Ouest	Est	Sud	Ouest	
Taux = 474,80 Z pour 1 dollar									
VOLUME: Total=60.190 m3	10750 m3	800 m3	3000 m3	300 m3	32500m3	2200 m3	5000 m3	5000 m3	60190
1. P.M.F.	82732,62	200178,-2	98354,08	209864,69	89818,52	198994,77	201039,61	71719,91	215245,81
2. Frais allègement transport & stock SOZIR	4396,00	0,00	4396,00	0,00	4396,00	0,00	0,00	4396,00	4396,00
3. Frais bancaires (8,9% du PMF)	7363,20	17815,20	8753,51	18677,96	7993,85	17710,53	17892,53	6383,07	10156,87
4. Total P.M.G.D.	94491,82	217994,52	111503,59	228542,64	102208,37	216705,31	218932,13	82498,98	238798,71
5. Caisse de stabilisation	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
6. Perte MEP (1% PMGD pour essence et 0,5% pour autres produits)	944,92	2179,95	557,52	1142,71	511,04	1083,53	1094,66	412,49	1193,99
7. Charges d'exploitation S.E.P.	24977,53	6709,96	36787,71	14264,36	37636,48	28229,53	15987,92	23458,24	21459,89
8. Charges d'exploitation Societe Commerc.	42524,24	8742,46	17736,41	23313,59	18152,66	14529,94	14015,04	15762,44	103031,20
9. Charges d'exploitation SOZIR	4684,86	0,00	4684,86	0,00	4684,86	0,00	0,00	4684,86	4684,86
10. Marge Societes Commerciales (10% PMGD)	9445,18	21799,45	11150,36	22854,26	10220,84	21670,53	21893,21	8249,90	23879,87
11. Total frais de distribution	82580,72	39431,82	70916,35	61574,92	71205,88	65513,52	52990,81	52568,54	160922,11
12. PIF fiscal (en Z/m3)	92756,93	92756,93	99774,47	99774,47	96118,51	96118,51	96118,51	63746,65	215245,81
13. Taux de taxation (en %)	0,85	0,85	0,45	0,45	0,75	0,75	0,75	0,75	0,75
14. Total Parafiscalites	7843,57	78643,19	3393,51	44998,51	72088,88	72083,29	72083,88	47809,99	161111,37
15. Prix de reference reel	255915,93	336269,73	227318,55	335016,08	245503,13	354307,71	344011,84	192877,51	260147,00
16. Prix de reference applique	256000,00	336000,00	217000,00	335000,00	246000,00	354000,00	344000,00	183000,00	260000,00
17. Difference (24 - 23)	84,97	-269,73	-318,95	-16,08	496,87	-307,71	-11,24	122,49	147,00

ANNEX : 6

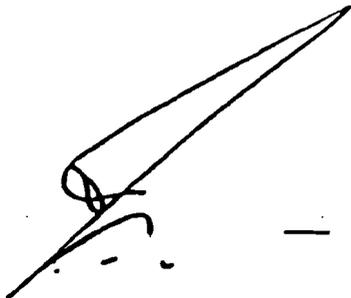
STRUCTURE DE PRIX OUEST / EST / SUD / MAHS 1990

Taux = 501.79 Z pour 1 dollar	ESS ENCE		PET ROLE		GASOIL			FUMI	GAZ
	Ouest	Est	Ouest	Est	Ouest	Est	Sud	Ouest	Est
VOLUME : Total=40.190 m3	:10750 m3	: 800 m3	: 3000 m3	: 300 m3	: 32500m3	: 2800 m3	: 5000 m3	: 5000 m3	: 40 T
1.P.M.F.	: 84507,85	: 205768,37	: 101118,71	: 214401,29	: 98303,77	: 208145,55	: 208429,90	: 13049,19	: 227181,18
2.Frais allègement transport & stock SOEIR	: 6247,29	: 0,00	: 6247,29	: 0,00	: 6247,29	: 0,00	: 0,00	: 6247,29	: 6247,29
3.Frais bancaires (0,9% du P.M.F.)	: 7521,20	: 18313,39	: 8999,57	: 19081,72	: 8749,04	: 18524,95	: 18550,26	: 6501,38	: 20245,85
4.Total P.M.G.D.	: 98276,34	: 224081,76	: 116365,57	: 233483,01	: 113300,10	: 226670,51	: 226980,17	: 85791,86	: 253974,62
5.Caisse de stabilisation	: 0,00	: 0,00	: 0,00	: 0,00	: 0,00	: 0,00	: 0,00	: 0,00	: 0,00
6.Perte MEP (1% FNEB pour essence et 0,5% pour autres produits)	: 982,76	: 2240,82	: 581,83	: 1167,42	: 566,50	: 1133,35	: 1134,90	: 428,99	: 1209,81
7.Charges d'exploitation S.E.P.	: 28881,75	: 6784,86	: 37198,35	: 14423,58	: 39560,47	: 5315,11	: 16166,38	: 25713,23	: 27766,41
8.Charges d'exploitation Societe Commerc.	: 41723,96	: 8577,93	: 17402,62	: 22874,85	: 17811,05	: 14256,49	: 13751,28	: 15465,81	: 101095,18
9.Charges d'exploitation SOEIR	: 4908,15	: 0,00	: 4908,15	: 0,00	: 4908,15	: 0,00	: 0,00	: 4908,15	: 4908,15
10.Marge Societes Commerciales (10% FNEB)	: 9827,63	: 22408,18	: 11636,56	: 23348,30	: 11330,01	: 22667,05	: 22698,02	: 8579,19	: 25397,46
11.Total frais de distribution	: 86324,26	: 40011,79	: 71727,50	: 61814,14	: 74176,17	: 43372,00	: 53750,58	: 55095,96	: 160417,07
12.P.M.F. fiscal (en Z/m3)	: 90029,69	: 90029,69	: 105446,15	: 105446,15	: 101582,37	: 101582,37	: 101582,37	: 67370,33	: 227481,48
13.Droit d'entree (15 % du P.M.F. fiscal)	: 14704,45	: 14704,45	: 15816,92	: 15816,92	: 15237,36	: 15237,36	: 15237,36	: 10105,55	: 34122,22
14.Droit d'accise (15 % de (12) + (13))	: 16910,12	: 16910,12	: 18189,46	: 18189,46	: 17522,96	: 17522,96	: 17522,96	: 11621,38	: 39240,56
15.Surtax de transport (55%-15%-45%-45%)+P:	: 81103,97	: 81103,97	: 23792,70	: 23792,70	: 68763,00	: 68763,00	: 68763,00	: 45604,01	: 151985,70
22.Total Parafiscalites!	: 112718,55	: 112718,55	: 57799,09	: 57799,09	: 101523,31	: 101523,31	: 101523,31	: 67330,94	: 227348,47
23.Prix de reference reel	: 297319,14	: 376812,09	: 245892,15	: 353096,24	: 289999,58	: 371565,82	: 382254,06	: 208224,76	: 641760,16
24.Prix de reference applique	: 297000,00	: 377000,00	: 246000,00	: 353000,00	: 289000,00	: 372000,00	: 382000,00	: 208000,00	: 642000,00
25.Difference (24 - 23)	: -319,14	: 187,91	: 107,85	: -96,24	: 0,42	: 434,18	: -254,06	: -224,76	: 239,84

BEST AVAILABLE DOCUMENT

1411

ANNEXE 5



CALCUL DU P.H.F. FISCAL

Date = 06/02/1990.  
Taux de change S/Z Z = 474,20

	ESS ENÇ		PET ROLE		GASOIL		FUMI	GAZ
	Ouest	Est	Ouest	Est	Ouest	Est	Sud	Ouest
Densite des produits	0,74	0,74	0,79	0,79	0,84	0,84	0,84	0,98 (en TSO)
Assiette fiscale (en S/Z)	264,00	264,00	265,00	266,00	261,00	261,00	261,00	137,00
Prix moyen (S/ml), excepte Gaz	195,36	195,36	210,14	210,14	202,44	202,44	202,44	134,25
P.H.F. (en Z/ml), excepte Gaz	92756,93	92756,93	99774,47	99774,47	96118,52	96118,51	96118,51	63766,65 (215243,8)

DEPARTMENT OF REVENUE

opens a line of credit at a first class bank (City Bank for example) for the equivalent amount in Zaires. The finance costs resulting from the granting of credit are covered in the price structure for petroleum products.

- The counterpart in Zairian currency is paid to the Office des Routes on the instruction of USAID.

BEST AVAILABLE DOCUMENT

## ANNEX 7: PRACTICAL PROCEDURES FOR IMPLEMENTING CIP

### 1) Calls for tender

Currently distribution companies which import via the southern and eastern routes of the country import for their own commercial activities. Under the CIP system, the companies would group together and put out calls for tender among the suppliers CALTEX, KOBIL, KENYA SHELL, and TOTAL for the eastern route; TRADIMEX, SUDEXCO and AFRI-ITALIA for the south. USAID could verify the bids and check the proposed prices as well as the origin of the products.

### 2) Eligibility Criteria

Financing of imports should only be considered for large distribution companies: MOBIL, FINA, SHELL, and PETROZAIRE in association with ELF-AQUITAINE and AGIP.

The recently formed, small, private companies in the southern part of the country will not be eligible for USAID's financing program:

- only companies having a bulk distribution network are to benefit from the program. This condition is justified insofar as the goal of the program is to solve the problems of supplying the retail market.
- only those client companies whose commercial activities do not bring in foreign exchanges are eligible under CIP.

These two conditions effectively eliminate all the small companies serving the captive market GECAMINES.

### 3) Dispersement of hard currency

The distribution company sends a purchase order to the supplier retained through the competitive bid process. USAID issues a letter of credit payable in 30 or 60 days depending on the conditions demanded by the supplier. The transfer in foreign currency to the supplier would be carried out directly by USAID upon reception of the products by the distribution companies.

### 4) Counterpart in Zairian currency

To ensure that the counterpart in local currency is recovered and remitted to the Office des Routes, the following procedure must be set up:

- when USAID grants a letter of credit, the distribution company

## ANNEX 8: PROCEDURE FOR THE PAYMENT OF GOVERNMENT CONSUMPTION

The Budget Department in conjunction with the Finance Department could set up a special budget procedure for payment of the government's consumption of petroleum products.

### 1) Hierarchy of expenditures

Fuel expenditures are considered as priority expenditures, on the same level as the salaries of civil servants, in other words, the fuel expenditures would be paid after salaries but before all other operating expenditures of the government.

### 2) Monthly dispersements

Payments to the oil companies for consumption are made monthly in the form of an advance, equivalent to 1/12 of the annual budget. Adjustment of actual expenditures based on invoices can be carried out on a quarterly basis. This step is necessary for the liquidation of public expenditures.

### 3) Priority allocation of tax revenues

If the government has defaulted on its payments for a period of 30 consecutive days, the Conseil Ececutif agrees to remit the net tax receipts from the distribution companies to the Office des Routes as a priority, based on the allocation rate in force, i.e. 43% of the monthly total of tax revenues contained in the price structure for petroleum products.

Example:	(\$US in millions)
Total monthly taxes (1):	11.7
Monthly public consumption outstanding:	3.5
Taxes paid to OFIDA:	8.2
Taxes remitted to Office des Routes (43% of 1)	5.0
Balance of tax revenue available	3.2

**ANNEX 3**

**ROAD INFRASTRUCTURE AND INSTITUTIONAL ANALYSIS**

USAID/Zaire  
May 1990

# ROAD INFRASTRUCTURE AND INSTITUTIONAL ANALYSIS

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APPENDIX A: Detailed Scenarios

## ROAD INFRASTRUCTURE AND INSTITUTIONAL ANALYSIS

### I. PREFACE

This annex evaluates the record of the highway subsector's past performance while focusing primarily on performance since 1985. Section II briefly surveys the history of the subsector since independence and the record of donor assistance. Sections III and IV describe the Office des Routes (ODR) and the Service Nationale des Routes Desserts Agricoles (SNRDA), the two organizations responsible for road management.

Sections V and VI are devoted to a discussion of the main issues and challenges the subsector faces in the immediate future and over the long term. The sections include recommendations on how to respond to these issues. Related needs in policy reforms, institutional strengthening, and technical assistance are spelled out as appropriate.

Sections VII describes the strategies adopted by ODR over the 1990-1992 period. Section VIII evaluates ODR's proposed transition program for the same time span, and Section IX looks briefly at prospects for 1992-1994.

### II. SUBSECTOR HISTORY AND THE RECORD OF DONOR ASSISTANCE

#### A. Historical Context

Under Belgian colonial administration, Zaire had a modestly-dimensioned but satisfactory highway network. Most main roads -- though of gravel standards -- had all-weather characteristics. It was possible to drive from one end of the country to the other in four days (i.e., from Kinshasa to Lubumbashi). Road conditions and weather permitting, this trip now would take about ten days. The colonial administration developed and strictly enforced highway policies compatible with the system's engineering characteristics. For example, because of relatively modest geometric and pavement characteristics, the importation of vehicles with a carrying capacity in excess of 2.5 tons was banned.

Road administration was highly decentralized. The governor of each region retained ultimate authority for most decisions, but delegated certain responsibilities.

The lowest territorial administrative unit, the collectivity, was responsible for maintaining the road system. Collectivities were expected to finance maintenance works either through cash levies or contributions of labor. The chiefs of these collectivities were adequately supervised by zonal and subregional administrators, and financial incentives were offered for work well done. An interesting feature of the period was the establishment of special villages in remote areas with a work force mainly engaged in road maintenance. The workers, known as cantonniers, whether living in these villages or in other locations, were reasonably well paid -- above today's levels in real terms. Under this system, the road network was well maintained using mostly manual methods.

After independence in 1960, no formal institution responsible for road management existed, and the roads began to deteriorate rapidly. Office des Routes (ODR) was initially established with active World Bank support in 1972 as a department within the Ministry of Public Works, and was charged with managing the country's road network, including feeder roads. ODR set up a system using Bases Operationelles (now called Unites de Production or Production Units) to implement both mechanized and manual maintenance. The bases were responsible for selecting, controlling, and paying cantonniers who remained Public Works employees.

ODR opted for mechanical maintenance, and only fractionally employed labor-intensive methods. Due to both its limited financial resources and limited management capacity, ODR was able to give attention to just the national and, to a lesser extent, the regional road networks. By default, responsibility for the feeder road network fell to the regional administrations, which were even less equipped to handle the task. The few entities available to carry out feeder road maintenance were private sector organizations, such as commercial plantations which maintained their own limited networks, and religious missions, which took charge of additional limited road lengths.

Zairianization measures were implemented at a forced pace in 1972/1973. Expatriate-owned plantations and commercial enterprises were handed over to inexperienced nationals; thus, the maintenance of even these limited road section was also abandoned.

## **B. The Donor Experience**

Post-independence donor assistance to Zaire's highway sector began in the early 1970s; over the past twenty years, the World Bank, nine bilateral donors, and a regional donor, the African

Development Bank (AFDB), have made available about \$600 million in grants and various soft-term credits. Since its establishment, ODR has been the recipient of a large part of this assistance. Donor-financed projects have included considerable technical assistance for institution-building and training. Donors and the GOZ have chosen for the most part to pursue limited objectives, which can be best described as holding actions intended to:

1) keep the basic main road network of about 50,000 km open through a mix of routine maintenance and periodic rehabilitation.

2) construct a limited number of new roads designed to modern standards (i.e., Kisangani-Bukavu and Kinshasa-Kikwit-River Loange).

3) provide training and technical assistance to strengthen the ability of sectoral institutions to plan, manage, and execute road construction and maintenance, and establish appropriate financing mechanisms.

ODR performance in achieving these objectives and the effectiveness of donor assistance have produced mixed results. Despite large infusions of donor assistance, the road system's institutional strength and the level of service it provides users are lower today than during the colonial period.

The overall impact of donor assistance on the highway sector can be evaluated on two levels: the first compares the present condition of the sector to a hypothetical case in which no assistance was forthcoming, and the second makes the more difficult comparison of how well donor assistance has served the sector in relation to the amount of money that has been spent.

On the first level, there is no doubt that donor assistance has been very effective. Without it, the economy of the country would have come to a complete stop. On the second level, however, results are less favorable. A dispiriting pattern has emerged: after each encouraging start at improvement, the overall condition of the sector seems always to slip back to its post-independence state of deterioration because of a lack of maintenance.

The results of what appeared to have been the most significant breakthrough at sector improvement under the World Bank's Fifth and Sixth Highway Projects have been largely lost. The financial crisis of 1987-1989 brought ODR activity to a standstill, much to the detriment of the institutions painstakingly built over several project cycles.

## 1. The World Bank

The First World Bank Credit to the highway sector dates from 1969, followed by the Second Credit in 1972, when the process of extensive Zairianization had begun. The World Bank has extended six credits to the highway sector totalling \$176 million in pursuit of the objectives described above. The paragraphs below describe the extent to which these specific objectives have been achieved:

Objective 1 could only be partially achieved due to irregular and insufficient GOZ funding. From 1987 to 1989 especially, ODR was unable to provide even minimum maintenance for the basic road network. The remainder of the network was left to the episodic care of agro-industries, religious groups, and/or specific rural development projects. Rural feeder roads have not been systematically maintained due to lack of funds and appropriate institutions.

Objective 2 has generated very modest, high-cost results. The present paved network is barely 2,800 km long, compared to about 1,500 km at independence. The pace of new road completion has hardly exceeded that of the destruction of existing roads caused by inadequate maintenance.

The pursuit of Objective 3 has produced the most successful results in the development of public institutions for the management of the main road network. However, there now exists a widespread consensus that the private sector should become increasingly involved in the execution of future road maintenance activities.

The greatest failure has been the inability to set up an appropriate local currency funding mechanism for road maintenance. Efforts to earmark revenues from fuel taxation for road maintenance activities were periodically disrupted by fiscal pressures at the macro level, particularly between 1987 and 1989. A revised funding mechanism established early in 1989, based on an ad valorem tax, is expected to produce significant improvement.

## 2. USAID

USAID has been active in the highway subsector for two decades, and was influential in establishing the original post-independence roads bureau. USAID has continued to be influential in the development of ODR and the directions it has taken. In more recent times, USAID road projects have been closely linked to USAID agricultural and development projects in Bandundu and

Shaba. These projects have resulted in the rehabilitation of about 5,500 km of roads between 1980 and 1984.

In addition, USAID has contributed highway maintenance equipment, vehicles, base camps, supply centers, training facilities in-country, offshore training, technical assistance, and counterpart-funded budgetary support. USAID projects have experienced both difficulties and successes during the past decade. The former North Shaba project resulted in the rehabilitation of more than 800 km of local interest roads, contributing to a sharp rise in the area's productivity. The Bandundu project (660-0126) completed an additional 400 km in 1987.

### III. OFFICE DES ROUTES

#### A. Organizational Structure

Office des Routes (ODR) is an operationally and financially autonomous agency established in 1972, and is responsible for the administration, planning, construction, and maintenance of the primary and secondary road networks. It is headed by a General Manager (PDG) who reports to the ODR board, which consists of seven members: the PDG, the Administrative and Technical Directors of ODR, and delegates from the Departments of Finance, Public Works, Agriculture, and the Directorate of Urban Roads. ODR is responsible for the following:

- . administrative duties, performed by its Kinshasa departments and eleven regional offices.
- . operational functions, performed by production units (UPs).
- . equipment management (SGMTP).
- . national public works laboratory (LNTP).
- . training centers (CF).

ODR is a highly centralized agency operating in an equally centralized environment. Within ODR itself, regional offices have little authority in planning, budgeting, and contract award. Annual work programs are approved at Kinshasa headquarters. There is considerable dependence on Kinshasa for fuel, spare parts, and the deployment of production units, which inevitably produces delays and bottlenecks that impede implementation and efficiency. Although regional administrators do exert some influence through informal personal communication channels, the strength and extent of this influence falls considerably short of decentralization.

## **B. Staffing**

As of March 1990, ODR had a staff of about 5,800 employees, including 300 engineers and 50 high-level technicians and managers; personnel will be reduced by 1,200 during 1990-1991. The quality of staff is satisfactory to good, and until about 1987, it had improved considerably. Donors have provided ODR with considerable resources for training to improve staff skills; an average 1,200 employees were trained each year from 1983 to 1987 in six regional centers. ODR faces severe problems in attracting and retaining staff because of low salaries.

## **C. Equipment**

Equipment management is the responsibility of the Service de Gestion du Materiel des Travaux Publics (SGMTP), a functionally independent department within ODR. SGMTP operates ten road maintenance equipment workshops and three shipyards for ferries. SGMTP also buys, maintains, and replaces equipment, and keeps records and accounts.

In December 1989, ODR had 3,380 pieces of equipment with a replacement value of \$107 million, net of depreciation. A fleet this size should be able to meet the road network's maintenance needs without difficulty; however, 54 percent of the equipment is in varying states of disrepair, including six percent having value only as scrap metal. The major reason for low equipment availability is slow spare parts procurement, compounded by complicated customs procedures. According to ODR statistics, equipment productivity for bulldozers and graders peaked in 1987 at between 800 to 1,000 hours.

## **D. Mode of Operation**

ODR carries fulfills its responsibilities as follows:

- . periodic maintenance of asphalt roads, rehabilitation, and new construction works: contract.
- . design and supervision: consultants.
- . routine maintenance for all road types and periodic maintenance for gravel roads: force account.
- . manual routine road maintenance: contract.
- . bridge and ferry construction and maintenance: force account.

As a result of the financial crisis of 1987-1989, ODR is planning to implement a major organizational restructuring which will entail a shift from maintenance by force account to maintenance by contract. ODR also plans to privatize the management of its equipment.

#### **E. Accounting**

The usefulness of ODR's accounting system is strictly limited. All matters related to budget implementation are reported in a form extraneous to the accounting system and therefore unverifiable. Because no costing system is in place, reliable information on unit costs is unavailable.

On a formal level, ODR has had a satisfactory accounting system in place for several years. Accounts are examined annually by independent outside auditors. Reconciliation could be attempted, but under Zairian law, the audit must conform to the format used by business enterprises, a format which unfortunately is incompatible with ODR's budget. The auditors can only scrutinize accounting results, not budget implementation. Under these conditions the accounting system is of limited use for budget control, and fails to supply verifiable management information on financial matters.

Within the last year, technical assistance has been provided in an effort to improve budgetary control over operations, make the accounting system more management-oriented, and install a costing system.

#### **F. Financing**

ODR receives money from three main sources: proceeds from a tax on fuel, local currency from the GOZ investment budget, and donor assistance. Donor assistance is by far the largest source, totalling \$450 million between 1989-1992. Most donors demand that the GOZ fund some or all local currency expenditures for donor-financed projects. Hence, every currency unit added to ODR's budget by the GOZ triggers a three-to four-fold multiplier effect on ODR's total resource availability. A reduction produces the opposite multiplier effect.

Fuel prices and road user taxes are high in Zaire. Because of low traffic levels, revenues from road users cannot meet the cost of maintaining the existing road network at a level which can prevent its deterioration.

ODR has failed to receive from the government even the modest amounts it was promised, and these payments have been erratic. ODR has found itself caught in difficulties totally outside its control: inflation rates nearing 100 percent per annum, matching currency devaluations, the government's ill-founded determination to control fuel prices at artificially low levels, and the unwillingness of fuel companies to transfer tax revenues to ODR when they are unable to recover their fuel costs from the government-controlled pump price.

Following a steep decline in revenues in 1987, ODR was compelled to drastically curtail its operations. A multiplier effect compounded ODR's financial problems when the World Bank decided in 1988 to suspend disbursements under the Sixth Highway Credit. Since the end of 1989, the situation has improved somewhat. The government's decree of January 31, 1989 established an ad valorem transportation surtax rate of 55 percent on gasoline, 45 percent on diesel and fuel oil, and 15 percent on kerosene. Forty-three percent of the revenues generated by this tax were earmarked for ODR, an additional five to six percent for SNDRA (the agency responsible for feeder road development), and the balance was to go to the general revenue account of the GOZ budget. OFIDA, the central customs authority, was charged with collecting the tax when imported fuel entered Zaire, and instructed to send the appropriate percentages directly to ODR and SNDRA.

With the resulting regular and stable influx of funds to ODR, the World Bank resumed disbursements under the Sixth Highway Credit in January 1990 after obtaining GOZ assurances that local currency payments would continue regularly.

The new setup is a vast improvement. The tax is easier to administer, and it could preserve the real value of revenues against inflation to provide a stable basis for road maintenance funding, if the GOZ does not revise the tax frequently and drastically. Unfortunately, the GOZ has already done so, first in February 1990 and then in March 1990. In February, ODR's share of tax revenues was reduced to 40 percent from 43 percent and in March decreased again to 38 percent in order to create a fund of Z 6.7 billion for the newly-established Office of Urban Streets and Sewers, or Office de Voire et Drainage (OVD).

#### **G. Planning and Research**

Planning in ODR is supported by an Information Office, or Cellule d'Information (CI), consisting of two economists who report directly to the PDG. The CI prepares three and five year plans and conducts special studies, but severe resource and data

constraints limit CI's output. The most recent countrywide traffic count dates from 1986, economic data on transport demand generators is limited, and there are no known origin and destination studies.

Given this less than adequate data base and the limited staff work that goes into planning, ODR makes ad hoc decisions on practically all subjects. Coordination problems are frequent. The Directorate of New Works in Kinshasa plans and executes nearly all major capital works, but frequently acts without consulting or informing ODR's regional administrations.

## H. Restructuring ODR

The main cause of ODR's difficulties in recent years has been financial irregularity. However, even if the financial situation returns to normal, resource scarcity will remain acute. It is important that the available scarce GOZ and donor resources be optimally utilized. This has not been done in the past; costly projects with design standards far too high have been, and continue to be, implemented.

### 1. Past Performance

The Technical Audit Mission jointly funded by USAID and the World Bank in March 1989 evaluated ODR's performance in recent years and noted the following.

#### a. ODR's Strong Suits

- . staff of adequate quality.
- . a number of effective training centers.
- . ODR's status as a public enterprise which allows flexibility in day-to-day management.
- . an organization that is well-rooted in the country and well-adapted to the country's human environment.
- . a long tradition of meticulous work in the context of the country's regions and adequate operational practices, although there remains room for improvement.

b. ODR's Weak Points

- . cumbersome procedures for contract awards and procurement, delays in the supply of equipment and construction materials, and subsequent damaging effects to ODR's reputation both within Zaire and abroad.
- . a less than effective management process which diminishes the efficiency of works implementation.
- . insufficient knowledge of costing and unit costs.
- . administrative heavy-handedness and excessive centralization in dealing with geographically-dispersed production units which slows down the productive process.
- . SGMP's inadequate management, which contributes to the negative perception of ODR held by production units in the field -- SGMP's main limitation is its inability to supply spare parts for field equipment within a reasonable period.
- . a weak planning process.
- . Insufficient communication between different units, and within each unit.

The team concluded that ODR's main problems have been the paucity and irregularity of financial resources, especially since 1987.

2. ODR's Future

The budget crisis emphasized ODR's actual and latent problems. A solution must be found if ODR is to play its assigned role in the country's development. The need for cost effectiveness under strict budgetary constraints is certain to prevail over the next decade. The central issues have thus become the establishment of realistic ODR objectives, setting priorities within the limits of these objectives, and most important, defining how best ODR can meet these objectives.

To address these issues, the Technical Audit Mission was asked whether ODR should undergo a major restructuring by altering its legal status to better serve its objectives. The team considered two principal alternatives: 1) reversion of ODR to its previous status as a department within the Ministry of Public Works to which all civil service regulations would apply,

or 2) breaking up ODR into three entities, each of which would be separately managed, and each of which would represent a specific and distinct ODR function. The three organizations would assume responsibility for:

- . comprehensive corporate level management of the road network.
- . the provision of technical and planning services to other government road agencies.
- . direct execution of maintenance works using ODR's own force account brigades.

The Technical Audit Mission identified three major considerations which determined its recommendations.

- . the maintenance and construction of roads is strategically too important for the country's development to transfer network management to the private sector in its entirety.
- . the full or partial reincorporation of ODR into a government department would be an impediment to improved road network management.
- . ODR staff are often good professionals and managers of public enterprises, but lack the attributes and financial means to manage privately-owned enterprises.

Based on the above, the team concluded that the present legal identity of ODR should be retained, subject to two substantive changes in highway sector management:

- . maintenance should be executed by private contractors to a greater extent, and
- . ODR should decentralize its operations to a much greater degree.

#### **IV. FEEDER ROAD MANAGEMENT**

##### **A. SNRDA**

The Service National des Routes de Dessert Agricole (SNRDA), was established in 1987 as a department of the Ministry of Rural Development to plan, administer, and manage Zaire's feeder road

network. SNRDA provides a focal point for regional and local organizations and populations having a direct interest in the serviceability of the feeder road network and in the establishment of priorities for its development. (This focus cannot be provided by ODR, which has the national road network as its top priority, requiring more centralized management.)

SNRDA maintains and develops the feeder road network through contractors.

The decree establishing SNRDA did not provide it with technical offices. A small staff of 70 includes just 29 engineers. For technical services, SNRDA relies on ODR, which is critical its success. ODR's 70 zone engineers play an important role, as do the ODR regional coordinators in charge of manual maintenance operations who issue instructions to zonal engineers. ODR engineers interface with SNRDA coordinators.

During the last year, several steps have been taken improve SNRDA's less than adequate performance. In June 1989, the government announced a major policy change that accorded greater autonomy and responsibility to regional, subregional, and zonal authorities in the award and management of maintenance contracts. As part of this new policy, payments to contractors will be made under the joint signatures of SNRDA and regional governors, and a revised cooperation agreement between SNRDA and ODR is being formulated. ODR has already seconded 70 zone engineers to SNRDA.

#### **B. Pilot Feeder Road Project**

These policies and agreements will be incorporated as credit conditions of the World Bank's Pilot Feeder Road Project. This project will make a systematic attempt to decentralize SNRDA operations and more clearly define ODR's role as technical advisor. Regional SNRDA offices will:

- . participate in determining priorities for feeder roads at micro level.
- . verify and confirm technical and operational aspects of tender documents.
- . secure adequate supervision of works and approve contractors' invoices for payment.
- . implement specific pilot activities.
- . prepare implementation reports and socio-economic evaluation of projects.

The principal objective of the planned project is to try out alternative methods of managing the feeder road system. These alternatives include trial maintenance and rehabilitation works

carried out by agro-industrial companies and by small and medium enterprises. A second objective is the creation of rural employment opportunities. In the process of fulfilling these twin objectives, SNRDA's management capacity will be enhanced.

The project's works component includes 7,400 km of routine maintenance, 2,060 km of rehabilitation works, and 570 meters of bridge rehabilitation. Total works cost is \$1.9 million for road maintenance, \$6.9 million for road rehabilitation, and \$2.0 million for bridge rehabilitation.

The technical assistance package includes a technical advisor, a training specialist, an accountant/computer specialist, civil engineers, and other short-term specialists.

Total project cost will be \$20.8 million. The World Bank will finance \$14.7 million, UNDP \$3.2 million, and the GOZ \$2.9 million. A detailed technical assistance and training program for the feeder road subsector will be financed by UNDP.

### **C. SNRDA Funding**

Six percent of fuel tax revenues is paid to the SNRDA account. Payments to SNRDA (in real terms, considerably above the inflation rate) have increased since 1987, and have been more regular than payments to ODR. Revenues rose from Z 117 million to Z 538 million. However, these sums are still modest in relation to the minimum needs of an 87,000 km feeder road network. Funds from the GOZ investment budget increased over tenfold from Z 79 million in 1987 to Z 1075 million in 1989. SNRDA was able to spend about 90 percent of its budget during these three years.

seventy-three percent was paid to contractors executing maintenance works, including small and medium enterprises, non-governmental organizations, and plantation-type companies. An additional 15 percent was paid to ODR for its services.

### **V. PRIVATIZING ROAD MAINTENANCE**

The Executive Committee approved a broad plan to privatize most of ODR's maintenance operations in 1989. As an indicator of the size of this readjustment, the 1988 ODR 7,500 personnel roster fell to 5,800 in March 1990, and will be further reduced to about 4,000 when the privatization process is completed.

The new ODR will be an entirely changed organization, operating under a different system with new staffing patterns. During the past several months, ODR has focused its energy and resources on the detailed design of a new management system. The main objective is increased involvement of the private sector in executing maintenance. This activity is expected to continue throughout 1990.

#### **A. Contract Maintenance**

Experience with road maintenance executed under contract has been limited, and the quality of work performed under contract has been low. Payments to contractors for work not performed were common and major setbacks were sustained, particularly on feeder roads in remote areas. The causes can be grouped into two categories. The first is SNRDA's inability to adequately plan, schedule, and contract works, especially its inadequate supervision of implementation. The second is the lack of reliable contractors. In the existing climate of irregular demand for maintenance by contract, a credible contracting capability has failed to develop.

ODR's deficiencies have prevented the effective utilization of contractors in road maintenance. A more severe constraint has been the absence of adequate operating budgets for works supervision. This has prevented district engineers from going to the field to supervise works. When a district engineer does not have a vehicle and is not paid for his living expenses while away from home, he cannot be expected to effectively inspect and supervise work performance.

Besides volatile and erratic demand for contract maintenance, individual contractors have no assurance of when they will be paid. Some contractors have not received payment for works executed up to a year ago. Given past rates of inflation nearing 100 percent per annum, such delays represent a forced discount of 50 percent or more.

The standard contract in use is a one-sided document which clearly spells out the contractor's obligations, but offers practically no protection against late payment or default by ODR. Contractor confidence in ODR is very low because ODR has defaulted on a massive scale. Its outstanding debt to contractors and suppliers now totals the equivalent of \$15 million.

This has resulted in the bankruptcy of some firms, particularly companies in outlying provinces and medium to small contractors. Significant contracting capability presently exists

only in Bas Zaire, Kinshasa, and Shaba. Contractors are cautious when presenting bids for tenders issued by ODR. They try to include large security margins in the prices they offer as a hedge against inflation, work order cancellation, and payment default. If this fails, they ask for unduly large advance payments before agreeing to start work. Under these circumstances, the potential advantages of contract maintenance are lost.

#### **B. Force Account Works**

Significant progress was made over the past ten years in institution and skill building. However, this progress was almost wiped out by the budget irregularity of the last three years which brought ODR activities to a standstill.

#### **C. BCEOM Study**

The Technical Audit of ODR financed by the World Bank and USAID in March 1989 laid much of the groundwork for the institutional reforms presently under discussion. A recently completed three month study (BCEOM, February 1990) has resulted in a "Transition Program" for the period 1990 to 1992. This program focuses on the reorganization of ODR and the rehabilitation and maintenance of major sections of the national priority road network.

There is insufficient Zairian experience to establish the dividing line between road maintenance works suitable for contractors and those suitable for ODR force account. No matter where this line is drawn, the proportion of maintenance performed by contractors is presently so low that there is no way it can decrease further, but in all probability can be increased. However, if this increase is desirable, contracting capacity must be developed before work done by private contractors can be expanded on a large scale.

Figuring prominently in the consultants' recommendations is a proposal for the establishment of a corporate entity to take over from SGMTP the management of ODR's highway maintenance equipment. Various alternatives were mentioned for ownership ranging from purely private to purely state, or a mixture of the two. The new entity will lease equipment to firms executing contract work. In a more recent version, the company will be purely state-owned and will lease equipment to one or more private entities, which in turn will rent it to an undefined number of entities, which again in turn will lease the equipment

to contractors. The consultants' final report is still to be received.

In their presentation, the consultants did not make an attempt to justify the establishment of a company in business or economic terms. Rather, they axiomatically assumed that a company would improve maintenance operations and their cost effectiveness while still showing a profit for the equity capital invested. No corporate plan was offered in the draft final report.

The proposal appears to lack obvious advantages. Its impact on better and more cost effective highway maintenance is at best neutral. At worst, by creating an additional link in the operational chain for maintenance and construction, a link with monopolistic status and under less public control, it can only produce less than positive effects. A corporation newly established for the purpose of managing (if not outright owning) assets exceeding \$100 million and employing a workforce of almost a thousand requires a corporate plan to win approval in principle from the deciding authorities and as a basis for negotiations between the GOZ and the company's potential private sector partners.

An excessive preoccupation with planning detailed reforms on an entirely new track detracts attention and resources from the urgent needs of the road network, which continues to deteriorate. The restoration of a modicum of normalcy under existing operational structures is urgently needed before major structural changes are attempted. At the moment, the only sound policy which is likely to result in expanded privatization is the establishment of a regular demand for contract maintenance services in the hope that this demand will trigger the development of private contractor capacity.

Such a policy could be adopted country-wide, but also in a more active way in pilot areas, such as Kinshasa, Bas-Zaïre and Shaba, where it is most likely to succeed. To be avoided at all costs is the immediate introduction of contract maintenance on a massive scale without adequate preparation or trial, and without making sure that conditions for maximum success are in place.

#### Recommendations:

1) ODR should provide a satisfactory contract format as a basis for tendering maintenance works to private contractors which spells out in a balanced way the rights and obligations of both parties.

2) In the interim period, ODR will provide evidence that highway maintenance operations have been resumed under existing arrangements.

3) ODR should not shut down force account production units in the field before making certain that private contractor capacity is in place to take over the work.

## **VI. INSTITUTIONAL AND PLANNING IMPROVEMENTS**

### **A. ODR Record Keeping and Reporting**

This subject is described as a major issue in reports of the Technical Audit Mission, in a consultant's report financed by USAID, and in a World Bank project completion report. As previously noted, problems stem from accounts being maintained in isolation from financial reporting on the budget, and the absence of a costing system.

The key reporting tool on ODR activities is the "Rapport Annuel d'Activites." This annual report, which normally exceeds 100 pages, contains information covering all aspects of ODR operations. However, a close look at the published annual reports reveals major deficiencies at the conceptual level. Individual subjects are not examined as part of an integrated whole.

To give a few examples, funds received from individual donors are not identified in the accounts. Comparisons between budgets and actual expenditures by individual line items are not made. Budgeted and actual unit costs are not compared. The execution of claimed physical work quantities cannot be traced to reported expenditures. An examination of detailed figures reveals several major inconsistencies and implausible outcomes. Despite the wealth of detailed "data," these annual reports suffer from a substantial credibility problem. A reporting format which adequately integrates all aspects of ODR activity and translates them into a credible whole is needed.

**Recommendation:** ODR should present a scope of work and schedule for reforming the accounting system.

### **B. Financing**

Whether the road funding problem in the short run will become clear in the context of the 1990 approved budget. The

recent World Bank pre-appraisal mission obtained assurances from all authorities contacted that under the 1990 budget, ODR will receive Z 18.9 billion in end 1989 values, and Z 7.8 billion from the development budget. These amounts are a compromise reached in September 1989 between the World Bank and the GOZ; they reflect the funding required in local currency for a strict minimum of road maintenance and the government's share (also in local currency) of ongoing rehabilitation works.

These sums fall short of meeting minimum network requirements, although they represent a workable compromise. Failing to provide ODR with these amounts would result in a highway network in poor condition that is unable to meet the minimum needs of the economy and faces further deterioration. Funding from donors sources would also fall.

The government's record over the past three months in funding ODR on a regular basis, though much improved, is still short of allowing the funding mechanism to operate without a monthly review of its outcome and without giving up the privilege of controlling fuel prices.

In countries like Zaire where budgetary pressures are enormous and economic crunches frequently occur, it is only through an agreed earmarking procedure that minimum service can be guaranteed. Transportation is vital to the economy; no better case can be made in favor of earmarking than for the country's roads. In a country with the highway infrastructure and traffic characteristics of Zaire, the bulk of resources to finance highway expenditures can come only from fuel tax revenues.

The roads of Zaire have suffered from a draconic reduction at short notice in their life support systems. To avoid the recurrence of such developments, it is necessary to establish an earmarking procedure for funds collected through road user taxation to finance highway expenditures.

A World Bank study is now in progress to establish a road fund and a suitable mechanism to feed it with a predetermined revenue stream on a regular and stable basis. The government is expected to implement the study's recommendations.

### **C. Highway Masterplanning**

ODR needs to develop planning tools for three areas of sector management.

- . A long term highway rehabilitation and construction strategy .

- . A highway masterplan with a ten to fifteen year horizon.
- . A highway maintenance strategy and the development of associated maintenance standards.

A highway masterplan will lead to the formulation of design standards reflecting topographical differences, traffic volumes, and other elements of regional diversity. It would establish guidelines on thresholds for rehabilitation, upgrading, new construction, and policies for one-shot and phased construction. Once an adequate data base and a masterplan is available, procedures for the preparation of annual budgets can be improved.

Three substantive obstacles must be overcome.

First, an implementor, a scope of work, and the highway masterplan's place in the context of a national transport masterplan must be identified. The two contending candidates managing the preparation of the transport master plan are the Group d'Etudes des Transports (GET) of the Ministry of Transport and the Ministry of Plan, Department of Infrastructure.

ODR is pushing for a highway masterplan without waiting for the start of a transport master plan. This in the second issue, whether such a procedure makes sense from a planning view point.

The third issue is scope and hence financial outlay. The recent World Bank project preparation mission believes the master planning process can begin with the preparation of a brief transport masterplan over a three to four month period under GET. The transport masterplan will establish the broad contours of subsectoral shares.

However, the transport masterplan should be a modest effort costing about \$.3 million, and not the \$7.0 million GET would like. A brief exercise of this type would most likely confirm the widely-held perception that the highway subsector should receive the lion's share of transport development over the next two decades. Highway masterplanning could then proceed within the broad contours established by the transport masterplan.

#### **D. Technical Assistance Needs**

The suggestions for technical assistance proposed below are likely to be confirmed by the ongoing organizational studies discussed in Section VIII-E.

Recommendation:

A transport economist/planner will be assigned to the ODR Cellule d'Information to assist in planning and revising national highway and road data base and to advise the PDG on works proposals.

A national technical coordinator will report to the PDG on all matters concerning the ODR transition period and coordinate the organization of new departments within ODR.

**VII. ODR'S 1990-1994 STRATEGY**

ODR has developed a recovery, maintenance, and development strategy for the 1990-1994 period. The strategy ODR plans to pursue during the first two years can best be described as short term recovery, the key word for which is "austerity." It was designed to pursue the strictly limited objective of resuming orderly maintenance and rehabilitation through the following:

- . Reopening to traffic and minimal maintenance of a restricted number of highway links vital to the economy of the country and its regions.
- . Preventing further deterioration of the asphalt paved network and of bridges presently threatened as total losses.

The program, if successfully implemented, would have the following consequences:

- . Regional economies would be stimulated through increased agricultural production, reduction in transportation costs, and employment opportunities for manual maintenance workers.
- . Zaire's balance of payments would improve through a reduction of food imports and an increase in agricultural exports.
- . Income distribution would improve between rural and non-rural areas and in each region as social services become more conveniently available over much larger areas.

During this period, no new projects of substantial dimensions would be started. The intention is to resume

operations interrupted by the financial crisis of 1987-1989, and particularly to resume World Bank Sixth Highway Project lending.

For 1992-1994, assuming that the sector has sufficiently recovered, ODR plans to broaden its earlier strategic goals to serve the following medium term objectives.

- . The rehabilitation and maintenance of priority highways and links identified in the Highway Masterplan based upon economic criteria.
- . The rehabilitation and maintenance of secondary roads within the limits of GOZ and donor available resources.
- . The development of transport sector capabilities, including development of the contracting capacity for constructing and maintaining highways.

In conjunction with the unfolding of the strategy described above, ODR is in the process of designing a major reorganization and institution-strengthening program which pivots around the long term policy decision to shift maintenance from force account work to private sector contractors.

#### **VIII. ODR'S INTERIM PROGRAM: 1990-1992**

ODR has developed, with the assistance of consultants, the interim program described above which will be implemented during 1990-1992. The program responds to the 1990-1991 short term strategy and the first year of the strategy for the subsequent period. The program features a built-in methodology to:

- . identify the priority network and annual work plans.
- . determine the costs associated with the annual plan and identify funding sources.

The interim program contains a series of action programs, studies, technical assistance, and training needed to implement policy changes and the planned reorganization. For these reasons, the 1990-1992 program is described as an interim or transition program.

##### **A. Priority Determination**

ODR assigned priority to works serving the following objectives:

- . the facilitation of inter-regional commerce.
- . the transport of agricultural and other produce to export points and the movement of needed imports to destinations throughout the country.
- . the elimination of transport bottlenecks leading out of production areas and into urban centers
- . the facilitation of intraregional trade.

By applying the above criteria, a core network was identified consisting of about 19,000 km of primary roads and 8,000 km of secondary roads. Seventy-eight percent of this core network primarily serves the first objective, 18 percent the second, and four percent the third. This network also serves more than 75 percent of total road traffic in the country.

Specific works included in the program were determined on the basis of economic rates of return for the following:

- . routine maintenance
- . periodic maintenance
- . deferred maintenance
- . rehabilitation
- . modernization and low/tech, low/cost soil stabilization

#### **B. Program Financial Envelope**

The program financial envelope summarized below, is the result of the following adjustments applied to the ODR program.

- . The full amount of ODR's annual ordinary budget was added to the program including sums for ODR's outstanding debt.
- . Amounts were added for studies, training, and technical assistance.
- . Works budgets were scaled down to reflect realistic schedules for contract adjudication, award, and physical execution.

The program was prepared in two alternative versions. The first, referred to as Scenario A, is based upon World Bank cost estimates. The second, referred to as Scenario B, is a more conservative rendition of Scenario A.

Table 3-1 compares ODR's program for 1990-1992 and the revised versions under both scenarios.

**Table 3-1: 1990-1992 ODR Program**  
(millions of dollars)

<u>Year</u>	<u>ODR Program</u>	<u>Revised Program</u>	
		<u>Scenario A</u>	<u>Scenario B</u>
1990	119	143	103
1991	163	174	163
1992	288	201	185
TOTAL	570	518	452

### C. Program Content

The program under all the above scenarios covers a small amount totalling \$22.7 million for the 39,000 km of the primary and secondary roads not included in the core program. More than 90 percent of programmed investment and maintenance outlays are for works on the 19,000 km core network.

A summary of work under the 1990-1992 program under Scenario B (the most conservative of the three estimates) is presented in Table 3-2.

Ongoing works are those contracts have been signed. An equivalent of \$66 million is required to complete a project which does not have priority, but which is nevertheless proceeding because stopping it would probably cost more than executing it. New projects total only \$105 million and consist mainly of rehabilitation works. Expenditures on maintenance of various types total \$124 million, an amount exceeding programmed spending on new projects. This is in line with ODR's strategy, actively supported by donors, which gives priority to conserving the existing network and preventing its further deterioration before new projects are attempted. If executed as planned, the program will achieve this important goal.

**Table 3-2: 1990-1992 PROGRAM COMPOSITION**  
(millions of dollars)

	<u>km</u>	<u>amount</u>	<u>%</u>
<u>Fully Funded Ongoing Projects</u>			
Rehabilitation works (asphalt roads)	425	72500	
Rehabilitation works (gravel roads)	150	7000	
Construction to modern standards (gravel roads)	<u>110</u>	<u>66000</u>	
<b>TOTAL ONGOING PROJECTS</b>	<b>685</b>	<b>145500</b>	<b>32.2</b>
<u>New Projects</u>			
Construction to modern standards and rehabilitation (gravel roads)	1229	<u>105039</u>	23.2
Works supervision		13500	2.9
<u>Maintenance</u>			
Current	16024	35530	
Periodic	2200	66000	
Minimum	<u>118464</u>	<u>22718</u>	
<b>TOTAL MAINTENANCE</b>	<b>136488</b>	<b>124248</b>	<b>27.5</b>
<u>Technical Assistance and Training</u>		<u>12575</u>	2.8
<b>TOTAL INVESTMENT AND MAINTENANCE BUDGET</b>	<b><u>141619</u></b>	<b><u>406101</u></b>	<b><u>88.7</u></b>
<u>Administrative Budget</u>		<u>50833</u>	<u>11.3</u>
Payment of debts, administrative, buildings renewal			
<b>GRAND TOTAL</b>		<b>451695</b>	<b>100.0</b>

**D. Program Funding**

The revised program under Scenario A requires funding to an extent of \$177 million as the GOZ's participation and \$342 million in foreign exchange from donor sources. Under Scenario B, the local funding requirement drops to \$160 million equivalent and \$291 million. The comparison between the two scenarios shows

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a multiplier effect of four, that is, for every dollar the GOZ contributes at the margin to the sector's maintenance and development, it can expect to generate \$3.00 in donor aid.

ODR is assumed to fund its share of the project through the revenues it expects from fuel taxes and further supplements from the investment budget. According to ODR 1990 estimates approved by the Ministry of Finance, these add up to \$53 million. They are sufficient to cover Scenario B. For Scenario A, they would be expected to increase somewhat for 1991 and 1992.

To meet foreign exchange requirements, ODR has commitments in principle from donors (out of ongoing operations or on operations under negotiation for which there is donor approval) for \$254 million. The following is a list of major participants and the sums involved (in millions of dollars).

World Bank	76.8
AFDB	24.1
EEC	24.7
German Assistance	41.8
USAID	2.6
French Assistance	<u>11.4</u>
Total Available	181.4
Under Negotiation	<u>73.1</u>
Total Commitments	254.5

Of the above amount, about \$30-50 million will spill over to years beyond 1992. The financial gap in foreign currency for which the GOZ will solicit donor participation for the year 1992 is about \$125 million for Scenario A, and \$100 million for Scenario B. By 1992, the World Bank and multi-donor funded Second Transport Sector Rehabilitation Project (STSRP) is expected to come on stream to cover ODR's 1992-1994 program and eliminate the financial gap.

#### **E. ODR Restructuring Under the 1990-1992 Program**

While executing the physical works of considerable scope referred to in preceding paragraphs, ODR is readying itself for a major restructuring following its decision to privatize maintenance operations and close most of its force account operations, including equipment management. The following studies are preparing the way for this restructuring.

1) The reorganization of SGMTP. ODR set up a task force in January 1990 to bring about this change. A follow-up study

will define the new corporation/entity which will take SGMTP's place in equipment management. The study will have two phases. The first will be completed in July 1990 and will cover legal, commercial, and financial aspects of the transformation. The second, to be completed in December 1990, will cover human resources and information systems.

2) Detailed design of the new ODR organization. This study is also underway and will be completed in June 1990. Output will consist of a detailed operational blueprint for the new ODR, and the study will offer principles of subcontracting and project supervision under the new system, for both the interim period and the long term.

3) Human resource planning and training requirements. The terms of reference for the a study to completed in December 1990 are in preparation. Study outputs will include a detailed set of job definitions for the new organization, an assessment of the existing staff, a staff reduction program, and a training program.

4) LNTP. A study on subcontracting of laboratory functions (soil, cement testing, etc.) is planned to start in October 1990.

#### **F. Economic Rates of Return for Maintenance Works**

Returns are particularly high compared to those for rehabilitation -- the better the road condition and the less rehabilitation needed, the less costly it will be to preserve the road. This is a result of doing required periodic and current maintenance.

Based on the above parameters, a paved road with an ADT of 350 requires an annual maintenance budget of \$2,800 per km, and an additional \$22,500 to resurface the road every seven years. Failing to do this over a ten year period, a saving of \$50,500 is obtained, but at the expense of heavy deterioration of pavement, and then the road bed. By the end of the period, vehicle operating costs will escalate 30 percent. In order to rehabilitate the road, an expenditure of \$150,000 is required. Using this example, the economic rate of return for "normal" maintenance outlays would be in excess of 100 percent, even if benefits due to reduced vehicle operating costs are not included in the analysis.

A comparable example can be constructed for maintaining a gravel road with an ADT of 100. Annual current maintenance costs are estimated to be \$1,530. In addition, every five years it

needs to be resurfaced at a cost of \$21,000. Failing to do this for seven years would cause the road to deteriorate to the point where an investment of \$90,000 per km would be required for its rehabilitation.

#### **IX. THE 1992-1994 PROGRAM**

The yearly profile of the program will have about the same mix between maintenance, rehabilitation, technical assistance, training, and studies as those established by consultants for ODR's 1990-1992 program. Priorities under the program for individual works can be established using the same ranking methodology. The 1992-1994 program is limited to the 19,000 km core network mentioned earlier and provides minimum funding for the balance of 39,000 km of national and secondary roads.

It is hoped that by 1992 the highway masterplan will be executed to enable a revision of program scope for physical works by use of methodology which is not restricted to the identification of the short-term emergency rehabilitation needs of the network, but is based upon relevant economic criteria. In all probability, it is doubtful that the results will provide a substantially different priority for the years 1992-1994. The highway masterplan results will be most effectively applied to sector development after 1994, assuming that the emergency rehabilitation requirements of the system have been met.

Office des Routes  
Transition Program

SCENARIO A  
1990

Item	Kms	(\$000)		Funding Source		Unit Costs
		Budgeted	GOZ	GOZ	Donor	
<b>1.0 Operation Budget (Fuel Tax Funds)</b>						
1.1 Overhead		11,200	11,200		0	
1.2 Debt Service		7,400	7,400		0	
1.3 Rehabilitation						
Asphalt Highways	2,426	6,793	6,793		0	2.80
Earth Roads	0	0	0		0	0.00
1.4 Regular Maintenance						
Manual Mtnc/Bridge/Ferry	39,488	9,470	9,470		0	0.24
Asphalt Highways	300	9,000	900	8,100		30.00
<b>1A Total Maintenance</b>	<b>39,788</b>	<b>18,470</b>	<b>10,370</b>	<b>8,100</b>		<b>0.46</b>
<b>1B Operation Total</b>	<b>42,214</b>	<b>43,863</b>	<b>35,763</b>	<b>8,100</b>		<b>1.04</b>
<b>1C Maintenance/Total Works</b>	<b>94%</b>	<b>42%</b>	<b>29%</b>	<b>100%</b>		<b>1.37</b>
<b>2.0 Investment Budget (Additional GOZ Resources)</b>						
2.1 Building Renovation		4,000	4,000		0	
2.2 Planned Layoffs		3,000	3,000		0	
2.3 Debt Service		0	0		0	
2.4 Projects Underway						
Asphalt Rehabilitation	247	40,915	4,200	36,715		165.65
Pavement Projects	40	33,135	8,200	24,935		828.38
Rehabilitation Earth Roads	75	3,500	525	2,975		46.67
2.5 New Projects						
Pavement Projects	0	0	0	0		0.00
Low-Cost Stabilization	100	8,000	8,000			80.00
2.6 Studies		1,750	200			
2.7 Training		0	0			
2.8 Technical Assistance		0	0			
2.9 Supervision		4,938				
<b>2A Total Investment Budget</b>	<b>462</b>	<b>99,236</b>	<b>28,125</b>	<b>64,625</b>		<b>200.76</b>
<b>Grand Total (1B+2A)</b>	<b>42,676</b>	<b>143,101</b>	<b>63,888</b>	<b>72,725</b>		<b>3.20</b>

Office des Routes  
Transition Program

SCENARIO B  
1990

Item	Kms	(\$000) Budgeted	Funding Source		Unit Costs
			GOZ	Donor	
<b>1.0 Operation Budget (Fuel Tax Funds)</b>					
1.1 Overhead		9,520	9,520	0	
1.2 Debt Service		6,290	6,290	0	
1.3 Rehabilitation					
Asphalt Highways	2,062	5,774	5,774	0	2.80
Earth Roads	0	0	0	0	0.00
1.4 Regular Maintenance					
Manual Mtnc/Bridge/Ferry	33,565	8,050	8,050	0	0.24
Asphalt Highways	255	7,650	765	6,885	30.00
<b>1A Total Maintenance</b>	<b>33,820</b>	<b>15,700</b>	<b>8,815</b>	<b>6,885</b>	<b>0.46</b>
<b>1B Operation Total</b>	<b>35,882</b>	<b>37,284</b>	<b>30,389</b>	<b>6,885</b>	<b>1.04</b>
<b>1C Maintenance/Total Works</b>	<b>94%</b>	<b>42%</b>	<b>29%</b>	<b>100%</b>	<b>1.37</b>
<b>2.0 Investment Budget (Additional GOZ Resources)</b>					
2.1 Building Renovation		3,400	3,400	0	
2.2 Planned Layoffs		2,550	2,550	0	
2.3 Debt Service		0	0	0	
2.4 Projects Underway					
Asphalt Rehabilitation	210	34,778	3,570	31,208	165.65
Pavement Projects	34	28,165	6,970	21,195	828.38
Rehabilitation Earth Roads	64	2,975	446	2,529	46.67
2.5 New Projects					
Pavement Projects	0	0	0	0	0.00
Low-Cost Stabilization	85	6,800	6,800		80.00
2.6 Studies		1,488	170		
2.7 Training		0	0		
2.8 Technical Assistance		0	0		
2.9 Supervision		4,197			
<b>2A Total Investment Budget</b>	<b>393</b>	<b>84,352</b>	<b>23,906</b>	<b>54,931</b>	<b>200.76</b>
<b>Grand Total (1B+2A)</b>	<b>36,275</b>	<b>121,636</b>	<b>54,305</b>	<b>61,816</b>	<b>3.20</b>

Office des Routes  
Transition Program

SCENARIO A  
1991

Item	Kms	(\$000)		Funding Source		Unit Costs
		Budgeted		GOZ	Donor	
<b>1.0 Operation Budget</b> (Fuel Tax Funds)						
1.1 Overhead		11,200	11,200	0		
1.2 Debt Service		7,400	7,400	0		
1.3 Rehabilitation						
Asphalt Highways	1,328	3,719	3,719	0		2.80
Earth Roads	546	8,775	8,775	0		16.07
1.4 Regular Maintenance						
Manual Mince/Bridge/Ferry	39,488	9,470	9,470	0		0.24
Asphalt Highways	1,808	27,120	2,898	24,222		15.00
<b>1A Total Maintenance</b>	<b>41,296</b>	<b>36,590</b>	<b>12,368</b>	<b>24,222</b>		<b>0.89</b>
<b>1B Operation Total</b>	<b>43,170</b>	<b>87,684</b>	<b>43,462</b>	<b>24,222</b>		<b>1.57</b>
<b>1C Maintenance/Total Works</b>		<b>96%</b>	<b>54%</b>	<b>28%</b>	<b>100%</b>	<b>1.34</b>
<b>2.0 Investment Budget</b> (Additional GOZ Resources)						
2.1 Building Renovation		0	0	0		
2.2 Planned Layoffs		0	0	0		
2.3 Debt Service		7,000	7,000	0		
2.4 Projects Underway						
Asphalt Rehabilitation	149	20,545	7,650	12,895		137.89
Pavement Projects	34	29,865	4,050	25,815		878.38
Rehabilitation Earth Roads	75	3,500	525	2,975		46.67
2.5 New Projects						
Pavement Projects	116	25,999	2,600	23,399		224.13
Low-Cost Stabilization	213	17,040	1,704	15,336		80.00
2.6 Studies		1,825	200	1,625		
2.7 Training		1,000	200	800		
2.8 Technical Assistance		2,000	200	1,800		
2.9 Supervision		5,433	550	4,883		
<b>2A Total Investment Budget</b>	<b>587</b>	<b>114,207</b>	<b>24,879</b>	<b>89,528</b>		<b>194.56</b>
<b>Grand Total (1B+2A)</b>	<b>42,676</b>	<b>143,101</b>	<b>63,888</b>	<b>72,725</b>		<b>3.20</b>

Office des Routes  
Transition Program

SCENARIO B  
1991

Item	Kms	(\$000) Budgeted	Funding Source		Unit Costs
			GOZ	Donor	
<b>1.0 Operation Budget (Fuel Tax Funds)</b>					
1.1 Overhead		9,520	9,520	0	
1.2 Debt Service		6,290	6,290	0	
1.3 Rehabilitation					
Asphalt Highways	1,129	3,161	3,161	0	2.80
Earth Roads	464	7,459	7,459	0	16.07
1.4 Regular Maintenance					
Manual Mtnc/Bridge/Ferry	33,565	8,050	8,050	0	0.24
Asphalt Highways	1,537	23,052	2,463	20,589	15.00
1A Total Maintenance	35,102	31,102	10,513	20,589	0.89
<b>1B Operation Total</b>	<b>36,694</b>	<b>57,531</b>	<b>36,943</b>	<b>20,589</b>	<b>1.57</b>
<b>1C Maintenance/Total Works</b>	<b>96%</b>	<b>54%</b>	<b>28%</b>	<b>100%</b>	<b>1.34</b>
<b>2.0 Investment Budget (Additional GOZ Resources)</b>					
2.1 Building Renovation		0	0	0	
2.2 Planned Layoffs		0	0	0	
2.3 Debt Service		5,950	5,950	0	
2.4 Projects Underway					
Asphalt Rehabilitation	127	17,463	6,503	10,961	137.89
Pavement Projects	29	25,385	3,443	21,943	878.38
Rehabilitation Earth Roads	64	2,975	446	2,529	46.67
2.5 New Projects					
Pavement Projects	99	22,099	2,210	19,889	224.13
Low-Cost Stabilization	181	14,484	1,448	13,036	80.00
2.6 Studies		1,551	170	1,381	
2.7 Training		850	170	680	
2.8 Technical Assistance		1,700	170	1,530	
2.9 Supervision		4,618	468	4,151	
<b>2A Total Investment Budget</b>	<b>499</b>	<b>97,076</b>	<b>20,977</b>	<b>76,099</b>	<b>194.56</b>
<b>Grand Total (1B+2A)</b>	<b>36,275</b>	<b>121,636</b>	<b>54,305</b>	<b>61,816</b>	<b>3.20</b>

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Office des Routes  
Transition Program

SCENARIO A  
1992

Item	Kms	(\$000)		Funding Source		Unit Costs
		Budgeted	GOZ	Donor		
<b>1.0 Operation Budget (Fuel Tax Funds)</b>						
1.1 Overhead		11,200	11,200	0		
1.2 Debt Service		0	0	0		
1.3 Rehabilitation						
Asphalt Highways	1,328	3,719	3,719	0		2.80
Earth Roads	10,942	17,553	17,553	0		1.60
1.4 Regular Maintenance						
Manual Mtnc/Bridge/Ferry	39,488	7,108	7,108	0		0.18
Asphalt Highways	1,470	13,344	2,326	11,018		9.08
<b>1A Total Maintenance</b>	<b>40,958</b>	<b>20,452</b>	<b>9,434</b>	<b>11,018</b>		<b>0.50</b>
<b>1B Operation Total</b>	<b>53,228</b>	<b>52,924</b>	<b>41,906</b>	<b>11,018</b>		<b>0.99</b>
<b>1C Maintenance/Total Works</b>	<b>77%</b>	<b>39%</b>	<b>23%</b>	<b>100%</b>		<b>1.59</b>
<b>2.0 Investment Budget (Additional GOZ Resources)</b>						
2.1 Building Renovation		0	0	0		
2.2 Planned Layoffs		0	0	0		
2.3 Debt Service		0	0	0		
2.4 Projects Underway						
Asphalt Rehabilitation	200	16,600	2,150	14,450		83.00
Pavement Projects	52	14,900	3,725	11,175		286.54
Rehabilitation Earth Roads	0	0	0	0		0.00
2.5 New Projects						
Pavement Projects	0	0	0	0		0.00
Low-Cost Stabilization	1,350	108,000	9,600	98,400		80.00
2.6 Studies		3,000	600	2,400		
2.7 Training		1,000	200	800		
2.8 Technical Assistance		2,000	200	1,800		
2.9 Supervision		3,000	600	2,400		
<b>2A Total Investment Budget</b>	<b>1,602</b>	<b>148,500</b>	<b>17,075</b>	<b>131,425</b>		<b>92.70</b>
<b>Grand Total (1B+2A)</b>	<b>42,676</b>	<b>143,101</b>	<b>63,888</b>	<b>72,725</b>		<b>3.20</b>

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Office des Routes  
Transition Program

SCENARIO B  
1992

Item	Kms	(\$000) Budgeted	Funding Source		Unit Costs
			GOZ	Donor	
<b>1.0 Operation Budget (Fuel Tax Funds)</b>					
1.1 Overhead		11,200	11,200	0	
1.2 Debt Service		0	0	0	
<b>1.3 Rehabilitation</b>					
Asphalt Highways	1,129	3,161	3,161	0	2.80
Earth Roads	10,942	17,553	17,553	0	1.60
<b>1.4 Regular Maintenance</b>					
Manual Mtnc/Bridge/Ferry	33,565	6,042	6,042	0	0.18
Asphalt Highways	1,250	11,342	1,977	9,365	9.08
<b>1A Total Maintenance</b>	<b>34,814</b>	<b>17,384</b>	<b>8,019</b>	<b>9,365</b>	<b>0.50</b>
<b>1B Operation Total</b>	<b>46,665</b>	<b>49,296</b>	<b>39,933</b>	<b>9,365</b>	<b>1.05</b>
<b>1C Maintenance/Total Works</b>	<b>74%</b>	<b>35%</b>	<b>20%</b>	<b>100%</b>	<b>1.62</b>
<b>2.0 Investment Budget (Additional GOZ Resources)</b>					
2.1 Building Renovation		0	0	0	
2.2 Planned Layoffs		0	0	0	
2.3 Debt Service		0	0	0	
<b>2.4 Projects Underway</b>					
Asphalt Rehabilitation	170	14,110	1,828	12,283	83.00
Pavement Projects	44	12,665	3,166	9,499	286.54
Rehabilitation Earth Roads	0	0	0	0	0.00
<b>2.5 New Projects</b>					
Pavement Projects	0	0	0	0	0.00
Low-Cost Stabilization	1,148	91,800	8,160	83,640	80.00
2.6 Studies		2,550	510	2,040	
2.7 Training		850	170	680	
2.8 Technical Assistance		1,700	170	1,530	
2.9 Supervision		2,550	510	2,040	
<b>2A Total Investment Budget</b>	<b>1,362</b>	<b>126,225</b>	<b>14,514</b>	<b>111,711</b>	<b>92.70</b>
<b>Grand Total (1B+2A)</b>	<b>36,275</b>	<b>121,636</b>	<b>54,305</b>	<b>61,816</b>	<b>3.20</b>

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**ANNEX 4**

**PRIVATE DISTRIBUTION AND CONSTRUCTION INDUSTRY ANALYSIS**

USAID/Zaire  
May 1990

PRIVATE DISTRIBUTION AND CONSTRUCTION INDUSTRY ANALYSIS

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## PRIVATE DISTRIBUTION AND CONSTRUCTION INDUSTRY ANALYSIS

### I. INTRODUCTION

The annex is intended to

- . examine constraints on the road transport sector and its capacity to respond favorably to improved road conditions by increasing transport services at lower prices; and
- . determine the capacity and willingness of the construction industry to take an increasing role in road maintenance and rehabilitation activities.

The first objective is by far the most difficult due to the complexity of the road transport sector (which extends over a very large country) and the interrelationships between its various components. Because of time limitations, only a small segment of the total sector could be examined. However, this segment is sufficiently representative that the conclusions drawn should have meaning in relation to the road transport system whole.

The discussion begins with an outline of the methodology adopted for data gathering. Section III offers a description of the different components of the road transport sector -- the formal trucking industry, company-owned fleets, and merchant transporters -- and suggests solutions to some problems. The next section analyzes the relationship between rates and vehicle operating costs on deteriorated and improved roads, and ends with a discussion of the impact of fuel price increases. Section V presents the results of interviews with various construction firms regarding their interest in road maintenance. Finally, Section VI includes suggestions for future studies of road user charges, road inventories, and traffic counts.

### II. METHODOLOGY

The study was conducted in two parts. First, existing documentation was reviewed, particularly on the structure of the rural agricultural sector. Second, an intensive interview program gathered first-hand data from many sources: truckers, merchant truck owners, industries which use trucks and other modes of transportation for their products and raw materials, government officials, agricultural cooperatives, and construction companies. In all, 50 entities (government and private) were

contacted, 37 of which were directly engaged in road transport (see Appendix A for a list of organizations contacted).

The interviews took place during March 1990 in Lubumbashi and central Bandundu. Additional interviews with trucking companies were undertaken in Kinshasa in April.

Two forms were employed during the interviews (see Appendix B) to establish a framework for discussion and to make certain that answers received were in response to identical questions.

The first form was used in interviews with all truck owners, whether they hauled their own cargo or transported loads for third parties. The interviews began with questions about equipment utilized (types, numbers, ages, and condition) and problems in acquiring new equipment (availability and financing). The next questions were operational -- products carried, trip origins and destinations, loads, rates, tire costs, and backhaul. Competition and other costs (taxes and insurance) were addressed in the final section, which also asked about major problems and the impact of fuel price increases.

Although not within the original scope of the survey, transporters operating on the feeder road network also were questioned about their experience and willingness to undertake maintenance activities under contract.

The second form guided interviews with manufactures utilizing road transport for their own products and raw materials. These firms were asked about the sourcing of inputs, distribution of outputs, modes used, and whether they contracted trucking or used their own vehicles. If the answer to the latter question was yes, the first form was also used in the interview.

Discussions with the construction industry followed no fixed format.

### **III. A SUMMARY OF ROAD TRANSPORT IN ZAIRE**

Road transport in Zaire consists of three categories of truck owners. The first is the formal trucking industry which comprises firms whose sole or principal function is to transport goods for third parties for a fee. Most of these enterprises are located in major urban centers and show varying degrees of sophistication. The second category is made up of producers (primarily of manufactured goods) who own and operate truck fleets to haul raw materials to the plant and/or distribute final products to customers. The final category, and by far the largest, includes merchants (many located in small towns and

villages) who buy trucks in order to purchase and collect produce in villages, transport it to large urban centers for resale, and return with merchandise to sell in villages and small towns. There are also firms which combine aspects of all three types of operations. Larger merchants with production facilities, such as a palm oil plant, will rent extra space on their trucks to third parties. However, the majority of truck owners fit quite well into one of the three previously mentioned categories.

#### **A. The Formal Trucking Industry**

The formal trucking industry is made up of firms organized for the sole purpose of providing road transport services to third parties. These firms have no other business interests, although some may have been established by holding companies or manufactures to transport specific cargoes. Examples of the latter are Merzario and Nicaza in Shaba, both working primarily under contract to GECAMINES, the national copper mining company. Merzario takes copper to Dar es Salaam and Nicaza transports ore for processing. Another example is COTRAZAL in Kinshasa, which transports wood. The Merzario group also has an interest in the Orion-Zaire trucking company in Kinshasa. Most companies, however, are run by founder-managers and are concentrated in the Kinshasa area; the survey recorded 16 in Kinshasa and three in Lubumbashi.

Trucking firms in the Kinshasa area work principally between Bas-Zaire (Matadi and Boma) and Kinshasa. Some companies operate as far east as Kikwit in Bandundu and, on rare occasions, Kananga in Kasai Occidental. No trucking firms were found willing to transport goods any distance from paved roads. One only company admitted to making very occasional trips to Bandundu city. Road transport in the Kasais and in northern Shaba is undertaken by local firms. None of the firms interviewed in Lubumbashi or Kinshasa work in these areas, primarily due to poor road conditions and the availability of sufficient haulage closer to their bases of operations. In Lubumbashi, the greater part of commerce takes place to the south with Zambia, Zimbabwe, Tanzania, and South Africa, rather than with the interior of Zaire. The principal port for Lubumbashi exports and imports has traditionally been Lobito in Angola; since that route has been closed, however, most imports and exports pass through southern African ports. Most foodstuffs consumed by the local population also come from the south, as evidenced by the large number of foreign trailer trucks unloading grain and other products. According to a freight forwarder, under the best circumstances it takes 40 to 50 days to move products between Lubumbashi and Matadi (Matadi-Kinshasa by road, Kinshasa-Ilebo by river, Ilebo-Lubumbashi by rail) -- there is no regular road transport.

Driving a truck the same distance (2,750 km) takes 17 days on bad roads. At the time of independence, this trip could be made in four to five days at most. In contrast, the trip to Durban (3,465 km) takes just 10 to 12 days on good paved roads.

## 1. Equipment

All road transport companies exclusively use trailer-tractor combinations for long distance hauling, though a few own trucks for work in towns. Tractors have either two or three axles, as do trailers, though in both cases, two axles (four axle total configuration, tractor plus trailer) prevail. The number of tractors per company varies from 10 to 99, and trailers from 10 to 168. Most companies have 10 to 30 units.

The survey found considerable variety in the kinds of vehicles used -- Mack, DAF, Volvo, Kenworth, International Harvester, Mann, Toyota, and Mercedes. Some smaller firms had as many as three brands of truck, but most used only one kind (or occasionally two). The average age of vehicles was about six years, ranging from practically new to more than ten years old. Over half the firms interviewed had new trucks and trailers on order.

Kilometers travelled each year per unit varied from 80,000-93,000 for Kinshasa-based firms to 115,000 for Shaba-based trucks engaged in export haulage. The distance travelled by Kinshasa firms was slightly higher than for other African countries reviewed. The averages for Nigeria, Cameroon, and Ghana were 77,600, 70,000, and 74,500, even though some truckers in Nigeria average 140,000 kilometers per year (source: Federal Trunk Road Study, Nigeria, World Bank).

## 2. Financing

Financing the purchase of new vehicles was cited as a problem by most firms, although not an insurmountable one. Most companies were able to obtain loans through SOFIDE, the Zairian state financing corporation. Repayment periods varied from four to six years, although one company claimed ten year loans were possible. Interest rates were reported to be high, but variable. Those interviewed claimed that financing was possible for well-established firms with sufficient equity to provide collateral (up to 100 percent or more of the value of financing).

All firms arranged their own equipment imports; none bought new vehicles on the local market because of high markups. A

popular alternative was the purchase of used vehicles, particularly from Belgian leasing firms. These vehicles were said to be three years old or less, in good condition, and complete with spare parts.

Some managers expressed concern regarding the future of the zaire because payments to SOFIDE were readjusted in accordance with the exchange rate. If there is a significant devaluation of the zaire, some firms could be hard pressed to keep up payments. In sum, it appears that financing is not a major obstacle to the expansion of the formal trucking industry.

### 3. Operations

Haulage is generally contracted by the load with individual clients. There is no less-than-full-load service. A customer must rent the entire truck on the basis of a 25 ton load; if he ships less, he still pays for 25 tons. Clients are permitted to jointly hire a truck, if they are unable to fill one individually, but this is difficult to arrange and seldom accomplished. Long-term contracts are rare.

Rates vary considerably, depending on the amount and type of product the customer ships. Rates from Matadi to Kinshasa range from Z 28,000 to Z 50,000 per ton. Rates in the other direction average Z 16,000 to Z 20,000. Because most demand is for haulage from Matadi, truckers are willing to accept lower rates rather than see their trucks return empty. Trucks backhaul, or carry loads on the return trip, about half the time. Haulage to the east (i.e., to Kikwit) is based on round trip rates: a client pays for the trip there and the return, whether or not he has cargo travelling in both directions. Round trip rates range from Z 1,200,000 to Z 2,000,000 per 30 ton load. This price includes the use of the trailer for two days to sell produce. If the produce is not sold within this period, the trailer is unloaded at the warehouse, and the merchant receives less for his merchandise when he finally sells it.

Competition appears to be healthy. Attempts to form a cartel and fix rates have failed in the past, as temptations to undercut the crowd were often hard to resist. The truckers have formed a transporters' organization, but it remains weak; efforts at cooperation, such as establishing an information pool concerning available cargoes, have also failed. Some truckers interviewed complained about small, independent truck operators who offered prices far below those of larger trucking companies and created "unloyal competition." The smaller, rigid-body trucks are less economical to operate than trailers; their owners are largely unaware of the true costs of making a trip,

especially amortization. This phenomenon is common in most developing countries, and usually resolves itself only with the development of an increasingly sophisticated transport industry.

Taxes and insurance expenses were major complaints. The principal annual fixed costs for a tractor/trailer unit are:

Road Tax	Z	250,000
Registration Fee	Z	38,000
Insurance	Z	800,000
License	Z	<u>40,000</u>
Total	Z	1,128,000

The Road Tax, as far as could be determined, had nothing to do with the roads. Insurance is ineffective, according to one trucker, who said it takes a year or more for an insurance claim to be awarded, plus a "payment" of 10 percent of the claim's value.

Nearly all those interviewed said payments during the journey, such as regional taxes on transported produce and harassment by authorities along the roads, did not constitute a significant problem, especially when compared with previous years. The government of Shaba has cracked down especially hard on errant officials, eliminating all complaints from transporters in that region.

All trucking firms were self-sufficient in repair facilities for their vehicles. All had shops with full-time mechanics, and parts warehouses with yards for parking vehicles.

Crews consist of a driver and an assistant. Drivers are paid a base salary, a fixed amount per trip, and trip expense money; in addition they receive meals and a place to sleep while travelling. Most of their earnings are derived from the individual trip payments. More trips mean higher total earnings; thus, while the base salary is Z 38,000 per month, drivers who make the usual ten trips per month to Matadi can earn up to Z 150,000. Each driver is responsible for his own truck and does not drive other tractors, even when his own tractor is being repaired. This practice insures that drivers will take good care of their vehicles. Assistants are paid on much the same basis as drivers (though in lesser amounts) and are responsible for the trailers and loads -- when a trailer is unhitched, the assistant looks after it and also supervises loading and unloading.

One as yet underdeveloped operational aspect is the use of multiple trailers. The ratio of tractors to trailers among the firms interviewed varied from 1:1 to 1:2.1. The optimal ratio is

1:3, which allows one trailer to be unloaded/loaded at each end of the route while a third is in transit. Only one company interviewed engaged in this kind of operation, though another said it planned to start. Most firms simply kept the tractor hitched to the trailer during loading/unloading, resulting in suboptimal utilization of tractors. However, the practice discussed above of assigning drivers to specific vehicles could be a drawback, as it would require drivers to travel much more, increasing the risk of driver fatigue.

Another operational problem is poor communications between the dispatcher and trucks on the road. Communications are currently handled by telephone or by sending word with a passing truck. Thus, if a truck breaks down, it normally takes a long time to find out about the situation, with consequent delays and potential cargo spoilage. There are no direct radio communications with trucks. Mechanics are sent to repair vehicles and bring them back. Very few companies had wrecker to retrieve incapacitated or wrecked vehicles. The result is that a wreck may remain in place for a week or more awaiting removal.

A final but significant problem is vehicle overloading: nearly all truckers interviewed claimed they did not overload their trucks, but placed the blame on others. One trucker, did admit to overloading, saying it was the only way he could compete. As axle weights are not controlled, some truckers carry loads as great as 40 to 50 tons. By carrying larger amounts, they are able to offer lower rates per ton than truckers carrying normal loads. Other truckers must charge competitive rates and eventually they, too, overload their trucks in order to lower their cost per ton. All operators recognized that this lower cost was only apparent, as the resulting strain on vehicles and damage to the roads meant much higher real costs in the medium term. All agreed that they would have no objection to the installation of weigh bridges, as long as they were run correctly and standards were applied equally.

The tendency of drivers to supplement their incomes by picking up passengers and extra cargo exacerbates the overloading problem. Truckers have partially eliminated this problem by using containers, but it remains a serious concern.

#### **4. Informal Truckers**

The informal trucking subsector consists of owners who rent trucks to customers for hauling goods. Truckers generally own one vehicle which they drive themselves. These vehicles gather in specific locations ("parkings") in cities to await customers and passengers. Each parking corresponds to a given destination,

such as Kikwit, Bandundu city, or Boma. These truckers are willing to transport goods to any place in the vicinity of the principal destination. The charge is Z 130,000 per day (time lost to repairs on the road is not counted). The rates are higher per ton than rates for trailers. Assuming a six day round trip to Kikwit -- 2 days up, 2 days back and 2 days in the market -- a nine ton load carried by one of these trucks will cost Z 86,666 per ton; carried by a tractor-trailer, the cost will be Z 74,400 per ton. The advantage offered by the informal trucker is not lower price, but the willingness to drive directly to villages, a thing formal truckers will not do. Informal truckers, therefore, attend to the lower end of the market, the small trader who cannot fill a trailer both ways and lacks transport to and from his village.

The vehicles used are generally old Mercedes or Mann trucks which are repaired as needed to keep them running; one trucker said he had replaced the engine of his truck four times. The owner/drivers are usually mechanics as well. They take two assistants along on each trip to help with any problems.

Cargoes for the return trip must be found locally, but one driver operating to Bandundu city said this was not a problem because there were more cargoes available than trucks. No particular problems were cited by these truckers as seriously affecting their operations.

#### 5. Problems Raised by Truckers

Without exception, all truckers cited the condition of the roads as being the principal problem facing their operations. Increased trip times meant that fewer trips could be made and consequently less cargo hauled per vehicle. A trip to Matadi that used to take seven hours now takes twelve. A round trip to Kikwit that three years ago took three days now takes five. Driver efficiency is also lower because it is much more tiring to drive slowly through holes than to drive over a good road. Poor road conditions cause increased wear and tear on vehicles and tires and increase the probability of breakdowns resulting in loss of perishable cargoes such as cassava. As a result of deteriorating road conditions, some truckers have stopped operating on the Kikwit road; others have increased rates or reduced the number of trips. All truckers said the volume of traffic would increase if the roads were put in order, as there was plenty of demand for haulage. In the expectation of improved roads, some truckers were increasing the size of their fleets.

Parts availability appears to be the next biggest problem. Prices of parts obtained locally are very expensive, and include

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large markups. While imported parts are less expensive, they take longer to receive, although the length of delays varied considerably. One trucker reported a three day turnaround between ordering and receiving a part, whereas others waited up to four months. The delivery times obviously depended on the type of part ordered (small parts could be sent by DHL) and the model of truck for which the part was needed; parts for older models were harder to obtain.

In addition to the problems of financing, wreckers, and axle loads mentioned above, truckers cited the lack of signalization on the roads, particularly warning signs, pavement markers, and posted speed limits. Of particular concern was the lack of areas where a driver could pull his rig off the road and rest if he felt tired. The narrow or nonexistent shoulders are a real hazard in Zaire. When a truck breaks down (a frequent occurrence), it remains in the middle of the road, sometimes for several days.

#### **B. Company-Owned Fleets**

Large manufacturers and business enterprises in Zaire make special arrangements for the transport of their products and raw materials. Some create, finance, or contract with trucking companies, as discussed above, while others purchase their own trucks. Several of the latter type of companies were interviewed in Lubumbashi. These included the local textile mill, cigarette factory, and brewery.

The fleets of these businesses were all light vehicles of 10 tons or less, and in the case of the cigarette factory, included Toyota pickups. Fleet sizes ranged from the seven trucks of the textile mill to 30 trucks for cigarettes and beer. The beer company also hired trucks for haulage to Kasenga from firms engaged in the fish trade in Kasenga. Toyotas were the favorite brand, followed by Mercedes; most were imported from South Africa. The average age of the fleets was about 3 years, and all companies said they replace some vehicles each year.

Like most other companies operating in Zaire, all three were self-sufficient in repair facilities for their vehicles. Parts not available locally could be obtained from South Africa in ten days.

The longest haulage was cotton for the textile mill from Cotolu, about 800 kilometers from Lubumbashi. The distribution by road of products from the other two firms was limited to southern Shaba, principally Likasi and Kolwesi. Outside this area, distribution of textiles and cigarettes was handled by air

and sometimes by train, or by traders who bought products at the factory. Most raw materials, such as chemicals, malt, and tobacco, were brought in by truck or train from South Africa.

All factory managers lamented the state of the roads which prevented less expensive and more efficient truck transport over a greater area. Road conditions were especially critical to the textile firm because the cotton it uses comes from an isolated area near the Angolan border. The textile company is currently obliged to do its own repair and maintenance work in order to keep the road open due to the authorities' neglect of roads in that area.

Financing of new vehicles does not appear to be a major problem for these companies, and probably only constitutes a small portion of their total financial commitments.

### **C. Merchant Transporters**

The main difference between merchant transporters and the foregoing groups is that merchant transports are small and mainly engage in trade and the transport their own produce. For the sake of exposition, three subgroups of merchant transporters are described below:

- . Traders in agricultural commodities and hard goods, who in some instances have also expanded into productive activities. This group forms the vast majority of transporters in the interior.
- . Merchants primarily engaged in the production of palm oil.
- . Merchants in the fish trade in the Shaba region.

These groups are very important to the economy; they provide the means, basis, and stimulus for the local populations' economic activities beyond the subsistence level.

#### **1. Traders**

The study of the first group of merchant traders described above took place mainly in the Bandundu region. However, discussions with individuals from other regions revealed that similar activities take place to a greater or lesser degree throughout the interior of the country. The primary activity of these merchants is trade; trucking is only a means of getting

their goods to market. As the formal trucking sector does not reach beyond the major centers, these merchants must depend on themselves for transport facilities. All the merchants interviewed in Bandundu follow the same basic trade pattern.

The first step is the purchase of agricultural products from the villages; this is accomplished by buyers who travel from village to village. Products bought depend on what the merchant believes will bring the greatest profit. Prices for produce are usually arranged through the chief or headman of each village. The produce is sacked and when a truckload accumulates, a truck is sent to pick it up. Some merchants complained about "pirates" (merchants who offer higher prices and buy the produce promised to the first merchant, thus inducing the villagers to increase their prices). However, other traders said that pirates were not a significant problem; they did not buy large quantities and were not steady customers at the villages.

The purchased goods are stored in the merchant's warehouse until the price is right, and then taken to the main market in Kinshasa, either on the merchant's trucks or in a trailer hired from a trucking company. Most haulage from central Bandundu is by road, but because of the deterioration of the highway between Kikwit and Kinshasa, some merchants are looking into river transport. Those who have tried it have not been altogether satisfied; while cheaper, the length of time involved (two to three weeks), the uncertainty of barge schedules, and lack of storage facilities means river transport cannot compete with the convenience of trucking for most products. Palm oil seems to be the only product consistently shipped by barge.

Upon arriving in Kinshasa, the truck goes to the central market where wholesalers purchase the produce. The length of time it takes to sell a load varies. Some merchants are able to sell everything at once, and others take as many as five days. Once the truck is empty, the driver picks up items the merchant has purchased to sell in his stores in the villages, such as salt, soap, pails, and cloth, as well as other goods, such as fuel. Because the volume of goods moving into Kinshasa is greater than the volume moving in the other direction, there is sometimes extra space on the truck which is hired out to third parties. As a rule, the trucks never return to Bandundu empty. The goods are distributed to the merchant's stores and the cycle begins again. Recently there has been less payment of villagers in cash and more on a pseudo-barter basis; the merchant gives the villager a paper entitling him to a certain value of goods in the merchant's store. In one case, strict barter was found to be the rule, with the merchant trading salt or soap for fixed quantities of produce.

In addition to other traders, the merchants face competition from cooperatives. The principal behind cooperatives is that the villagers should be able to market their produce directly in Kinshasa, and keep the merchant's profit margin for themselves. The two cooperatives interviewed, however, said their efforts had not been very successful, mainly because the cooperatives lacked trucks and were obliged to hire transport through third parties. In both cooperatives, transport had been subsidized by missionary organizations, but sufficient haulage was not always available to evacuate all the produce.

Merchants were asked whether they believed there was a crisis in the interior leaving produce to rot because there was no way to transport it. All merchants interviewed claimed that this was not the case, and that in the villages they served there was plenty of competition to buy whatever the villagers had to sell. According to the merchants, problems only arose when prices had been high for a particular commodity the previous year, and villagers planted more of the crop, only to find that both demand and prices had dropped. However, because merchants operate only within a 140-kilometer radius of their home base, there probably remain isolated villages where production capacity is underutilized. With the exception of the cooperatives, most crops produced for sale seem to find their way into the markets. Merchants pointed out, however, that due to the lower buying power of local populations, they had closed some of their stores in the villages, suggesting that less agricultural produce is being sold now than previously.

## 2. Palm Oil Producers

The palm oil industry is based on a number of small processing factories spread out over the central and northern areas of the Bandundu region. The fruit is gathered from palms grown on traditional palm oil estates or from wild groves. Because the trees on the estates are quite old and their production has been dropping, oil producers have depended more on wild groves as a source of palm fruit. The fruit from these is gathered by villagers who place it on racks by the roadside to await collection by a truck from the palm oil plant. The processors usually collect fruit within a 40-kilometer radius of their the plant. From the plant, the processed oil and palm nuts are sent to Kinshasa for sale. If the plant is near a river port, the oil is usually sent by barge; in fact, some larger oil companies have their own barges. As the processed oil does not spoil easily, there is no problem with delays in transport. The nuts, however, are carried by truck. Producers located far from the rivers take the oil to Kinshasa in tank trucks, which return carrying fuel for the plant. Because of a number of problems

(competition from artisanal production, cheap imports, etc.), many palm oil producers are diversifying into other areas, such as other crops, cattle, and seed production. Conversely, abandoned factories are being bought by prosperous merchants who combine palm oil production with other activities.

### 3. Fish Merchants

In Shaba, a fairly lucrative industry has been built around the transport and marketing of fish. There is high demand for fish -- smoked, dried and fresh; people are willing to pay high prices in Lubumbashi and other Shaba towns. The fish is brought mainly from Lake Moero (Kilowa), 343 km from Lubumbashi, or from Kasenga, 211 km away. On the outward trip, trucks collecting fresh fish take ice, and those going for smoked or dried fish usually transport some cargo, such as beer or other merchandise. At least one merchant has set up a fishing cooperative, supplying fishermen with boats and gear in exchange for fish; this merchant transported over 200 tons of fish during 1989. There is no doubt that the Lubumbashi fish market is an important factor in the economy of eastern Shaba.

The fish carried back belong either to the merchant or to third parties. The freight rates for third parties are 100 zaires per kilo for fresh fish and 50 zaires per kilo for smoked and dried fish. Between four and five tons are carried per trip, which means the transporter grosses Z 400,000 to Z 500,000 for a load of fresh fish. There is, however, considerable risk; if the truck breaks down, the result is disaster. Merchants say the round trip must be made within 48 hours -- any longer and the ice has melted. Thus, considerable amounts must be spent to maintain and purchase trucks. The principal fresh fish merchant replaces his fleet with new trucks each year as a guarantee against losses.

The fish merchants also haul maize flour from border areas to Lubumbashi which they say comes from their own farms.

### 4. Equipment

Unlike the formal trucking industry, the fleets of merchants are primarily rigid body trucks of eight to ten ton capacity with two, or occasionally, three axles. Some merchants do have trailers, but trailers account for only about eight percent of the total merchant vehicle fleet. Trailers would not be economical because most of the roads are earthen and in poor condition, loads are small, and haul distances are short.

In Bandundu, the average number of trucks owned by each firm interviewed was nine. However, two large merchants owned 38 and 20 trucks, and the remaining firms each had only about five. One Bandundu firm had no trucks in operating condition. The most common brand of truck was Mann, and the average age of the fleets was around 13 years -- the oldest were about 33 years old and the newest, two. Trucks were bought second hand, even those directly imported from Europe. The average number of kilometers travelled each year per truck was about 33,000 with a maximum of 60,000, less than half of the distance travelled by vehicles of the formal trucking industry. Trucks were generally in poor condition (as evidenced by the numbers of disabled trucks parked beside the main roads). A typical merchant's compound contained three or four broken vehicles awaiting new engines or other parts. Some trucks were obviously irreparable.

In Shaba, the average fleet size was six, usually Toyotas. The average age of the vehicles was three years and the oldest, five. Most fish merchants had at least one new truck, which reflects the relative profitability of their operations. Average kilometers traveled per vehicle per year was 61,000, twice that of Bandundu merchants, perhaps because the trucks were relatively new.

## 5. Financing

The availability of financing for new trucks is a major concern for many merchant truckers, particularly in Bandundu. Only one merchant there had bought a truck with financing, and most considered such a purchase out of reach, although few had checked recently on current terms and conditions. Some merchants, particularly in Kikwit and USAID project areas, expressed interest in the CIP program and said they were looking into it. Interest in purchasing new trucks to replace older vehicles was universal, but only merchants said they wanted to purchase trucks to expand their operations. Other traders said that it was better to continue to repair old trucks until either the cost of financing or road conditions improved. All believed that with new trucks and better roads the movement of goods would increase. Three to four years ago, merchants were averaging four trips to Kinshasa per month per vehicle; now they averaged only two. Apparently more vehicles were available in the past for transport, but it is difficult to determine how many more or the degree of fleet attrition and consequent loss of capacity.

Shaba merchants financed their trucks out of their operations and did not resort to bank loans.

## 6. Operations

Each merchant normally hauled his own products and sold only space he could not fill to third parties. The exceptions were a large company in Bulungu with contracts to supply large agribusinesses in Kinshasa, and the fish merchants who regularly hauled for third parties.

Like the formal trucking companies, each merchant was self-sufficient in maintenance facilities for his trucks, although maintenance facilities obviously differed in quality. Some truck owners did their own repairs, some depended on drivers to fix their trucks, and others complained about the dearth of qualified mechanics. The quality of service was usually a function of the mechanical ability of the merchant himself, or the size of his operation. One of the larger merchants employed an expatriate mechanic for his fleet.

Each merchant had a storehouse or two for his merchandise, and from one to 65 stores in villages. Some merchants had bought their own farms and were processing their own produce, some had rice and corn processors, and others were buying palm oil factories and raising cattle. To all these people, trucking was merely a sideline (albeit an important sideline) and not always first on their list of priorities for investment.

Finally, most complained about harassment by authorities, particularly tax officials. Although officially vehicles were no longer stopped on the road for payment of taxes and fees, the regional tax per sack of produce is still collected at the ferry in Bandundu city. Most tax activity has now moved to the merchants' offices where collectors make periodic appearances demanding payment of new taxes. The merchants' only defense is to be up to date on new tax legislation and thus able to defend their interests.

## 7. Road Maintenance

Although not part of the original scope of the survey, merchants in Bandundu were asked about road maintenance and their willingness to undertake road maintenance activities in their areas. All were interested. In fact, many already performed maintenance on some of the roads they used. Maintenance included formal activities under the cantonnier system, traditionally carried out by larger firms like Fernandes and PLZ, and more informal efforts. One merchant mobilized his entire village and paid them goods in exchange for needed repairs on the access road to the village. Some merchants said they would be willing to

undertake this activity at cost, as they would benefit through better access and lower vehicle operating costs. The one condition stipulated in all cases was that merchants be paid on a regular basis. Office des Routes (ODR) had failed to honor contractual obligations in the past and no one was willing to work with ODR again unless certain payment guarantees were in place.

#### 8. Problems Cited by Merchants

Like other truck owners, the merchants complained most about the condition of the road network, especially the feeder roads. All recognized the impact of increased wear and tear and lost time on their operations. Any maintenance done by the merchants was performed on roads in their particular area of interest and was usually a stop-gap measure to enable their truck to get through. All merchants stressed the need to improve the maintenance situation. Particularly vocal in this respect were the fish transporters who claimed that continued deterioration of the roads to Kasenga and especially Kilowa would have a negative impact on the fishermen and their own businesses.

The second problem, and one cited as most important by many Bandundu merchants, was the limited availability of financing for the purchase of new vehicles to replace their aging fleets. This was the most pressing problem for the merchants of Idiofa, most of whom had less than a third of their vehicles in running condition. They claimed that the banks would provide financing only to larger merchants in bigger towns (who undoubtedly had the collateral to guarantee their debts). This was not cited as a problem by the Shaba merchants, who do not depend on bank financing.

The third problem was the limited availability of spare parts, which take a long time to arrive and are expensive. However, this issue varied in its gravity, depending on the resourcefulness of the merchant.

Other complaints (poor quality fuel and lubricants, low skill levels of mechanics and drivers, and time lost in the Kinshasa market selling products) seem to depend largely on the situation of the individual merchant, and are not general problems.

#### **D. Suggested Improvements**

During the course of the interview program, a number of problems in road transport came to light which donor organizations could contribute to solving. In this section, suggestions concern areas where donor efforts would yield the greatest returns.

##### **1. Road Maintenance and Rehabilitation**

Road maintenance and rehabilitation are basic to the present USAID and World Bank programs, specifically the decentralization and privatization of these functions. There is thus no need to discuss them at length in this annex. However, there are a few items of special interest to the transport sector which should be taken into consideration in future programs and design specifications. These are:

- . Widen shoulders on existing trunk roads to lessen the danger created by disabled vehicles blocking highways. Due to poor communications, parts problems, etc., disabled trucks can remain on the roads for extended periods while awaiting and undergoing repairs; a solution is vital, especially as road rehabilitation will mean higher speeds for oncoming traffic. Truckers currently place small branches in the road to warn vehicles travelling in their lane, but almost never post a warning for the lane of oncoming traffic. This situation is particularly hazardous for overtaking vehicles in the oncoming traffic flow, especially at night. Present rehabilitation programs should thus include provision for widening shoulders to two meters.
- . Road maintenance units or highway police should be provided with wreckers to remove disabled vehicles from the carriageway. During a recent visit to Bandundu, the road was blocked for several days by a jackknifed rig.
- . Signalization is virtually nonexistent on trunk roads. Not only are there no warning signs, but there is not even a white line in the center of the road. Rehabilitation and maintenance contracts should make a point of including this item.
- . Rest stops or places where a tired driver can pull his rig off the road for a break or repair work do not exist, except in some villages. These areas are very

inexpensive to provide and pay big dividends in avoiding driver fatigue and consequent hazards.

## 2. Financing

Financing of vehicle purchases was cited as an urgent need by many of the smaller merchants. Indeed, the growing age and precariousness of much of the fleet is cause for concern, as it means the decapitalization of the part of the transport sector on which all others depend, namely the movement of goods to and from the rural sector. The indiscriminate extension of special financing terms to all truckers be folly, however, as some groups of transporters -- the formal trucking industry and fish merchants in Shaba -- manage to get by under present conditions. With few exceptions, the adoption of any criteria for choosing the beneficiaries of financing will favor the expatriate community at the expense of Zairians. Assuming that the purpose of a financing program is to help the local population, additional measures are needed to enhance the Zairian trucker's eligibility for financing. It is apparent in even casual conversation with local merchants that they see the difference between purchase and selling price, minus expenses such as fuel and driver costs, as profit. Few traders have understood the concept of amortization, and consequently little money is saved for renewing their fleet. Records rarely go beyond making note of transactions. Social pressures for sharing profits with relatives, etc., also limit savings accumulation. This situation has been well documented in previous studies (Coopers & Lybrand, 1987). To be effective, financing must be coupled with training in basic business management. This training should not be just group lectures, but a hands-on orientation for each merchant on how to manage his books, possibly through the Peace Corps or a similar organization.

## 3. Animal Traction

One item noted, especially in talks with agricultural cooperative officials, is the psychological dependence on motorized transport as the only means of moving produce out of village areas. One official in Idiofa said he needed 32 trucks to transport the produce from the 600 villages in his area. In east and southern Africa, two or four wheeled carts pulled by donkeys or bullocks are seen everywhere. Villagers use these carts to haul produce to central storage facilities where produce is kept until it can be picked up by trucks. The carts provide commercial transport without the need for maintaining motorable roads. In Bandundu, the people do not have a tradition of animal

husbandry. However, in some areas near religious missions, however, animal traction has apparently been used with some success, and the increase in cattle raising is a sign that there may be additional possibilities in animal traction.

#### 4. Axle Load Control

Once trunk roads are rehabilitated, axle load control is imperative. cursory examination of vehicles suggests that overloading is quite common, especially in merchant trucks. Overloading creates additional maintenance costs because pavement deteriorates more rapidly. One possible solution is the establishment of weigh bridges on heavily-travelled routes to fine drivers or stop overloaded trucks from continuing. Truckers interviewed said they would have no objection to such a system, especially if it controlled all transporters on the same basis. All truckers recognized the consequences of overloading on reduction of truck life and road quality. Weigh bridges would also serve to reduce unauthorized extra loading of trucks by drivers. A second solution is to design and rehabilitate roads to carry heavier axle loads and charge the costs to truckers, with discounts established to encourage the use of vehicles with more axles.

#### IV. RATE/COST ANALYSIS

The purpose of this section is to present a summary of the rates charged by the trucking industry for haulage between specific points. This will then be compared with the operating costs per kilometer for different kinds of vehicles under different road conditions. The results will suggest the profitability of trucking operations in Zaire, especially in view of the necessity of replacing vehicles. In addition, the analysis will show approximate savings in vehicle operating costs due to road rehabilitation and maintenance, and how this will affect trucker's profit margins. The section will terminate with a discussion of the impact of fuel price increases on operating costs and rate levels.

##### A. Rates

The average Matadi to Kinshasa rate is Z 36,000 per ton and return is Z 20,000 per ton. Assuming that the backhaul rate is 50 percent, then the expected value of backhaul is Z 10,000 (.5 X 20,000), and of the round trip 46,000 Z. Divided by the round

trip distance and multiplied by 30 tons, the expected value per kilometer is Z 2,300 or \$4.18. If there is no backhaul, the gross income for the trip is \$3.27 per kilometer.

To Kikwit, the average rate is Z 1,860,000 per 30 ton load round trip. This becomes Z 1,755 per kilometer for the round trip, or \$3.18, slightly less than the Matadi run.

For the fish merchants of Lubumbashi, the rate is 100 zaires per kilo for fresh fish from Kasenga. As the trip to Kasenga carries ice, the payload is only on the return trip. This normally is four tons of fish, the remainder of the space being taken up by what is left of the ice. This means that the transporter can make Z 400,000 per each round trip of 422 kilometers, 948 zaires or \$1.72 per kilometer.

## B. Vehicle Operating Costs

The World Bank Highway Design Module (HDM) was used to calculate vehicle operating costs (see Tables 1 to 9 at the end of this annex).

For the cost calculations, four situations are envisaged. The first is the cost of a trailer truck travelling on a good paved road. The second is cost of the same articulated truck travelling on the same road, but with the road in bad condition. The difference here is in the roughness estimate utilized in the program. The good road has an International Roughness Index (IRI) of 1.8 meters per kilometer, and the bad road an IRI of 10 meters per kilometer. The third case simulates a two axle lorry on an good unpaved road and the fourth simulates the same truck on a bad unpaved road. The IRI values used in the first and second situations are also used for the third and fourth simulations.

The assumptions for vehicle utilization and cost parameters are based on information obtained during interviews. The data was entered into the HDM model, which was then used to calculate the operating costs for each vehicle simulation. The assumptions are shown in Table 1 for the articulated truck, in Table 2 for the Bandundu merchant lorry, and in Table 3 for the Shaba fish merchant. The lorry case was divided in two because of the different operating assumptions affecting the two types of merchants. The Shaba merchant depreciates his truck in one year and travels twice the distance of the Bandundu merchant. The input data shown on the tables comprise mainly default values calculated by the HDM program for each vehicle type. Thus, of the first 16 items, only the load carried and the number of tires per vehicle were added. The average annual utilization kilometer

figures were taken from interviews. An average service life of six years is the time period used for the depreciation calculation, except in the case of the Shaba merchant, where one year is used. Average life kilometrage is simply the average service life times the yearly kilometers. The vehicle and tire costs were obtained from dealers, and are representative of a DAF tractor and York trailer for an articulated truck with 30 ton capacity, and an eight ton Toyota for the lorry. Crew costs are the salaries and trip expenses of the drivers and assistants, assuming the present number of monthly vehicle trips made by truckers and each type of merchant. Interest represents the current financing rate of 90 percent per year. All prices have been translated into U.S. dollars at the rate of 550 zaires to the dollar.

### C. Results

The financial results for the tractor/trailer on good and bad roads can be seen in Tables 4 and 5; Tables 6 and 7 show results for the Bandundu truck on improved and deteriorated roads; and Tables 8 and 9 show results for the Shaba fish merchant. The assumptions for the geometric road standards in each simulation are only guesses, as no specific data exists on the roads in question. The results for each simulation indicate the physical quantities of fuel, parts, tires, etc., consumed per 1,000 vehicle kilometers, the resulting vehicle operating costs per item, and their percentage participation in the total.

For the articulated trucks, the cost on the good paved road is \$1.77 per kilometer, and \$2.42 on the same road in poor condition. This shows that even on bad roads the rates charged by the trucking industry are sufficient to cover all trip costs including depreciation and interest by a healthy margin. This is not to say that truckers are getting rich, because the calculation does not include fixed overhead, taxes, breakdowns, or failure to make the minimum number of trips per month. The results suggest that given the continuation of present circumstances, truckers can make enough money to replace and maintain existing fleets.

The difference between the cost per kilometer on good and bad roads suggests the savings to articulated trucks from rehabilitating and maintaining the paved roads. This amounts to \$0.65 per vehicle/kilometer, or a drop of 27 percent in outlays, mainly for repairs, and a corresponding increase in transporters' margins. Due to the inability of the truckers to collude among themselves, the results of road improvements would probably be lower freight rates in real terms. Whether the benefits would go to producers, in the form of increased farmgate prices, or to

consumers, in the form of lower retail prices, depends on the existing structure of the market place.

For the Shaba fish merchants, the costs are \$1.57 per kilometer on the bad unpaved road and \$1.29 on the improved road. Their margins are not as great as the commercial truckers, but sufficient to cover trip costs, plus depreciation and interest. The same qualifications hold in this case as with the articulated trucks. In addition, the "scrap" or resale value of the Shaba trucks after a year of use is higher than those used over a longer time period. The benefit derived from repairing the road is about \$0.28 per kilometer, or an 18 percent reduction in costs. Again, where the incidence of the benefits would lie is unknown. However, since these merchants are reputed to be able to collude on price levels, they would probably be the beneficiaries.

For the Bandundu merchants, the costs on the bad road are \$1.40 per kilometer and \$0.99 on the good road. Improvement in the road would result in a saving of \$0.41, or 29 percent of present costs per kilometer travelled. Costs are generally lower because depreciation takes place over a longer period than is the case with the fish merchants. As there appears to be competition among merchants for the purchase of farm produce, which would increase with improved roads and greater accessibility, some part of the benefits would accrue to the farmer.

In conclusion, it appears that the road transport industry is profitable, especially for owners of articulated trucks. As the markets and transportation sector evolve, trucks will be used primarily for bringing goods from the villages to the larger centers such as Kikwit, where they will be shipped to Kinshasa by trailer. Rigid-body trucks are uneconomical for long distance hauling. Even without considering operational elements such as the fact that the motorized part is tied to the load, trucks are nearly twice as expensive to operate as trailers per ton/kilometer. Dividing the trailer cost by 30 tons, and the lorry cost by eight, the truck costs \$0.078 per ton/kilometer compared with \$0.048 for the trailer on a good paved road.

#### **D. Impact of Fuel Price Increases**

One of the questions asked of transporters during the interviews was the extent to which rates are raised due to an increase in the price of fuel. Special reference was made to 1989, when fuel prices doubled. Truckers were also asked what percent of their total costs were represented by fuel expenditures. Very few truckers had a clear notion of the impact of fuel prices on their operations. A few said that rates were

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changed in proportion to the fuel increase; one said no change was implemented; and another replied that rate increases were made as a function of the market (i.e., what everyone else did) and not on a rational basis. The other replies stated on average that fuel represents between 17 and 30 percent of expenses. Therefore, they believed an increase in fuel prices should mean a proportionate change in rates.

The table below shows the participation of fuel costs in total vehicle operating costs and rates.

Table 10: Participation of Fuel in Operation Cost Structure

	<u>Lorry (fish)</u>	<u>Tractor/Trailer</u>
Fuel Cost/km	\$0.145	\$0.240
% VOC/km	9.2%	9.8%
% of Rate	8.4%	7.5% (Kikwit)

The foregoing suggests that the participation of fuel in VOC is lower than most truckers think (although it could be slightly higher than shown above, as the HDM assumes well-regulated injectors). To recuperate fuel price increases, rates would have to be adjusted by a far smaller amount. For example, if fuel prices doubled (+100%), the rates should increase by 7.5 percent to compensate. If the increase is 25 percent, then the rates should be readjusted by 1.9 percent. In other words, the elasticity of rate increases should be .075 in this case.

However, truckers think differently. In fact, they will apply an increase to rates equal to the fuel price change to 20 or 30 percent of their costs, barring market or government intervention. Thus, the elasticity of rate increases is in fact between .2 and .3 percent. Our 25 percent price increase would be reflected as a 6.2 percent rate increase on the average.

#### V. THE PRIVATE CONSTRUCTION INDUSTRY: ROAD MAINTENANCE AND REHABILITATION

In addition to an analysis of the road transport subsector, a separate task was to determine the capacity and willingness of the private construction industry to take over a greater share of road maintenance and rehabilitation activities in line with the

decentralization and privatization of Office des Routes activities. To that end, four large, private construction companies and one engineering company were interviewed in Shaba and Kinshasa.

The directors of the firms were asked about their interest in the privatization scheme, equipment available to do the job, past experience, and the contractual terms and conditions they would require to participate. In this section, each of these items will be treated in turn.

#### **A. Private Sector Interest, Capacity, and Experience**

When informed about the privatization of Office des Routes activities, all construction companies expressed interest. After all, they said, it was part of their business to perform road construction and rehabilitation work. The Shaba firms said they would prefer working in Shaba, but would accept contracts in other regions. The Kinshasa firms said they would be willing to work anywhere. Interest in work in any part of Zaire seems to be the case with most of the larger construction companies. Six construction companies participated in recent bidding on roadwork in Shaba. It is significant the neither of the two Shaba-based companies was selected. This suggests the existence of both the capacity and willingness of the private construction industry in Zaire to undertake work in diverse areas of the country.

All the companies interviewed had extensive experience in roadwork and general construction. All had the basic equipment for road construction and repair, specifically for earthworks, structures, and surface treatment paving, though some lacked such items as an asphalt plant, paving machines for asphalt concrete work, and rock crushers. However, all were associated with firms outside Zaire, especially in Belgium and South Africa, and said they could obtain assistance and additional equipment as necessary to accomplish whatever job they were contracted to do.

The companies expressed interest in renting or leasing Office des Routes equipment. In fact, one company presently working in Shaba has made an agreement with ODR for renting equipment under which the company pays a fixed amount and ODR does equipment maintenance and repairs.

All contractors expressed interest in participating in maintenance as well as rehabilitation, although none had experience in running a long-term maintenance operation in Zaire, primarily because maintenance had been handled in the past by ODR. The contractors said they would be willing to set up and run local maintenance organizations, including equipment centers,

and would handle subcontracting activities, if necessary. All emphasized that they would favor a minimum amount of mechanization in maintenance of earth roads, such as periodic grading. One firm had several small graders pulled by farm tractors available for light road repair activities. Also, several suggested the application of new techniques for earth road improvement, such as asphalt and cement stabilization for road surfaces.

#### **B. Terms and Conditions for Private Sector Participation**

Terms and conditions under which rehabilitation/maintenance contracts would be awarded was the item of greatest concern to the private contractors interviewed. All expressed dissatisfaction with the present system and stipulated a series of general conditions for their participation in the program. The principal points are enumerated below.

1) Contracts should be given out on a competitive bid basis.

2) Road sections under each contract should be long and contiguous thereby permitting economies of scale and lower mobilization requirements.

3) The contracts should be long-term, at least 3 to 4 years, and renewable. This would avoid problems of frequent demobilization-remobilization between contracts and allow contractor and maintenance staff to become well acquainted with the needs of each road in their area. Long-term contracts would also lead to more efficient operations and reduced annual maintenance costs.

4) Contracts should specify rehabilitation followed by maintenance. As roads deteriorate rapidly, especially unpaved roads, delay between rehabilitation and maintenance phases could require a second rehabilitation before maintenance could be undertaken. The rehabilitation phase should be used in setting up the maintenance organization so that no time would be lost between the two. Contractors said they would not undertake maintenance responsibilities on roads that had not been rehabilitated.

5) One complaint concerned the quality of engineering work and contract supervision done by ODR, especially on the regional level. The firms said that Zone Engineers were ignorant of most engineering questions and were easily compromised by small unscrupulous companies which, in some cases, took their 40 percent up-front money and did no work.

6) Most contractors said they would accept payment in zaires, even the foreign currency portion, as zaires were presently convertible. However, one contractor said he would have to receive a portion in hard currency in order to guarantee his foreign-based expenses for parts and expatriate staff. All companies expressed concern about the risk involved in accepting 100 percent zaire payments for long-term contracts because of uncertainty regarding future inflation and devaluation, even though two of the companies had agreed to accept all-zaire payments for short-term road repair contracts with ODR.

7) Terms and conditions could follow the normal government contracting procedures, i.e., indexation of zaire portion, fuel costs, and foreign expenses, and an initial payment of up to 40 percent, depending on start-up expenses. Contractors complained that many contract clauses, such as the readjustment of overdue accounts by six percent, favored the government at the expense of the contractors. All felt that late payments should be readjusted by the above indexes, or by a market interest rate formula. Small firms, such as engineering companies, are sometimes required to pay up to 30 percent of the contract value up front as a performance bond which is paid back at the end of the contract in zaires with no readjustment. The biggest complaint was that there was no way to make ODR responsible under the terms of the contract, as it suffered no penalty if it failed to live up to its contractual obligations.

8) The greatest difficulty encountered in obtaining the support of the private sector for the privatization scheme was that none of the firms interviewed said they would work on long-term projects for ODR without guarantees from third parties (such as the World Bank or USAID) that they would receive payments on schedule for work performed. The experience of many contractors is that ODR simply does not pay its obligations and the contracts that it signs and guarantees it gives are worthless. This point was also mentioned frequently by merchants who had participated in the "attributaire" (contractor) system. Complaints were also voiced about payments of up to 20 percent of contract value demanded by an "intermediary" in order to be selected for a project. It must be said, however, that this practice is not just a problem of ODR, but of the public sector in general. It has led firms in the construction industry to work mainly in the private sector and avoid government contracts.

However, some firms are beginning to work with ODR on limited projects, such as the repair of the Kikwit road. The attitude of these firms is to wait and see. Some companies said they would study any proposals made; if they can be certain that payment will be made, then most other problems can be resolved.

## VI. SUGGESTIONS FOR ADDITIONAL STUDIES

### A. Road User Charges

A useful exercise for the future is a road user charge study. The theoretical idea behind road user charges is that road users should pay for the wear and tear they cause to roads. More specifically, each vehicle, depending on its weight and number of its axles, should be charged for the cost of repairing the damage caused by its passage over the road. In practice, what this entails is calculating the number of vehicle kilometers, or better, axle/ton/kilometers passing over the highway network each year, and determining the cost of repairing the corresponding damage to the network. The costs of the damage must be calculated as a function of actual maintenance and rehabilitation costs. This cost is then divided over the vehicle fleet/kilometers to assess the amount each type of vehicle should pay.

Once this theoretical exercise is completed, the next step is to compare the actual charges paid by road users with the cost of maintaining roads. Road users in Zaire pay numerous taxes, but apparently only the fuel tax goes to road maintenance. The analysis will indicate whether the fuel tax is sufficient or additional taxes should be levied. If the latter, the optimal form of collecting the charges will be determined, taking into consideration the efficiency of collection, equity, and incidence. For instance, trucks cause more damage than cars, but in most places pay less because trucks operators are able to pass additional charges on to consumers, whereas most auto owners can not. Forms of taxation will be evaluated within the Zairian social context to determine which are easiest to collect and offer fewer possibilities for fraud. The end result will be a proposal for the most appropriate means of collecting from road users the costs of maintaining the roads on which they travel.

### B. Road Inventories

This section and the next were requested specifically by USAID to help in setting up future programs, and were prepared without the benefit of having assessed the status of the existing data base in Zaire. These sections are based on the consultant's experience.

The elements making up the road network data base should be general. They should not require extensive budgets. They will not substitute for more detailed data gathering on specific road

sections to be studied in the future. However, they should be sufficient to save consultant time and client money in the execution of future projects.

1) Maps. Maps should be available for the road network showing the alignments of major roads, hydrographic, and topographic information, where available. Link-node maps should be prepared for the entire network with consistent codings for federal, regional, and feeder roads. These link numbers should form the basic references for the road inventory items to follow, as well as traffic counts.

2) Road Types. Roads should be classified according to surfacing characteristics, such as asphalt concrete, surface dressed, gravel or earth, as well as width, number of lanes, and shoulders. Soil conditions should be noted where possible.

3) Dates. The dates of construction and the last periodic maintenance applied to a road are useful for engineering and to help locate specific references on sections under study.

4) Condition. A set of condition categories for each road type should be established based on engineering criteria. Because road conditions can change rapidly, these categories should be broad, but at the same time able to draw attention to road sections which are due for periodic maintenance or rehabilitation.

5) Structures. An inventory of structures such as bridges per link should be compiled, with their physical characteristics and condition.

6) Cost Information. A file should be organized on costs of past projects, both force account and contract, to assist in estimating the costs of future projects.

7) Updating. Once the data base is set up, the only item requiring periodic updating is the condition survey, which ideally should be done annually following each rainy season.

8) Finally, a set of design criteria should be established for each type of road and for structures, taking into account axle loads and traffic volumes as well as climatic and other physical conditions to guide engineers and contractors.

### C. Traffic Counts

1) Classification Counts. Classification counts are done manually and record the numbers of each type of vehicle moving in each direction past a certain point. They are easy to do and compile, as well as organize. The first step is to locate counting stations on the higher volume road network and organize the counting teams. Counts should be done daily over a two to three week period once a year, and then for a week every two to three months. The dates and stations should not change in order to make the data consistent. If done regularly, an excellent traffic data base can be built up.

2) Moving Observer Counts. On lower volume roads with a few vehicles a day, it is suggested that moving observer counts be used. These are done from a car and extrapolate the daily traffic from the time over which the count was done and the vehicles observed. This can be done in conjunction with road condition survey updating, thus saving considerable expense. Villagers can also be asked how many vehicles passed their village during the day to check the moving observer count figures.

3) Machine Counts. If used at all, machine counts should be done only on high volume roads between major centers, such as Kinshasa and Matadi. Their advantage is that they collect data over 24 hour periods. Their disadvantage is that the machines are susceptible to pilfering and vandalism (the rubber tubes make good slingshots) and require some skill and constant attention to change tapes and batteries. For this reason, they are generally not recommended, especially where labor is inexpensive and unskilled.

4) Origin/Destination Surveys. In the opinion of this consultant, origin/destination surveys would be a waste of time and money in Zaire. First, because the traffic volumes are generally low, meaning that surveys would have to be done over long periods to obtain statistically meaningful results. Second, similar information can be obtained more easily from the classification counts and interviews with merchants and shippers. Because O/D surveys are rather complicated in their execution and require sophisticated data processing techniques, they are not suited for regular use in many developing countries.

5) Axle Load Surveys. This kind of survey is very important for road design and planning maintenance activities, as the axle weights determine the rate at which the deterioration of roads will take place. This survey can be done once and then repeated only when there is reason to believe that axle loadings have changed. Scales can be portable and only require a solid concrete or asphalt surface for operation.

TABLE 1 INPUTS FOR ARTICULATED TRUCK

INPUT DATA			
VEHICLE CLASS : ARTICULATED TRUCK			
TARE WEIGHT.	KG		14730.00
LOAD CARRIED.	KG		30000.00
MAXIMUM USED DRIVING POWER.	METRIC HP		310.00
MAXIMUM USED BRAKING POWER.	METRIC HP		500.00
SURFACE TYPE-SPECIFIC DESIRED SPEED.	KM/HOUR		84.10
AERODYNAMIC DRAG COEFFICIENT.	DIMENSIONLESS		0.63
PROJECTED FRONTAL AREA.	M <sup>2</sup>		5.75
CALIBRATED ENGINE SPEED.	RPM		1700.00
ENERGY-EFFICIENCY FACTOR.	DIMENSIONLESS		1.00
FUEL ADJUSTMENT FACTOR.	DIMENSIONLESS		1.15
NUMBER OF TIRES PER VEHICLE.	#		22.00
WEARABLE VOLUME OF RUBBER PER TIRE.	DM <sup>3</sup>		8.39
RETRADING COST PER NEW TIRE COST.	FRACTION		0.15
MAXIMUM NUMBER OF RECAPS.	DIMENSIONLESS		3.57
CONST. TERM OF TIRE CONSUMPTION MODEL.	DM <sup>3</sup> /M		0.16
TIRE WEAR COEFFICIENT.	10E-3 DM <sup>3</sup> /J-M		12.78
AVERAGE ANNUAL UTILIZATION.	KM		90000.00
AVERAGE ANNUAL UTILIZATION.	HOURS		2875.00
HOURLY UTILIZATION RATIO.	FRACTION		0.85
AVERAGE SERVICE LIFE OF VEHICLE.	YEARS		6.00
USE CONSTANT SERVICE LIFE ?	FLAG: 1-YES	0-NO	0
AVERAGE LIFE KILOMETRAGE OF VEHICLE.	KM		540000.00
NEW VEHICLE PRICE.	\$		118742.00
FUEL COST.	\$/LITER		0.65
LUBRICANTS COST.	\$/LITER		0.29
NEW TIRE COST.	\$/TIRE		749.00
CREW TIME COST.	\$/HOUR		2.00
MAINTENANCE LABOR COST.	\$/HOUR		0.60
ANNUAL INTEREST RATE.	%		90.00

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TABLE 2 INPUTS FOR BANDUNDU MERCHANT TRUCK

INPUT DATA

VEHICLE CLASS :	MEDIUM TRUCK	
TARE WEIGHT.	KG	5400.00
LOAD CARRIED.	KG	7000.00
MAXIMUM USED DRIVING POWER.	METRIC HP	100.00
MAXIMUM USED BRAKING POWER.	METRIC HP	250.00
SURFACE TYPE-SPECIFIC DESIRED SPEED.	KM/HOUR	72.10
AERODYNAMIC DRAG COEFFICIENT.	DIMENSIONLESS	0.85
PROJECTED FRONTAL AREA.	M <sup>2</sup>	5.20
CALIBRATED ENGINE SPEED.	RPM	1800.00
ENERGY-EFFICIENCY FACTOR.	DIMENSIONLESS	1.00
FUEL ADJUSTMENT FACTOR.	DIMENSIONLESS	1.15
NUMBER OF TIRES PER VEHICLE.	#	6.00
WEARABLE VOLUME OF RUBBER PER TIRE.	DM <sup>3</sup>	7.60
RETREADING COST PER NEW TIRE COST.	FRACTION	0.15
MAXIMUM NUMBER OF RECAPS.	DIMENSIONLESS	2.39
CONST. TERM OF TIRE CONSUMPTION MODEL.	DM <sup>3</sup> /M	0.16
TIRE WEAR COEFFICIENT.	10E-3 DM <sup>3</sup> /J-M	12.78
AVERAGE ANNUAL UTILIZATION.	KM	35000.00
AVERAGE ANNUAL UTILIZATION.	HOURS	2000.00
HOURLY UTILIZATION RATIO.	FRACTION	0.85
AVERAGE SERVICE LIFE OF VEHICLE.	YEARS	7.00
USE CONSTANT SERVICE LIFE ?	0-No	0
AVERAGE LIFE KILOMETRAGE OF VEHICLE.	KM	350000.00
NEW VEHICLE PRICE.	\$	66727.00
FUEL COST.	\$/LITER	0.65
LUBRICANTS COST.	\$/LITER	0.29
NEW TIRE COST.	\$/TIRE	749.00
CREW TIME COST.	\$/HOUR	1.14
MAINTENANCE LABOR COST.	\$/HOUR	0.30
ANNUAL INTEREST RATE.	%	90.00

TABLE 3 INPUTS FOR SHABA FISH MERCHANT TRUCK

INPUT DATA

VEHICLE CLASS : MEDIUM TRUCK		
TARE WEIGHT.	KG	5400.00
LOAD CARRIED.	KG	7000.00
MAXIMUM USED DRIVING POWER.	METRIC HP	100.00
MAXIMUM USED BRAKING POWER.	METRIC HP	250.00
SURFACE TYPE-SPECIFIC DESIRED SPEED.	KM/HOUR	72.10
AERODYNAMIC DRAG COEFFICIENT.	DIMENSIONLESS	0.85
PROJECTED FRONTAL AREA.	M <sup>2</sup>	5.20
CALIBRATED ENGINE SPEED.	RPM	1800.00
ENERGY-EFFICIENCY FACTOR.	DIMENSIONLESS	1.00
FUEL ADJUSTMENT FACTOR.	DIMENSIONLESS	1.15
NUMBER OF TIRES PER VEHICLE.	#	6.00
WEARABLE VOLUME OF RUBBER PER TIRE.	DM <sup>3</sup>	7.60
RETRADING COST PER NEW TIRE COST.	FRACTION	0.15
MAXIMUM NUMBER OF RECAPS.	DIMENSIONLESS	2.39
CONST. TERM OF TIRE CONSUMPTION MODEL.	DM <sup>3</sup> /M	0.16
TIRE WEAR COEFFICIENT.	10E-3 DM <sup>3</sup> /J-M	12.78
AVERAGE ANNUAL UTILIZATION.	KM	60217.00
AVERAGE ANNUAL UTILIZATION.	HOURS	3360.00
HOURLY UTILIZATION RATIO.	FRACTION	0.85
AVERAGE SERVICE LIFE OF VEHICLE.	YEARS	1.00
USE CONSTANT SERVICE LIFE ?	0-NO	0
AVERAGE LIFE KILOMETRAGE OF VEHICLE.	KM	60217.00
NEW VEHICLE PRICE.	\$	66727.00
FUEL COST.	\$/LITER	0.65
LUBRICANTS COST.	\$/LITER	0.29
NEW TIRE COST.	\$/TIRE	749.00
CREW TIME COST.	\$/HOUR	1.14
MAINTENANCE LABOR COST.	\$/HOUR	0.30
ANNUAL INTEREST RATE.	%	90.00

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TABLE 4 RESULTS FOR ARTICULATED TRUCK ON REHABILITATED ROAD

- ROAD CHARACTERISTICS AND VEHICLE TYPE :

SURFAC TYPE	REHABILITATE	PAVE ROAD	
AVERAGE ROUGHNESS.	M/KM IRI		1.80
AVERAGE POSITIVE GRADIENT.	%		6.00
AVERAGE NEGATIVE GRADIENT.	%		6.00
PROPORTION OF UPHILL TRAVEL.	%		10.00
AVERAGE HORIZONTAL CURVATURE.	DEG/KM		20.00
AVERAGE SUPERELEVATION.	FRACTION		0.00
ALTITUDE OF TERRAIN.	M		500.00
EFFECTIVE NUMBER OF LANES.		MORE THAN ONE	

VEHICLE CLASS : ARTICULATED TRUCK

- PHYSICAL QUANTITIES PER 1000 VEHICLE-KM :

FUEL CONSUMPTION.	LITERS	341.64
LUBRICANTS CONSUMPTION.	LITERS	5.42
TIRE WEAR.	# OF EQUIVALENT NEW TIRES	0.86
CARGO HOLDING.	HOURS	18.41
MAINTENANCE LABOR.	HOURS	29.41
MAINTENANCE PARTS.	% OF NEW VEHICLE PRICE	0.25
DEPRECIATION.	% OF NEW VEHICLE PRICE	0.14
INTEREST.	% OF NEW VEHICLE PRICE	0.32

- VEHICLE SPEED : KM/HOUR 54.33

- VEHICLE OPERATING COSTS PER 1000 VEHICLE-KM :

FUEL.	\$	222.07	12.6%
LUBRICANTS.	\$	1.57	0.1%
TIRES.	\$	644.64	36.4%
CREW TIME.	\$	36.81	2.1%
MAINTENANCE LABOR.	\$	17.65	1.0%
MAINTENANCE PARTS.	\$	302.76	17.1%
DEPRECIATION.	\$	163.83	9.3%
INTEREST.	\$	379.84	21.5%
TOTAL	\$	1769.18	100.0%

TABLE 5 RESULTS FOR ARTICULATED TRUCK ON DETERIORATED ROAD

- ROAD CHARACTERISTICS AND VEHICLE TYPE :

	DETERIORATED PAVED ROAD	
SURFACE TYPE.		
AVERAGE ROUGHNESS.	M/KM IRI	10.00
AVERAGE POSITIVE GRADIENT.	%	6.00
AVERAGE NEGATIVE GRADIENT.	%	6.00
PROPORTION OF UPHILL TRAVEL.	%	10.00
AVERAGE HORIZONTAL CURVATURE.	DEG/KM	20.00
AVERAGE SUPERELEVATION.	FRACTION	0.00
ALTITUDE OF TERRAIN.	M	500.00
EFFECTIVE NUMBER OF LANES.		MORE THAN ONE

VEHICLE CLASS : ARTICULATED TRUCK

- PHYSICAL QUANTITIES PER 1000 VEHICLE-KM :

FUEL CONSUMPTION.	LITERS	364.63
LUBRICANTS CONSUMPTION.	LITERS	6.66
TIRE WEAR.	# OF EQUIVALENT NEW TIRES	0.96
CREW TIME.	HOURS	26.50
MAINTENANCE LABOR.	HOURS	44.51
MAINTENANCE PARTS.	% OF NEW VEHICLE PRICE	0.57
DEPRECIATION.	% OF NEW VEHICLE PRICE	0.17
INTEREST.	% OF NEW VEHICLE PRICE	0.43

- VEHICLE SPEED : KM/HOUR 37.73

- VEHICLE OPERATING COSTS PER 1000 VEHICLE-KM :

FUEL.	\$	237.01	9.8%
LUBRICANTS.	\$	1.93	0.1%
TIRES.	\$	720.90	29.8%
CREW TIME.	\$	53.00	2.2%
MAINTENANCE LABOR.	\$	26.70	1.1%
MAINTENANCE PARTS.	\$	672.47	27.8%
DEPRECIATION.	\$	199.37	8.2%
INTEREST.	\$	507.72	21.0%
TOTAL	\$	2419.11	100.0%

TABLE 6 RESULTS FOR BANDUNDU MERCHANT ON IMPROVED ROAD

- ROAD CHARACTERISTICS AND VEHICLE TYPE :

	IMPROVED	UNPAVED ROAD
SURFACE TYPE.		
AVERAGE ROUGHNESS.	M/KM IRI	1.80
AVERAGE POSITIVE GRADIENT.	%	5.00
AVERAGE NEGATIVE GRADIENT.	%	5.00
PROPORTION OF UPHILL TRAVEL.	%	20.00
AVERAGE HORIZONTAL CURVATURE.	DEG/KM	20.00
AVERAGE SUPERELEVATION.	FRACTION	0.00
ALTITUDE OF TERRAIN.	M	500.00
EFFECTIVE NUMBER OF LANES.		ONE

VEHICLE CLASS : MEDIUM TRUCK

- PHYSICAL QUANTITIES PER 1000 VEHICLE-KM :

FUEL CONSUMPTION.	LITERS	208.10
LUBRICANTS CONSUMPTION.	LITERS	3.34
TIRE WEAR.	# OF EQUIVALENT NEW TIRES	0.24
CREW TIME.	HOURS	21.73
MAINTENANCE LABOR.	HOURS	7.28
MAINTENANCE PARTS.	% OF NEW VEHICLE PRICE	0.12
DEPRECIATION.	% OF NEW VEHICLE PRICE	0.24
INTEREST.	% OF NEW VEHICLE PRICE	0.61

- VEHICLE SPEED : KM/HOUR 46.01

- VEHICLE OPERATING COSTS PER 1000 VEHICLE-KM :

FUEL.	\$	135.27	13.6%
LUBRICANTS.	\$	0.97	0.1%
TIRES.	\$	181.25	18.3%
CREW TIME.	\$	24.78	2.5%
MAINTENANCE LABOR.	\$	2.19	0.2%
MAINTENANCE PARTS.	\$	78.10	7.9%
DEPRECIATION.	\$	162.46	16.4%
INTEREST.	\$	406.03	41.0%
TOTAL	\$	991.04	100.0%

TABLE 7 RESULTS FOR BANDUNDU MERCHANT ON DETERIORATED ROAD

- ROAD CHARACTERISTICS AND VEHICLE TYPE :

	DETERIORATED UNPAVED ROAD	
SURFACE TYPE.		
AVERAGE ROUGHNESS.	M/KM IRI	10.00
AVERAGE POSITIVE GRADIENT.	%	5.00
AVERAGE NEGATIVE GRADIENT.	%	5.00
PROPORTION OF UPHILL TRAVEL.	%	20.00
AVERAGE HORIZONTAL CURVATURE.	DEG/KM	20.00
AVERAGE SUPERELEVATION.	FRACTION	0.00
ALTITUDE OF TERRAIN.	M	500.00
EFFECTIVE NUMBER OF LANES.		ONE

VEHICLE CLASS : MEDIUM TRUCK

- PHYSICAL QUANTITIES PER 1000 VEHICLE-KM :

FUEL CONSUMPTION.	LITERS	224.18
LUBRICANTS CONSUMPTION.	LITERS	4.58
TIRE WEAR.	# OF EQUIVALENT NEW TIRES	0.28
CREW TIME.	HOURS	25.11
MAINTENANCE LABOR.	HOURS	16.61
MAINTENANCE PARTS.	% OF NEW VEHICLE PRICE	0.57
DEPRECIATION.	% OF NEW VEHICLE PRICE	0.26
INTEREST.	% OF NEW VEHICLE PRICE	0.67

- VEHICLE SPEED : KM/HOUR 39.83

- VEHICLE OPERATING COSTS PER 1000 VEHICLE-KM :

FUEL.	\$	145.72	10.4%
LUBRICANTS.	\$	1.33	0.1%
TIRES.	\$	210.97	15.1%
CREW TIME.	\$	28.62	2.0%
MAINTENANCE LABOR.	\$	4.98	0.4%
MAINTENANCE PARTS.	\$	382.29	27.3%
DEPRECIATION.	\$	175.34	12.5%
INTEREST.	\$	449.10	32.1%
TOTAL	\$	1398.35	100.0%

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TABLE 8 RESULTS FOR SHABA FISH MERCHANT ON  
REHABILITATED ROAD

- ROAD CHARACTERISTICS AND VEHICLE TYPE :

	IMPROVED	UNPAVED ROAD	
SURFACE TYPE.			
AVERAGE ROUGHNESS.	M/KM IRI		1.80
AVERAGE POSITIVE GRADIENT.	%		5.00
AVERAGE NEGATIVE GRADIENT.	%		5.00
PROPORTION OF UPHILL TRAVEL.	%		20.00
AVERAGE HORIZONTAL CURVATURE.	DEG/KM		20.00
AVERAGE SUPERELEVATION.	FRACTION		0.00
ALTITUDE OF TERRAIN.	M		500.00
EFFECTIVE NUMBER OF LANES.			ONE

VEHICLE CLASS : MEDIUM TRUCK

- PHYSICAL QUANTITIES PER 1000 VEHICLE-KM :

FUEL CONSUMPTION.	LITERS	208.10
LUBRICANTS CONSUMPTION.	LITERS	3.34
TIRE WEAR.	# OF EQUIVALENT NEW TIRES	0.24
CREW TIME.	HOURS	21.73
MAINTENANCE LABOR.	HOURS	5.19
MAINTENANCE PARTS.	% OF NEW VEHICLE PRICE	0.06
DEPRECIATION.	% OF NEW VEHICLE PRICE	1.00
INTEREST.	% OF NEW VEHICLE PRICE	0.36

- VEHICLE SPEED : KM/HOUR 46.01

- VEHICLE OPERATING COSTS PER 1000 VEHICLE-KM :

FUEL.	\$	135.27	10.5%
LUBRICANTS.	\$	0.97	0.1%
TIRES.	\$	181.25	14.0%
CREW TIME.	\$	24.78	1.9%
MAINTENANCE LABOR.	\$	1.56	0.1%
MAINTENANCE PARTS.	\$	40.65	3.1%
DEPRECIATION.	\$	669.27	51.7%
INTEREST.	\$	239.88	18.5%
TOTAL	\$	1293.63	100.0%

TABLE 9 RESULTS FOR SHABA FISH MERCHANT ON  
DETERIORATED ROAD

- ROAD CHARACTERISTICS AND VEHICLE TYPE :

	DETERIORATED UNPAVED	
SURFACE TYPE.	M/KM IRI	10.00
AVERAGE ROUGHNESS.	%	5.00
AVERAGE POSITIVE GRADIENT.	%	5.00
AVERAGE NEGATIVE GRADIENT.	%	20.00
PROPORTION OF UPHILL TRAVEL.	DEG/KM	20.00
AVERAGE HORIZONTAL CURVATURE.	FRACTION	0.00
AVERAGE SUPERELEVATION.	M	500.00
ALTITUDE OF TERRAIN.		ONE
EFFECTIVE NUMBER OF LANES.		

VEHICLE CLASS : MEDIUM TRUCK

- PHYSICAL QUANTITIES PER 1000 VEHICLE-KM :

FUEL CONSUMPTION.	LITERS	224.18
LUBRICANTS CONSUMPTION.	LITERS	4.58
TIRE WEAR.	# OF EQUIVALENT NEW TIRES	0.28
CREW TIME.	HOURS	25.11
MAINTENANCE LABOR.	HOURS	11.83
MAINTENANCE PARTS.	% OF NEW VEHICLE PRICE	0.30
DEPRECIATION.	% OF NEW VEHICLE PRICE	1.08
INTEREST.	% OF NEW VEHICLE PRICE	0.40

- VEHICLE SPEED : KM/HOUR 39.83

- VEHICLE OPERATING COSTS PER 1000 VEHICLE-KM :

FUEL.	\$	145.72	9.2%
LUBRICANTS.	\$	1.33	0.1%
TIRES.	\$	210.97	13.4%
CREW TIME.	\$	28.62	1.8%
MAINTENANCE LABOR.	\$	3.55	0.2%
MAINTENANCE PARTS.	\$	198.98	12.6%
DEPRECIATION.	\$	722.51	45.8%
INTEREST.	\$	265.52	16.8%
TOTAL	\$	1577.21	100.0%

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APPENDIX A  
LIST OF ORGANIZATIONS CONTACTED

LOCALITY	NAME	TYPE	
Lubumbashi	GMS-INTER	Transport, Merchant	
	Mutila	Fish Merchant	
	Mutombo	Fish Merchant	
	Frigomero	Fish Merchant	
	Kashiba wa Kashiba	Fish Merchant	
	Nicaza	Trucking	
	Katebe Kinsala	Fish Merchant	
	Merzario	Trucking	
	Agetraf	Freight Forwarder	
	Syntextin	Textile Factory	
	Tabazaire	Cigarette Factory	
	Simba Beer	Brewery	
	Fina Zaire	Petroleum Products	
	Division Reg. de Transport	Government	
M. Forrest	Construction		
Likasi	Swanspoel	Construction	
	ANEZA	Ch. Commerce	
Bandunduville	SOBRABAND	Brewery	
	KANUS	Merchant	
	Chambre Froide Moule	Cold Storage	
	Service Reg. de Recouvrement	Tax Collection	
	Division Reg. de Transport	Government	
	C.A.L.	Agr. Extension	
	Ferme Ngiamia	Merchant	
	Ets. Fernandes	Merchant, Transporter	
	DPP	Cooperative	
	COMBILIM	Food Processing	
Lusekele	Ets. Bitshi	Merchant	
	PADR	Merchant	
	Ets. Musandji	Merchant	
	Ets. Mukimi	Merchant	
	Kikongo-Tango	Interwood	Merchant, transporter
		Nogeira	Merchant
	Bulungu	Societe Bale-Card	Merchant
		JOPAL	Merchant
	Idiofa	MBOLIKA	Merchant
		PLZ	Palm Oil
Lusanga	Ets. SAMPEDRO	Merchant	
	SGPI	Palm Oil	
Masi-Manimba	Orion-Zaire	Trucking	
	Transport Routier du Zaire	Trucking	
	Transtshikem	Trucking	
	Transmac	Trucking	
	Trans-Zaire	Trucking	
	CADIC	Engineering	
	SAFRICAS	Construction	
	M.K.	Trucking	
	Kinshasa	M. D. ZAIRE	Construction

APPENDIX B  
INTERVIEW FORMS

FIRME DE CAMIONAGE

RAISON SOCIALE \_\_\_\_\_ LOCALITE \_\_\_\_\_

N. DE CAMIONS \_\_\_\_\_ REMORQUES \_\_\_\_\_

MARQUES 2 ESSIEUS \_\_\_\_\_ 4+ESSIEUS \_\_\_\_\_

AGE MOYENNE \_\_\_\_\_ ANS KM/AN \_\_\_\_\_ POIDS/CHARGE \_\_\_\_\_

DISPONABILITE D' EQUIPMENT \_\_\_\_\_ FINANCEMENT \_\_\_\_\_

KM/PNEUMATIQUE \_\_\_\_\_

PROPRIETAIRE DE GARAGE \_\_\_\_\_ ENTREPOT \_\_\_\_\_

SALAIRE DE CHAUFFEUR/MOIS \_\_\_\_\_ MECANICIEN \_\_\_\_\_

PRODUIT	DESTINATION	TONS.AN	TAUX	TEMPS DE VOYAGE
---------	-------------	---------	------	-----------------

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

CHARGE DE RETOUR \_\_\_\_\_

CONCURRENCE \_\_\_\_\_

CONTRAT \_\_\_\_\_

COUTES POUR VOYAGE \_\_\_\_\_

AUTRES COUTS, IMPOTS \_\_\_\_\_

ASSURANCE \_\_\_\_\_

AUTRES PROBLEMS, DELAIS, ROUTE \_\_\_\_\_

EFFET DES AUGMENTATIONS DE CARBURANT \_\_\_\_\_

EXPEDITEUR/ INDUSTRIE

RAISON SOCIALE \_\_\_\_\_ LOCALITE \_\_\_\_\_

PRODUITS \_\_\_\_\_

COMMENT ENVOYE \_\_\_\_\_

MODE DE TRANSPORT \_\_\_\_\_

PRODUCTION 1989 \_\_\_\_\_

CAPACITE INSTALLE \_\_\_\_\_

DESTINATION                    MODE                    COUT/TON    TEMPS DE VOYAGE    DISTANCE

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

MATIERES PREMIERES    ORIGIN            MODE            COUT/TON    DISTANCE

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CAMIONS:

CONTRAT OU PROPRES \_\_\_\_\_

CONCURRENCE \_\_\_\_\_

PROBLEMS \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**ANNEX 5**

**ROAD MAINTENANCE  
AN ANALYSIS OF REGIONAL MANAGEMENT AND FINANCING**

USAID/Zaire  
May 1990

**ROAD MAINTENANCE:  
AN ANALYSIS OF REGIONAL MANAGEMENT AND FINANCING**

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**ROAD MAINTENANCE:  
AN ANALYSIS OF REGIONAL MANAGEMENT AND FINANCING**

**I. INTRODUCTION**

**A. Background to the Study**

USAID and other donors providing assistance to the roads subsector in Zaire have become increasingly concerned over the sustainability of the nation's road network. Irregular and inadequate maintenance of the entire road system has been a persistent problem since independence. More recently, a dramatic decline in the quality of road services has prompted new initiatives in financial and institutional policy reforms by the Government of Zaire (GOZ), assisted by the donor community, principally USAID and the World Bank.

Overly-centralized institutions responsible for the finance and management of Zaire's vast road network have been a major part of the problem. Recent efforts to organize a more decentralized system for the management of the country's agricultural feeder roads show an increasing awareness of this issue. Recognizing the vital importance of more decentralized modes for road subsector management and finance, USAID/Zaire requested assistance from the Decentralization: Finance and Management Project (DFM), an A.I.D./Washington (S&T/RD) sponsored activity designed to address institutional and public finance issues regarding rural infrastructure maintenance. In July and August of 1989 a three person DFM team visited Zaire and prepared a report analyzing the institutional factors in the provision and production of decentralized road maintenance services, including an assessment of the fiscal systems in the regions of Shaba and Bandundu. The report also included a number of recommendations for the regionalization of road maintenance finance and management, focusing on the improvement of regional planning, programming, and budgeting; and regional revenue mobilization and financial management.

Since then USAID has undertaken the design of a major Transport Reform Program (TRP). A Program Assistance Initial Proposal (PAIP) was prepared by Mission personnel in Kinshasa and submitted for A.I.D./Washington review in November 1989. The proposal called for the generation of local currency counterpart funds (CPF) through USAID-funded fuel imports. The commodity import program would provide leverage for policy reforms to improve collection performance of fuel tax revenues, a portion of which are used to finance road maintenance and rehabilitation. The supply of needed foreign exchange for the importation of

petroleum products and relief to balance of payments deficits would also provide incentives to the Government of Zaire (GOZ) to institute these reforms. The CPF generated through the sale of U.S.-subsidized fuel would be used to fund targeted road maintenance and rehabilitation works, as well as technical assistance, training, and commodities to assist in institutional reforms within the roads bureaucracy at regional and local government levels and in private sector development initiatives.

The PAAD design strategy involves a series of specific sectoral analyses and studies on the fuel subsector, the transport sector, and the roads subsector. The present study on regional road management and finance is included among the pre-PAAD analyses. This report was prepared over a five week period from February 22 through March 30, 1990 by a three person team provided through DFM, including two members of the original team who prepared the decentralized finance and management study of August 1989.

## **B. Objectives**

The primary objectives of this DFM assignment were to:

- analyze the capabilities of regional Zairian organizations to collect and manage revenues dedicated to road maintenance (RDMT) activities;
- propose organizational and institution options for financing and managing resources for RDMT on a decentralized basis;
- develop programmatic recommendations for USAID technical and financial assistance to regional level institutions in the areas of programming, budgeting, contracting, and inspection of road works as well as in local resource mobilization and administration as a basis for future development of more effective and sustainable decentralized modes of road maintenance.

## **C. Approach and Methodology**

At the central level, the DFM team reviewed existing documentation related to the transport sector, with special emphasis on road maintenance, and conducted interviews with officials in the primary GOZ organizations involved in the road subsector. At the national level the team focused on (1) the organization of national programs for RDMT, including the ongoing

discussions on restructuring of Office de Routes (ODR); (2) resource levels and disbursement modalities for RDMT activities by SNRDA and ODR; and (3) financial management mechanisms for the transfer and control of funding for RDMT activities implemented at the regional level by ODR and SNRDA. The DFM team also reviewed the status of fiscal policy reform and decentralization initiatives underway at the national level.

The DFM team made separate trips to Lubumbashi from March 2-9 and to Bandundu Ville from March 12-15. At the regional level, the following six points were explored through interviews with regional political and administrative authorities, senior staff of road subsector organizations, and representatives of legislative bodies.

- 1) status of regional RDMT programming, budgeting and financial management;
- 2) resource availability and regional priorities for RDMT;
- 3) financial management capabilities of regional institutions;
- 4) options for organizing financing for RDMT using regional funds, Executive Council resources, ODR and SNRDA budgets, and donor funds;
- 5) institutional framework for regionalized RDMT program;
- 6) technical assistance and training needs.

## II. NATIONAL INITIATIVES IN THE ROAD SUBSECTOR

### A. Overview

Although the deterioration of Zaire's road infrastructure has been a continual and progressive process, there has been excessively rapid degradation of the principal arteries over the past three years which has entailed punishingly high costs to the nation's economy. External (and to a certain extent internal) financing of road works in Zaire has continued throughout the crisis period which began in 1987. These resources have permitted the survival of the road organizations but have been insufficient to produce adequate levels of maintenance. The causes of this crisis have been analyzed through the concerted efforts of the donor community and determined to be principally financial and institutional. Orientations for the major reforms needed to address the financial and institutional problems have

been identified but have yet to be instituted to any significant extent.

The gravity and complexity of the situation warrants careful study. Truncated analyses and quick-fix solutions will not resolve the problems. There is agreement on a certain number of measures, some of which are planned to be carried out in the near term. The priority measures are principally financial and concern the allocation of Zairian fiscal resources, mainly from the fuel tax, to the public organizations responsible for the road subsector: Office des Routes (ODR) and the Service National de Routes de Desserte Agricole (SNRDA).

Since August of last year, improvements have been observed in the collection of the fuel tax<sup>1</sup> as well as the transfers of a portion of these revenues to ODR and SNRDA. The World Bank has determined that, as a minimum, the GOZ must allocate 7.8 billion zaires from the national investment budget and 18.9 billion zaires from fuel tax revenues to ODR during fiscal year 1990 in order to allow the organization to regain an acceptable financial position. Without this minimum level of internal financing, the Bank believes that additional reforms under consideration for ODR will be ineffective. Fuel tax receipts of 1.6 billion zaires for the first part of 1990 have been recorded, but continued progress will depend on a regular supply of petroleum products and regular payment by the government for its fuel consumption.

#### **B. ODR National Institutional Reform Efforts**

The Technical Audit of ODR financed by the World Bank and USAID (March 1989) laid much of the groundwork for the institutional reforms presently under discussion. A recently completed three month study (BCEOM, February 1990) has resulted in a "Transitional Program" for the period 1990 to 1992. This program focuses on the reorganization of ODR and the rehabilitation and maintenance of major sections of the national priority road network. The major components of the proposed institutional reform include:

- a substantial reduction in personnel;
- the gradual elimination of force account work and a corresponding increase in private sector contracting;

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<sup>1</sup> The details of the numerous problems concerning the fuel tax will not be discussed here. Annex 2 of the PAAD is dedicated to an analysis of the fuel sector and the implications for the fuel tax.

- the transformation of the equipment management division (SGMTP) into a private operation for the purpose of leasing heavy equipment to private sector contractors;
- the transformation of the national public works laboratory (LNTP) into an independent entity providing services to the public and private sectors on a paying basis;
- the design and implementation of new management systems for programming, budgeting, accounting, contracting, etc;
- the preparation of a roads master plan which will provide the basis for future road works as of 1993.

It is unclear at this point how the different elements of this comprehensive blueprint for the reorganization of ODR will evolve and which will be retained, rejected, and/or modified. Most of its components will require detailed studies to define the operational modalities of the various transformations proposed. These studies will take considerable time to complete and therefore the three year time frame of the program would appear unreasonable.<sup>2</sup>

The investments in road works during the period 1990-1992 proposed under the transitional program are based on a number of strategic and economic criteria. The application of these criteria to the various roads comprising the 58,385 km under the official ODR mandate provided the basis for the identification of a core network consisting of about 11,000 km of primary and 8,000 km of secondary roads, as well as the economic rationale for prioritizing both the individual roads and the type of maintenance, rehabilitation, or repair yielding the highest economic return. Selection was then made on the basis of the potential availability of financial resources using two alternative scenarios.

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<sup>2</sup> A more thorough discussion of ODR and its program of reform measures can be found in Annex 3.

### C. SNRDA Feeder Roads Program

SNRDA provides services for the rehabilitation and maintenance of the nation's 87,000 km feeder road network.<sup>3</sup> Of this total network, approximately 31,500 km have been inventoried with some information available on state of structures and ferries, although little is known about drainage and surface conditions of these roads.

The principal shortcomings of SNRDA activities to date can be summarized as follows:

- insufficiency and irregularity of funding;
- problems of contractor selection;
- inadequate contractor inspection and control.

The last item relates to technical services provided by ODR on which the SNRDA program heavily relies. This problem remains unresolved.

Much progress has been made under the SNRDA program since its inception in 1987, especially in the area of contracting authority. For the most part, the selection process for road sections and potential contractors has been delegated to regional and local authorities with a leading role for popular participation. These are positive signs in the development of decentralized capacity for the provision of road maintenance services, which can serve as the basis for further progress in this area.

Donor support to SNRDA feeder road maintenance and improvement is underway with UNDP technical assistance and a planned pilot project under World Bank funding. The proposed Pilot Project for Agricultural Feeder Roads is a four year project (1991-1994) focusing on two areas of important cotton production and another area in which an integrated rural development center (sponsored by the non-governmental organization, CDI Bwamanda) has shown considerable progress in its production activities. The project will focus on a mix of manual maintenance and more intensive rehabilitation works including the use of light and heavy machinery carried out by local contractors.

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<sup>3</sup> - Annex 3, provides a complete description of SNRDA history, accomplishments and problems to date.

The project proposes to finance the maintenance of 7,365 km of roads, the repair and rehabilitation of an additional 2,060 km, the rehabilitation and reconstruction of 267 bridges, and maintenance of 299 bridges over the four year period, for a total dollar cost of \$20.8 million. UNDP will provide training and technical assistance to experiment with appropriate technologies, develop technical standards for low traffic feeder roads, and measure socio-economic and environmental impacts of project interventions. The development of more realistic price structures for the maintenance and repair of these local roads and increased competition among contractors are also objectives of the project.

Although a number of interesting approaches and interventions through existing agribusinesses and non-governmental organizations (NGOs), such as CDI Bwamanda, are planned under the project, there appears to be no assessment of why roads have deteriorated in these important cash crop production areas and, consequently, what provisions should be made for the sustained maintenance of the rehabilitated roads. In addition, local government participation in project activities receives little attention. The design proposes that maintenance contracts include provision for the enforcement of road use regulations, without considering the legalities of such an arrangement. Although the regulation of road use may offer substantial benefits in terms of road surface sustainability, empowering private contractors to enforce these rules may give rise to serious complications. Devising and instituting cost-effective means of regulating road use will require the active participation of the road organizations, local government officials, road users, and populations in the concerned areas.

The pilot project proposes contracting procedures for major contractors which are more centralized than those presently practiced by the GOZ. It is suggested that technical specifications for tender documents and contract specifications be prepared by SNRDA with ODR assistance at the regional or local level as the basis for contracts which would be prepared and negotiated at the national level in Kinshasa and then signed by the regional governor acting in the place of the SNRDA national director. Furthermore, payments to major contractors would be made by the governors only after authorization following verification of inspection reports at the national level. Although contracting authority for small and medium size contractors would reside at the regional level, the method of payment (authorization from Kinshasa required) would be the same as for larger contracts. It is unclear why the decentralized modes of contract and financial management instituted since August of 1989 will not be practiced under this project.

#### D. The Maintenance Gap

There has been a great deal of discussion concerning road classification and the assignment of management responsibility for various classes of roads to the different public organizations and levels of government. The entire road network of the country is estimated at 145,000 km. As stated above, the official classification establishes ODR's responsibility for approximately 58,000 km of national, regional priority, and regional secondary roads. There is general consensus concerning the urgent need for ODR to focus on a reduced network of approximately 19,000 km of the most economically beneficial roads (at least for immediate attention under the transitional program). This argument is based on economic criteria (11,000 km of national roads carry 78 percent of total traffic and 8,000 km of regional roads carry 18 percent) and it is a sound judgment from a management and financial perspective -- concentrate scarce financial resources to perform good quality work on a manageable network, rather than diffuse efforts on a larger network.

The restriction of the ODR mandate makes good sense; it should become a permanent state of affairs for the national headquarters of this organization, even in the event of a significant improvement in ODR's management ability. At the other end of the spectrum of the Zairian road network are 87,000 km of lower standard, low traffic agricultural feeder roads. The responsibility for management of these roads has been given to SNRDA since its creation in 1987. If the ODR program over the next three to five years is to concentrate principally on the 19,000 km (or some approximate number) of national priority roads, there remains an intermediary network of some 40,000 km which may be neglected during this period. Although less important in terms of economic benefits when compared with national priority roads, this rather hefty chunk of the road network falls into what can be called the "maintenance gap."

The purpose of identifying the maintenance gap is not to suggest that the ODR transitional program be expanded beyond the most economically important roads nor to encourage an increase of the mandate of SNRDA. It is useful, however, in determining the future of ODR institutional reform and in highlighting the importance of broader institutional reforms concerning the role of the territorial administration and local citizens in the management and finance of an important part of the country's road system. This secondary road network is of great significance for the development of local economies and is an integral part of the total transportation infrastructure which should be maintained.

## E. Emphasis on Regional and Local Institutions

The DFM report of September 1989 analyzed the existing institutional framework for road subsector finance and management and concluded that regional and local institutions other than ODR and SNRDA were playing an increasingly important role in the provision of road maintenance and rehabilitation services. Because of the weakness of regional and local fiscal capacity, the report also concluded that reliance on national and external financial resources would be required for some time to come. A general orientation was proposed for granting more regional autonomy in planning, programming, and budgeting, as well as oversight and control of road subsector activities. This orientation may provide the beginnings of a solution to the maintenance gap. The specific proposal for a pilot intervention at the regional level contained in this study suggests the devolution of authority to regional institutions for the management of the regional road network.

The World Bank provides the largest amount of funding to the road subsector in Zaire and plays an important role in influencing national policy decisions. Recent documents prepared by World Bank officers including the Aide-Memoire of March 8, 1990 demonstrate increasing concern for and support of decentralization as an essential component of institutional reform. As a precondition to the design of a major transport sector project to follow the existing Sixth Highway Project, the Bank has called for the preparation of a preliminary program for increasing responsibilities of regional institutions in the finance and management of the regional interest network.

The "Limited Highway Subsector Review" (February 1990), also prepared under World Bank auspices, calls for the active pursuit of decentralization in highway management and recommends guaranteeing each region a minimum annual budget for road maintenance, leaving it entirely free to decide how this money will be spent, and to supervise performance on the basis of results. The following quotation shows the general strategy for decentralization proposed in this document.

"What is required is a detailed organizational blueprint to be realized over say a ten year time horizon indicating how decision taking, implementation, and reporting responsibilities concerning the different aspects of highway management and financing will be shared between the Central Government, regional, subregional and zonal authorities, and a statement of what part of this blueprint will be realized over the project cycle of STSRP [Second Transport Sector Rehabilitation Project]....."

It is highly desirable to pursue institutional reforms designed to encourage local initiative, make better use of local time and place information for planning and decision making, promote transparency and internal control mechanisms, and increase local resource mobilization.

The diversity of conditions found in Zaire argues for flexibility in the development of institutional solutions. The design of institutional reforms at the center should seek to create conditions under which local problems will be resolved through local solutions. Efforts to decentralize management and finance of road maintenance and rehabilitation will be strengthened by a clear recognition that the roads bureaus are not the only game in town and that engineers and transport planners do not have a monopoly on expertise.

#### **F. Decentralization and Fiscal Reform**

The Executive Council of the Government of Zaire has embarked on a thorough review of key issues in the areas of decentralization and fiscal reform. The Commission on Decentralization is in the process of formulating specific proposals to reinforce and revise the process of decentralization initiated in 1982. Among the issues under consideration are the transfer of central service functions to decentralized entities, the reduction in the levels of decentralized entities through converting the rural zone and the city or urban zone into deconcentrated units, the establishment of a School for the Training of Territorial Agents, and the creation of a solidarity fund (fond de péréquation) to finance local development initiatives. The government appears to favor a cautious approach whereby implementation will be conducted on an experimental basis, taking into account the varying levels of economic and institutional capability of regions and collectivities.

Awareness is high among government officials that decentralization must be accompanied by the transfer of financial capacity in order to be self-supporting. A Commission on Fiscal Reform was created and is currently developing a strategy for reforming national and local fiscal policies. Given the gravity of the central government's current fiscal situation, there is concern that measures taken to strengthen regional and local fiscal capacity do not impose a destabilizing burden (loss of revenue) on the central budget. Nevertheless, there is general agreement that the existing fiscal system actively discourages economic activity and conformity with tax codes by private enterprises. The multiplicity of taxes on the same activity or tax base, assessed and collected by various territorial entities

and public services, has been identified as one of the key targets of fiscal reform.

Discussions with the State Secretary of Decentralization and his advisors, and with the legal counselor of the Vice Prime Minister for Administrative and Political Affairs, revealed an interest in collaborating with USAID in the development and implementation of decentralization initiatives. Topics included assistance in decentralization policy, local fiscal systems, and institutional reform, and it was suggested that technical assistance in these areas could be attached directly to the office of the State Secretary for Decentralization.

### **III. THE STATUS OF ROAD MAINTENANCE AND REHABILITATION: A REGIONAL PERSPECTIVE**

The status of road subsector finance and management was discussed at length with national and regional staff of ODR and SNRDA, as well as with the Governors of the two regions visited, the Presidents of the Regional Assemblies, and the heads of the regional divisions of key central ministries, during field visits to Shaba and Bandundu in March 1990. The following observations and conclusions were noted by the DFM team in the areas of general funding; planning, programming, and budgeting; financial management; contracting; inspection and supervision; and popular involvement in road maintenance and rehabilitation.

#### **A. Finances**

The single most important factor explaining the low production level of road maintenance services on the part of both ODR force account work and private sector contractors is the lack of regular and adequate financing. The funding crisis of the past two and a half years has left ODR operating well below capacity and the road infrastructure has been allowed to deteriorate. SNRDA has also suffered from irregular funding and from organizational problems not uncharacteristic of a new organization.

Although transport infrastructure and roads are acknowledged to be top priorities for the regions visited, the amount of funding made available from the regional budget is limited, primarily due to the weakness of the fiscal system. Nevertheless, the region of Shaba has made a substantial effort to allocate resources for road maintenance (Table 5-1).

TABLE 5-1: Funding for Roads in Shaba  
(in millions of zaires)

Source	SNRDA				OFFICE DES ROUTES			
	1989		1990		1989		1990	
	Appr'd	Rec'd	Appr'd	Rec'd	Appr'd	Rec'd	Appr'd	Rec'd
Fuel Tax Revenues	239	117	388	na	1500 <sub>a</sub>	670	463 <sub>b</sub>	na
GOZ Investment Budget	0	0	0	na	0	45	0	na
Regional Budget <sub>c</sub>	0	0	0	0	50	40	200	na

Notes:

- a Not including SGMTP rental
- b Quarterly budget, Contrat Programme Fevrier - Avril 1990
- c Primarily for "travaux spéciaux," particularly bridges

Source: ODR and SNRDA documents. "Reddition des Comptes des Entités Décentralisées Region du Shaba Année 1989;" and "Approbation du Budget de la Region du Shaba pour l'exercice 1990."

The Shaba regional government's contribution in 1989 represented over 30 percent of the amount that SNRDA spent in the region. The amount budgeted in 1990 is approximately four times the amount budgeted by the region for the preceding year and represents over 50 percent of the approved budget for SNRDA in Shaba.

No regional funds are budgeted or expended routinely for road maintenance (RDMT) in Bandundu, due to the relative fiscal poverty -- and poor fiscal performance -- of the region.<sup>4</sup> However, improvements in fiscal effort have been registered since 1986, and 1990 promises to provide a new record in tax recovery (Table 5-2).

<sup>4</sup> For a detailed analysis of the fiscal situation in both regions, see Chapter V of the DFM report Decentralized Finance and Management of Road Maintenance in Zaire, August 1989.

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The new Governor of Bandundu, a trained finance specialist, is taking serious measures to improve fiscal performance. A delegation was sent to Kinshasa to meet with the major manufacturers and wholesalers of manufactured goods to enlist their support in improving the declaration of the destination of goods and payment of the tax at the time of purchase. Receipts are to be deposited directly into the region's account in Kinshasa. Agreement is also said to have been reached with the Department of Contributions, which is responsible for the collection of national taxes, whereby the portion of taxes to be returned to the region also will be deposited directly into the region's account, without passing through the National Treasury in Kinshasa.

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Table 5-2: Approved and Collected Revenues  
Bandundu Region (1987 to 1990)  
(in zaires)

<u>Year</u>	<u>Approved</u>	<u>Collected</u>
1987	152,278,759	23,061,851
1988	271,213,612	20,582,792
1989 <sup>1</sup>	160,472,857	84,521,685

<sup>1</sup> 1989 data were not available by specific tax, only by budget item; therefore, we were not able to determine the revenues collected solely from the transport tax.

---

Finally, the establishment of a collection office (agence de recouvrement) for the tax on the transport of agricultural products in the vicinity of Kenge is being considered. A previous effort at the Kwango bridge was halted by the Executive Council due to the high level of reported abuses and the harassment and delay of truckers. The opening of the collection office is being pushed by the Regional Assembly and serious consideration has been given to avoiding the problems experienced at the Kwango. There is also some discussion of opening a smaller collection point at Kabuba. Interest in capturing part of the tax benefits from river transport continues to be voiced, and the possibility of establishing collection points at Kwamouth and at Mangaye is under investigation.

Some confusion, or at least inconsistency, exists in regard to the 1990 rate for the tax on the transport of agricultural

products. According to the President of the Regional Assembly, the 1990 rate will increase from 30 zaires per 50 kg sack to 100 zaires. The region's financial staff, however, affirmed that the 1990 rate was to be raised to 50 zaires per sack. Again according to the President of the Regional Assembly, proceeds from this tax, especially with the creation of the Kenge office, would go to both the region and the collectivities, with the region retaining 50 percent and the rest being divided among the collectivities.

In both Shaba and Bandundu, the Governors identified national fiscal reform as being the first priority for improving the revenue capacity of the regions and of other decentralized entities. Specifically, importance was placed on the transfer of national tax bases to the regions. The outcome of the national Commission on Fiscal Reform, organized by the Department of Finance, is looked to for providing major new directions. In the meantime, both regions are taking initiatives to improve regional revenue administration and mobilization. Interest in training financial personnel in tax recovery, financial management, and administration was also expressed.

#### B. Planning, Programming, and Budgeting

Planning capacity in general among both technical and administrative organizations at the regional level is quite limited. The establishment of regional planning divisions of the Department of Plan has improved this situation somewhat, although the reliability and availability of data remains a major constraint. In the road subsector, no attempt has been made to date to develop a long term planning document. This is not a failure of the regional institutions involved, but reflects the centralized nature of responsibility for the road subsector in Zaire.

The lack of a road subsector plan limits the ability of regional institutions to develop clear medium and long term priorities for the rehabilitation, maintenance, and upgrading of the road network. The potential benefits of a planning instrument for programming and budgeting are seriously diminished, however, as long as financing for the sector remains inadequate and unstable. A basic plan could be developed using the technical capabilities of the regional planning staff of ODR, the SNRDA staff, and input on production and traffic levels from agricultural and rural development field offices and local communities. Information resulting from a national road subsector data collection program could also be used. Given the level of resources available, such a plan (though perhaps

unsophisticated) would provide important information for decision making at an affordable cost.

Programming and budgeting by the regional road organizations, ODR and SNRDA, have improved due to recent changes in programming methodology and increased attention to cost control and budgetary analysis. The traditional procedure followed by ODR in the development of its annual program was based primarily on the production capacity (manpower and equipment) of its Brigades and Production Units (UP). Each Production Unit developed a program according to the capacity of its constituent Brigades and according to its assessment of the maintenance and rehabilitation priorities of the road network within its area of coverage. All Production Unit programs were then reviewed and incorporated into the regional ODR program. At this point, budget information would be developed and included in the annual Prévisions Budgetaires report submitted for review and approval to the national office (Direction Générale, DG). At the national level, the regional ODR director (DR) would defend his program, the DG would fix the level of financing, and the DR would revise the program in line with the kilometers allowed and the financial package provided by the DG. The result was the Modified Budget, which would then be communicated to each UP for execution.

This basic procedure has been altered to include more participation in the establishment of local priorities by committees established at the level of the zone (Brigade), the subregion (UP), and the region. The Brigade presents its proposals to the zonal authorities for consultation, and in some areas, a Subregional Road Commission reviews the program presented by the UP. A written record (procès verbal) of the minutes from this meeting is sent to the regional administrative authority by the Subregional Commissioner who presides over the Road Commission. Additions or changes may be made without reference to cost, since the program at this point does not contain budgetary (cost) data. Prospective contractors for ODR road maintenance contracts are also discussed at the level of the zone and subregion.

The regional ODR program, again without budgetary information, is presented to the Regional Road Commission (RRC), headed by the Governor of the region or, in the Governor's absence, the Vice Governor. The members of the Commission review the program and may discuss the merits of specific contract applicants. Although the RRC may recommend revisions to the regional ODR program, and the approval of the program by the RRC is officially recorded in the form of a procès verbal, the regional program must still be submitted to the DG for review and final approval. According to the Bandundu DR, the DG's role is

primarily financial and rarely involves directly altering the contents of the program.

The extent to which this revised procedure is followed in practice appears to vary substantially. Local authorities in Bandundu appeared to play a much more important role in reviewing and influencing the ODR program during its development than local authorities in Shaba. In Bandundu, the Subregional Road Commissions were requested to identify candidates to replace contractors who had been suspended or were no longer interested. In Shaba, the DFM team was told by a senior ODR staff member that the ODR regional program had not been presented to the RRC since 1988.

The procedures followed by SNRDA in the determination of road sections to be included in annual work programs and in the selection of contractors underwent fundamental transformation from a highly centralized to a decentralized system in June 1989. The system in use today is said to place primary authority for the determination of road sections to be rehabilitated and maintained, the type of intervention (special works or manual maintenance), and the contractor to be selected at the level of the collectivity. Local decisions are communicated upward in the system; some coordination takes place at the level of the zone and the region. The regional SNRDA program is presented by the Regional Coordinator to the members of the RRC for review and approval. The proposals for contract awards are approved at this level and the contracts are signed by the Governor of the region and the Regional Coordinator of SNRDA. Contractors are paid upon authorization of the Governor and the Coordinator, following receipt of a positive evaluation by the Zone Engineer, which is co-signed by the Zone Commissioner. The regional SNRDA program is sent to the national SNRDA office for information.

This procedure was observed to exist, with some variations, in the two regions visited. Local communities do tend to play a central role in the selection of road sections, but final determination of regional priorities is based on the financial package set by Kinshasa for the regional program. Only slightly more than 20,000 km were selected for 1989 from the estimated 90,000 km of feeder roads in the country. Less than half of the total network programmed for maintenance and rehabilitation was reported maintained as of January 1990.<sup>5</sup> In Bandundu, roughly 9,500 km of feeder roads have been inventoried and it is estimated that an additional 10,000 km of feeder roads have yet

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<sup>5</sup> SNRDA, "Evaluation de l'exécution physique et financière des activités des services émergeant au budget de dépenses in capital du Département du Développement Rural", janvier 1990. p.2.

to be inventoried. Of this network, less than 2,400 km were maintained in 1989. The selection of road sections involved some degree of decision making above the collectivity level. Despite the decentralized reputation of the SNRDA system, the Shaba regional SNRDA staff said it had been informed of contract payments, unknown to local authorities, which were made in Kinshasa and amounted to approximately 20 percent of the total regional program.

Informal coordination takes place between ODR and SNRDA in the development of their regional programs. Local Commissions are instructed to grant priority in the determination of road sections to feeder roads which connect with roads that are to be maintained by ODR. There is no formal institutional mechanism, however, to develop regional priorities for road maintenance and rehabilitation, to integrate ODR, SNRDA, regional, private sector, and other (donor) road maintenance and rehabilitation interventions, or to monitor execution of programmed activities.

The Regional Road Commission (RRC), as noted above, plays an increasingly important role in reviewing ODR and approving SNRDA regional programs. The full value of the RRC as a coordinating and deliberative body is not realized due to a number of shortcomings. The RRC treats each program individually and does not receive access to a program prior to the day of its presentation. The Commission lacks the technical capacity to question and verify budgetary information. It also lacks the ability to compare the programs presented to a regional plan with clear criteria for establishing priorities and for determining the level of necessary and appropriate intervention for specific roads or water crossings.

The Regional Road Commission is presided over by the Governor of the region (the task is often delegated to the Vice Governor) and includes representatives of the following regional divisions of central departments and organizations:

- Plan
- Territorial Administration and Decentralization
- National Economy and Industry
- Agriculture
- Public Works
- Transport and Communication
- ANEZA (private sector businesses)
- Development projects
- Religious organizations
- Office des Routes
- SNRDA

ODR acts as Secretary when its program is being reviewed; SNRDA performs the same function during discussion of its

program. Some changes have been noted in the composition of the membership the RRC. Another department has been added with the assignment of regional inspectors for the Department of Rural Development. It did not appear that representatives of religious organizations were invited routinely to attend RRC meetings in either Bandundu or Shaba.

### C. Financial Management

The regional directorates of SNRDA and ODR have adequate procedures in place for tracking funds transfers and for authorizing expenditures; however, these procedures and others used in accounting and financial reporting have not been "formalized" adequately in writing.

The use of the budget as a financial management device is greatly undervalued by regional institutions. The method of programming and budgeting traditionally used by ODR, SNRDA, and the regional administration generally results in substantial differences between provisional and approved budgets. The irregularity of and fluctuations in transfers from the national to the regional offices of the road organizations result in additional and often substantial discrepancies between the approved budget and the amount of funds actually received. The accounting and reporting practices of ODR, in particular, are not integrated into the budgeting process in a manner that permits clear correspondence and reconciliation between budget items and expenditures.

The approved 1989 SNRDA budget for road maintenance and rehabilitation in the Shaba region was approximately 240 million zaires. For 1990 it is about 380 million, despite the fact that only 50 percent of the 1989 budget was made available. Given national budgetary constraints and the delays in receipts to OFIDA (the central customs authority), it seems unlikely that the regional SNRDA program will receive its full amount of approved funding for 1990.

SNRDA operates essentially as a contracting agency and therefore has very different financial management needs than does ODR. It has good accounting procedures, but there is little incentive or need under present circumstances for it to develop more sophisticated financial management capabilities. However, under the assumption that additional regional resources will become available, some of which would almost certainly be passed through SNRDA, the organization would benefit from additional training in financial management. In any case, a more sophisticated understanding and use of the budgeting process would be valuable.

Routine auditing of the finances of both SNRDA and ODR is the responsibility of their respective national audit divisions. Nevertheless, it appears that no auditors from the ODR national office have visited either Shaba or Bandundu for an extended period. Deficiencies were noted in the frequency, rigor, and level of detail of audit reports and in the apparent lack of measures to assure that recommended corrections were incorporated.

Audits of regional institutions, including ODR and SNRDA, are also performed by the Regional Assembly. Though it was not possible to assess the technical quality of these audits, the simple fact of their existence should encourage the institutions involved to practice more rigor in financial matters.

For regional governments, the vagaries of revenue collection and delays in or nonpayment of central government retrocession of tax revenues pose serious obstacles to effective budgeting. Furthermore, the level of training and supervision of regional financial personnel and tax agents is quite low. The pervasive problems of "evaporation" of tax payments referred to in the August DFM study were acknowledged by regional authorities to be a major obstacle to the region's tax recovery and administration efforts. Finally, the expenditure nomenclature of the regional budget allows for broad discretionary authority on the part of the executive in attributing expenditures, and makes tracking and control of funds more difficult.

#### D. Contracting

The selection criteria for contractors (attributaires) to perform road maintenance and rehabilitation are evolving to favor NGOs and entrepreneurs with established records and clear vested interest in the quality of the road network. Regional territorial administrators and senior staff of the regional road organizations appear determined to reduce, if not eliminate, the awarding of contracts to politicians or to applicants who do not meet established selection criteria, but are nevertheless advanced by political figures.

Financial shortfalls and delays in transfer of budget allocations to the regions has continued to handicap ODR and SNRDA attributaire programs. In some cases, these organizations have not been able to honor their responsibilities for payment of signed contracts. In both Shaba and Bandundu, contractors were not paid for services provided in 1989. ODR manual maintenance contracts were suspended in February 1990 in Bandundu, following notification from the DG. However, some contractors reported

that they had received personal instructions from the DG to continue operations. As of mid-March 1990, the list of nominees for the next series of contracts, which were to have begun in February under the current quarterly Contract Program, had not been approved by the DG. Legal recourse procedures to enforce state compliance with contractual obligations exist, but they are generally ineffective, and infrequently used by contractors.

At the same time, and despite improvements in the selection process, SNRDA and ODR continue to experience instances of contractor non-performance or poor performance resulting in contract cancellation. According to senior staff of these organizations, the principal reason for non-performance is rupture or delays in payment.

Some potentially significant changes have taken place in ODR contracting. According to the Bandundu DR, authorization to sign contracts for manual maintenance was granted in August 1989, although the DG retains the right to review and approve the list of candidates. The DR expected to receive authorization to sign Special Works (Travaux Speciaux) contracts as well. This would be a significant move toward strengthening regional autonomy and authority, especially if pre-approval is dropped by the DG.

The current capacity of regional institutions to draw up, manage, and enforce contracts is limited. The experience of both ODR and SNRDA at the regional level is essentially limited to contracting for manual maintenance and small-scale public works, such as bridge repair and construction and ferry maintenance. The regional government has virtually no experience in managing road contracts.

At present, regionally managed contracts simply apply the norms and standardized rates developed by national institutions. Authorization to develop rate schedules based on local economic conditions and, more importantly, on detailed evaluation of the specific tasks to be accomplished, has not been accorded to regional offices.

The current proposed reorganization of ODR calls for widespread involvement of the private sector in the production of road maintenance and rehabilitation services. This involvement would be organized through the awarding of contracts. Additional experience, experimentation, and expertise in the organization and management of the contracting process will be needed to assure the viability and sustainability of this initiative. The regional directorates of ODR, working in collaboration with regional institutions such as the RRC, are particularly well suited to assume responsibility for management of the regional road network contracting process. Technical assistance in

contracting would be desirable at the regional level to develop and strengthen regional capabilities in this area.

The new programming and budgeting methodology implemented by ODR in January 1990 (Contrat Programme Trimestriel), establishes a relationship similar to that of a legal contract between the DG and the DR on the one hand, and between the DR and each Production Unit on the other. The Contract Program, prepared by the DR with information supplied by Production Units, specifies the equipment and the materials (fuel, oil, construction material) to be used on a defined road section (action) with specific types of interventions (activités). In the Contract Program reviewed by the DFM team, personnel requirements by action were not specified.

The previous programming methodology presented data on the quantities of activities for an entire Production Unit by cubic meters of surfacing material and total kilometers of grading to be performed, without reference to the specific road section where the work was to be performed. The utilization of equipment, material and fuel could not be matched against the work which was to have been accomplished, thereby defeating any attempt to control expenditures or measure productivity.

If the new method is used effectively, it will be possible (with certain refinements) to calculate cost and productivity for specific types of interventions performed by different production units. Such information is critical in evaluating the relative merits of private sector contracting, compared with force account production. It is not clear if this new methodology will be used to enforce production obligations and if sanctions of some type will be assessed for failure to fulfill specified conditions.

#### **E. Inspection and Supervision**

Both SNRDA and ODR acknowledge major shortcomings in their inspection capabilities due to:

- limited mobility of inspection personnel caused by lack of operational vehicles and travel compensation;
- low motivation of some Zone Engineers;
- inadequate technical criteria for inspection and lack of relevant training of some personnel.

The role and future of the position of Zone Engineer as a local inspectorate remains in question. These engineers represent the foundation of the regional inspection system, but

are not fully integrated, either conceptually or in terms of advancement and support, into ODR. Travel compensation and benefits related to their inspection duties for contracts managed by SNRDA are reported not to have been paid in the Shaba region. SNRDA makes a direct payment to the DR in Bandundu, but the DFM team did not determine whether these funds were transferred to the engineers. Few Zone Engineers in the regions visited had vehicles in operating condition.

The coverage of the Zone Engineer network is limited, especially in Bandundu and Shaba. There are only nine engineers for the 24 zones in Shaba, and five engineers for the 14 zones in Bandundu. The burden of routine inspection is consequently shifted to regional staff who, given their various duties, cannot be expected to provide adequate inspection for all contracts in regions as large as Bandundu and Shaba.

Discussions are currently underway between SNRDA and ODR at the national level to resolve the inspection issue. The central proposition seems to be that SNRDA will pay Zone Engineers benefits and operating costs, while the engineers remain employees of ODR. If accepted, this proposal would offer at least a partial solution to the motivational problems faced by many Zone Engineers. However, a number of issues would remain, particularly career advancement and promotion.

An increase in the number and size of road maintenance and rehabilitation contracts with private sector enterprises would seriously strain the inspection capability of the two primary road organizations. Concern has been expressed over the possible vulnerability of inspectors (who, as Zone Engineers, receive an average monthly salary of 60,000 zaires) when faced with approving contractor operations that could easily exceed 5 to 10 million zaires per month. Additional training, professionalism, and oversight will be necessary before any significant increase in responsibility for contract enforcement and inspection is made.

#### **F. Popular Involvement in Road Maintenance**

The bright light on the horizon is the increasing visibility of popular organizations, local communities, and public institutions in the contracting, inspection, and oversight (including auditing) of road maintenance and rehabilitation services. The designation of maintenance priorities and selection of contractors is increasingly influenced by local communities, territorial administrators, and at the regional level, by the Regional Road Commissions. Zone Commissioners are required to verify reports prepared by Zone Engineers on

contractor performance, and even Subregional Commissioners and Governors play a role in inspecting (on a non-routine basis) the condition of road maintenance.

The participation of popular organizations in the management and finance of the road subsector should be encouraged in the interest of transparency. The awarding, inspection, and enforcement of contracts for public works can only benefit from public awareness and involvement.

The Regional Assemblies of Bandundu and Shaba have taken active roles in auditing the financial accounts of the two road organizations, with encouragement from the Governors. All this leads to greater transparency in the financing and management of road maintenance services, while providing the public with a greater role in the establishment of road maintenance priorities.

#### **IV. MEASURES TO IMPROVE REGIONAL CAPABILITIES FOR THE MANAGEMENT AND FINANCE OF THE ROAD SUBSECTOR**

The recommendations presented in the following sections were developed to satisfy two principal objectives: (1) the establishment of a regional capability to manage the maintenance and rehabilitation of the regional road network and (2) the strengthening of regional resource mobilization and administrative capacity to allow the region to make a significant contribution to the financing of road maintenance activities.

A distinction is made in this proposal between the national highway network (here defined as national priority roads, including the approximately 19,000 km identified by ODR for concentrated attention during the three year transition plan, and other road sections that may be added to the national priority road network in the future), and the regional road network, which consists of the secondary and tertiary roads not identified as national priority arteries. This distinction is not made lightly, or without due consideration to existing nomenclature: the largely technically-outdated RN, RR1, RR2, and RDA, and the rather ambiguous "general interest" and "local interest." Rather, the national versus regional distinction is made to underscore the jurisdictional locus of primary management responsibility.

The objectives stated above are based on the following assumptions:

- Regional institutions have a natural advantage in managing the secondary and tertiary road systems due to the size of the country, the physical distance and

resulting information gap between outlying areas and the national capital, the greater awareness of and ability to respond to highly variable local conditions in road maintenance and rehabilitation needs, and the heightened sense of responsibility and accountability that regional and local authorities feel in regard to the condition of the regional road network.

- The primary beneficiaries of the regional road network are regional and local institutions, regionally-based commercial and industrial enterprises, and local populations. As such, they have a primary interest in and responsibility for the quality of the road network.
- The economic benefits of the regional road network are of both regional and national consequence and therefore the cost of maintaining this network should be borne by both national and regional authorities.
- At present, the modest fiscal capacity of the regions requires optimal management of national, regional, local, and private resources while efforts are undertaken to strengthen the ability of the regions to assume greater financial responsibility for road maintenance.

The recommendations presented below, if implemented, will prepare the institutional and financial foundation for the regionalization of authority and responsibility for the provision and production of regional road network maintenance services. A leading role is retained by national institutions in overseeing the evolution of this exercise in decentralization, in assuring national planning and management of the nation's transport sector and road subsector, and in providing training, technical assistance, inspection, and monitoring of regional activities. The most critical arteries of the nation's road network will continue to benefit from the direct control and management of the national organizations charged with this responsibility.

#### **A. Institutional Reform Measures**

The effective assumption of responsibility for the regional road network by regional institutions will require the enactment of specific institutional reform measures at the national level. These measures represent a conscious devolution of power and responsibility from central institutions to the regions through the transfer of public service functions, the transfer of decision-making authority, and the transfer of human and

financial resources. The institutional reform measures may be summarized as follows:

1. The Transfer of Public Service Functions

Public service functions related to the provision and production of regional road network maintenance services should be transferred from central institutions to regional institutions. The process entails the devolution of responsibility for planning, programming, and budgeting, as well as responsibility for managing road maintenance production activities performed by both public services and private sector enterprises through the contracting process. A move in this direction has been made by high government officials who informed governors that the quality of the road network in their jurisdictions would be considered in their performance evaluations.

2. The Transfer of Decision-Making Authority

Decision-making authority in programming, budgeting and contracting has already been devolved to regional institutions (the RRC and the regional SNRDA directorate) for the management of the tertiary road network by SNRDA. Similar measures are recommended for ODR as part of its organizational reform program.

Specifically, it is recommended that the ODR national program remain focused on the national priority network. The DG will continue to have authority for determining the level of funding to be allocated to the regional directorates and will be responsible for the planning and programming of the national priority network. Programming and budgeting authority for the regional network should be devolved to the regional directorates and to regional institutions such as Regional Road Commissions.

Contracting authority for rehabilitation and maintenance of the regional road network should also be accorded to regional institutions. This transition should be gradual in order to allow for the strengthening of regional capabilities in this critical area. The national divisions of ODR will play a critical role in managing the transition, in training personnel, and in providing on-site technical assistance to regional authorities.

Specifically, it is recommended that the regional directorates of ODR be authorized to organize and manage the contracting process, including the determination of pre-qualification criteria, technical specifications, and performance criteria for inspection. A contract review board (Conseil

d'Adjudication) should include non-ODR representatives. Authority to sign contracts will be held jointly by the regional executive and the regional director of ODR.

It is further recommended that a ceiling be established for the contracting authority of the regions. A tentative figure of 50 million zaires may be considered. Contracts having a value of less than this ceiling will be managed exclusively by the region. Contracts for services that exceed this level will be managed at the national level. It is fully expected that the national office will continue to provide audit and oversight services to the regions.

### 3. The Transfer of Financial and Human Resources

Financing will continue to be required from national sources. The level of financing to be made available should be communicated to the regions in a timely manner and the transfer of these funds must be guaranteed. It is recommended that a funding floor be established, i.e., the national government will guarantee a fixed amount from its own resources, if tax receipts from petroleum imports prove deficient during a particular period.

Fiscal reform measures will also be required to strengthen regional revenue capabilities. Specifically, the transfer of tax bases and control over some tax recovery mechanisms will be necessary.

With the assumption of greater responsibilities, regional institutions will require highly-qualified personnel. Technical personnel who become redundant at the central level because of the revised responsibilities of the national organizations should be made available to the regions upon request.

The implementation of institutional reforms of this nature should not be undertaken with undue haste. Careful analysis and evaluation will be required to assure that the process of transition is accomplished smoothly and with the necessary preparation of institutional capabilities at the regional level. It is therefore recommended that the proposed program be implemented on a pilot basis in the regions of Shaba and Bandundu and that the lessons learned from the experience in these regions be applied to future decentralization initiatives.

## B. Program Recommendations

The general assistance program presented below was discussed with regional authorities in Bandundu and Shaba. The program consists of three components: a financing component, a technical assistance and institutional reform component, and a training component. Some variations in the general program were made between the regions due to their different resource endowments and institutional capacity, and the nature of available USAID project resources.

### 1. Financing Road Maintenance and Rehabilitation

The inadequacy and irregularity of funding for the road subsector has been identified as the single most critical factor in explaining the low level of production of the national road organizations. The resuscitation of the Sixth Highway Project and the preparation of a transport sector program by the World Bank, as well as the USAID-initiated Transport Reform Program (660-0126), promise to provide at least a partial remedy to this problem. An important infusion of funds at the national level will be necessary to arrest the rapid deterioration of Zairian transport systems, particularly the road network. Direct financial support to the national offices of ODR and SNRDA, along with targeted technical assistance, is required to assure the viability of these organizations.

Financial support for national institutions may be complemented and even reinforced by a well-considered program of assistance to key regional institutions involved in road maintenance and rehabilitation.

It is recommended that USAID provide financial assistance at the regional level for road system maintenance and rehabilitation, including water crossings, according to priorities determined by the region, and with consideration of national transport sector planning.

a. Options. There are three optional financial paths for USAID funding to regional institutions for road maintenance and rehabilitation.

**Option One: Direct transfers to the regional directions of SNRDA and Office des Routes**

The primary objective of this option is to provide needed funding for the rehabilitation and maintenance of the regional road network.

Under this option, funds would be transferred directly to the budgets of the two primary road organizations as complements to funding provided by their national offices. The utilization of these funds would be determined by each organization's annual road maintenance and rehabilitation program. Disbursement and control would follow each organization's internal procedures, with additional measures taken to reinforce programming, budgeting, financial management, and audit capabilities as proposed below.

A number of conditions regarding the use of the USAID contribution could be made. For example, a provision could be formulated specifying the proportion of the funds transferred to ODR to be allocated to private sector contracting. Similarly, USAID could designate priority uses, such as major rehabilitation or upgrading of economically important and heavily used roads. Some funding could also be designated for experimentation in road maintenance technologies (mixed mechanization and manual maintenance, systems of labor organization for manual maintenance, targeted support for collectivities to manage and execute road maintenance activities) and for contracting specific services with Production Units or Brigades.

**Option Two: Direct transfers to a special fund to be managed by the regional authorities**

The primary objective of this option is to provide an incentive to the regional government to mobilize and commit funds for RDMT and rehabilitation. A second and related objective is to develop regional capacity for effectively assuming responsibility for managing and financing the regional road network.

This option would place management responsibility under the Governor's office. The utilization of funds would be determined by the Regional Road Commission. Technical assistance, detailed in a following section, is recommended to assist the RRC in planning, programming, budgeting, contracting, and inspection. The regional directorates of ODR and SNRDA would be expected to play a leading role in establishing regional program priorities in collaboration with local popular bodies and road users. Disbursement and financial control would be determined by the RRC, with the recipient organizations, ODR and SNRDA in

particular, managing the funds allocated to them according to their internal procedures.

Conditions on the utilization of funds could be established by USAID as described under Option One. Additional measures will be necessary under this option to determine the amount or proportion of funds that could be allocated for other than direct road maintenance and rehabilitation production activities. Such non-production uses could include material and equipment purchases, inspection, per diem, compensation for RRC members, staff, and related administrative costs, among others. In the interests of good management and sustainability, it is strongly recommended that strict limits to such expenditures be established at the outset.

Attention must also be given to the volume of funding to be provided under this option. To serve as an effective incentive to increase regional government contributions to RDMT, the ratio between the region's contribution and the external complement should not be too high. If the region of Shaba is able to fulfill its 1990 budgeted expenditure for RDMT of 200 million zaires, an external complement of 400 to 600 million zaires would seem appropriate. Providing a complement of a factor of 10, however, would seriously stress the region's management capabilities, and would possibly lessen the incentive to increase regional effort.

In Bandundu, the value of the region's effort will have to be calculated differently because no funds are presently budgeted for RDMT. As noted previously, the cause lies primarily in the relative fiscal poverty of the region. Nevertheless, the existence of external financial support for a regional RDMT and rehabilitation fund could provide an important incentive to improve the regional revenue mobilization effort while presenting the possibility of gaining experience in managing and programming RDMT activities for the regional road network. Regional authorities profess to place a high priority on the road (and river) network and an improved regional financial situation would permit the regional government to address this stated priority by contributing resources. Any external funding should therefore be based on the level of success in improving revenue mobilization. Such support should be relatively modest at the outset (keeping in mind the size of the regional government's budget) and increase only as the region demonstrates its capacity to manage effectively its own resources and those of the special fund.

**Option Three: A mixed system of financing for regional institutions**

The primary objective of this option is to provide direct support to the RDMT and rehabilitation activities of the two principal roads organizations while providing an incentive to regional government to mobilize and commit regional revenues to the road subsector. A secondary objective is to provide greater funding flexibility to accomplish USAID objectives in the transport sector without overstretching the existing capabilities of regional institutions. Option Three is recommended as the preferred financing strategy.

This option effectively combines the characteristics of Options One and Two above. External financing would be made available directly to the regional directorates of ODR and SNRDA to complement funds received from their respective national offices. In addition, a special fund would be established at the level of the regional government to provide an incentive for improved revenue mobilization. Disbursement and control procedures would be as described above. The considerations for the establishment of conditions and specific provisions for the use and distribution of externally contributed funds would also apply under this option.

**b. Control and Oversight.** A number of specific measures are recommended to assure financial control and oversight for the funds to be contributed under any of the options discussed above.

First, a detailed technical audit of the procedures and management needs of each institution involved in the handling of RDMT funds will be necessary. This audit is to produce specific recommendations for improving accounting and financial management procedures, develop reporting forms and budgetary analysis systems, and identify specific training needs of key staff of both road organizations, the regional administration, and the regional assembly.

Second, USAID should program routine financial audits in conjunction with those carried out by the national offices of the two road organizations and the national authorities.

Third, the participation of the regional assembly and the governor's office in inspecting the accounts of regional services should be encouraged.

Finally, in the case of a regional RDMT fund to be managed by the regional authorities, it is recommended that a special external commission be constituted to perform a quarterly review of the accounts of the regional fund. The commission should

include trained accountants from the private sector, a representative of the regional assembly, and possibly a representative of one of the religious communities in the area. (This recommendation was proposed to regional authorities in Shaba and accepted with the composition of the commission as stated above.) Training is also recommended for the members of the commission that carries out this audit function.

## **2. Technical Assistance to Regional Institutions**

Improved financing from the national government and from the donor community alone will not result in sustainable road maintenance programs or in the long term viability of the road network. It is also necessary to develop regional and local capability to manage and finance the rehabilitation and maintenance of the regional road network. To do so, technical assistance is recommended in three areas: programming and budgeting, contracting and contract management, and inspection. Technical assistance is also necessary to improve the regions' ability to mobilize and manage revenues for road maintenance and other public services.

**a. Programming and Budgeting.** One technical advisor in each region. The primary tasks of this advisor include the training of a Zairian counterpart; the development of a regional road subsector plan; the coordination of road maintenance and rehabilitation activities by all parties -- ODR, SNRDA, donors, industries, and private interests -- through the development of a region-wide annual road maintenance and rehabilitation program; and the communication of relevant information on the subsector to the Regional Road Commission.

**b. Contracting and Contract Enforcement.** One technical advisor in each region. The primary responsibilities of the person in this position are: to develop contract types that will be used for private sector contracts for road maintenance and rehabilitation; to develop a public information system for the letting and awarding of contracts; and to devise a mechanism for contracting with units of ODR, either directly or as subcontractors, for the production of road maintenance services. This technical assistant will also be expected to develop in cooperation with ODR technical staff a set of cost ranges for the calculation of specific activities which take into account soil types, drainage, levels of difficulty, and local economic factors.

**c. Inspection.** One technical person in each region. The responsibilities of this position include review of contract technical specifications; development of inspection norms and

procedures for ODR and SNRDA; training of inspection personnel; and inspection of work performed by private sector contractors, collectivities, and work contracted to ODR. The position should be staffed by a senior engineer.

In Shaba, the creation of a bureau of coordination for RDMT and rehabilitation, a division under the Governor's office, has been proposed to regional authorities and tentatively accepted. The bureau as conceived will serve as the secretariat for the Regional Road Commission and as advisor to the Governor. It will be staffed by the technical assistant as coordinator and by a Zairian engineer, who will be recruited and paid by the region. The engineer will be responsible for contributing to the development of the Regional Road Plan and the Regional RDMT and Rehabilitation Annual Program. The engineer will also be charged with the inspection and enforcement of contracts awarded by the region to private enterprises, collectivities, ODR, and SNRDA. The Shaba DR affirmed that the region would also be able to provide basic support staff. The creation of the bureau and the hiring of a senior road engineer will require authorization by the State Commissioner for Territorial Administration.

The technical assistant for inspection and contracting will work in close collaboration with the regional offices of ODR and SNRDA, and with the bureau of coordination, but will not be attached directly to the bureau. To remain sustainable after the termination of external financing, the bureau must be administratively light and within the revenue capabilities of the region.

In Bandundu, it is not recommended that a bureau of coordination be created at this time because of the inadequacy of regional resources to support a bureau. Instead, it is recommended that a technical assistance team fulfill the inspection responsibilities detailed above and work in collaboration with the regional staffs of ODR and SNRDA. The results of this collaboration will be communicated to the RRC and the Governor's office. The technical assistance team that is to come in under the Amendment to USAID Project 660-0098 may be able to assume these inspection responsibilities within their existing scope of work.

d. Resource Mobilization and Administration. One technical assistant at the national level and one each in Bandundu and Shaba. It is recommended that the national level technical assistant be attached to the office of the State Secretary for Decentralization. Responsibilities will include the monitoring of GOZ initiatives and actions in the general field of decentralization, institutional reform, and fiscal policy. This technical advisor will also be expected to make a

direct contribution to ongoing discussions and research on decentralization and fiscal reform.

The two regional technical assistants, in collaboration with the national level advisor, are to analyze existing systems and organizational options for mobilizing human, organizational, fiscal, and parafiscal resources with reference to the provision and production of road maintenance services. The specific tasks of the regional personnel include a thorough analysis of national, regional, and local fiscal policy; a review of field level tax assessment/collection procedures and capabilities; and the development of specific recommendations to increase the revenue performance, collection efficiency, and financial management capabilities of local administrative jurisdictions.

Organizational options for the delivery of road maintenance services, including private sector and collectivity responsibility, will also be assessed. The recommendations are to be implemented in selected test zones to provide an operational study of their effectiveness. Special attention is to be given to transport-related taxes and charges, and to the development of incentives for local authorities to allocate funds for the rehabilitation and maintenance of roads.

It is recommended that Zairian specialists, preferably university faculty members, be invited to participate in the initial research activities and in the eventual analysis of the results from the test zones. It would also be desirable to involve members of the regional financial staff. Research and experimentation activities would benefit from the expertise and experience of these Zairian collaborators, who also would constitute a resource for the region's future efforts in this area.

### 3. Training

The training component comprises four short-term training programs, as well as in-service training of counterparts to be provided by the technical assistance staff. These short-term training programs will require external financing, but training personnel should be available in country.

- Management training with an emphasis on financial management and budgetary analysis for senior staff in the regional offices of ODR and SNRDA.
- Training of Zone Engineers and territorial administrators (especially Zone and Subregional

Commissioners) in the inspection of manual maintenance and special works.

- Training in labor organization and materials management and in the technical aspects of manual road maintenance for private sector contractors, interested collectivity officials, and supervisor-level manual maintenance personnel. This program should be discussed in conjunction with the SNRDA training program to be financed by UNDP.
- Training in revenue mobilization and administration as well as in financial management for personnel from the decentralized administrative entities (regions, zones and collectivities).

**ANNEX 6**

**ECONOMIC ANALYSIS**

**USAID/Zaire**  
**May 1990**

ECONOMIC ANALYSIS

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## ECONOMIC ANALYSIS

### Introduction

This annex presents the economic considerations affecting the participation of A.I.D in the road rehabilitation and maintenance program in Zaire. The purpose of the annex is to acquaint the reader with some general propositions of transport economics for road transport and apply these to the situation prevailing in road transport in Zaire. The first section presents the economics of road rehabilitation and maintenance in developing countries and the rationale for concentrating resource use on maintenance and strictly limiting new construction. The second section discusses the potential for significantly high returns to road rehabilitation and maintenance in Zaire. Finally, the third section discusses Zaire's current macroeconomic situation and argues for delaying the funding of road rehabilitation and maintenance until Zaire adopts a sound macroeconomic framework in concert with the World Bank and the IMF.

Most of the material presented in this annex can also be found in Annexes 2, 3, and 4 except for the macroeconomic arguments. However, it was necessary in presenting the economic argument for road rehabilitation and maintenance and discussing the appropriate scale for such activity to organize the material in a somewhat different manner.

### I. ECONOMICS OF ROAD REHABILITATION AND MAINTENANCE

The World Bank categorizes countries according to their capacity to maintain the road network. The first category of countries could eliminate maintenance backlog within five years and meet future requirements simply by putting 80 percent of current spending into maintenance and restoration while postponing new construction. The second category should follow the same strategy, but will take up to ten years to catch up. The third category would have to double total spending on roads and devote all of it to restoration and maintenance with no new construction. Zaire unquestionably falls into this third category and into subcategory B of countries with aging (as opposed to relatively new) road infrastructure. There is also a

fourth category of countries where the networks and maintenance technology are obsolete.

How much is the high cost of neglecting road maintenance in Zaire? Can it be shown that such neglect has contributed directly to lower rates of economic growth? The fundamental economic argument for transport links is regional specialization through trade which increases the efficiency of resource use. Overall growth is affected by the degree to which such specialization and inter-regional trade can take place. All sectors are affected to some extent, but particularly agriculture depends upon the integration of the rural and urban economies through transport linkages (and economic policies which promote a country's comparative advantage). Have deteriorating road conditions resulted in less specialization taking place and hence lower growth? It would appear to be so in Zaire.

According to data for developing countries compiled by the British Transport and Road Research Laboratory, the cost of neglecting the maintenance of an existing road is a rapid progression from relatively inexpensive routine and recurrent maintenance to twenty times costlier periodic maintenance (only eight times costlier for an unpaved road). Then if periodic maintenance is neglected as well, there is a premature need for road strengthening at three to four times the cost of periodic maintenance. Lastly, if the road is allowed to deteriorate in a major way, rehabilitation will be required at thirteen times the cost of periodic maintenance for a paved road (almost six times the cost of resurfacing an unpaved road). Thus the progression in cost due to prolonged neglect (no maintenance for a decade) can raise the cost of rehabilitating a road to its original design standard by a factor of 29 for paved roads and a factor of 18 for gravel or earthen roads when compared with the undiscounted annual maintenance cost.

How do we measure the return to a road rehabilitation and maintenance program? The ideal but unobservable answer would come from an analysis which answers the question: what would have happened to economic growth if additional maintenance had been carried out with all other economic conditions held constant except for additional investment made principally because of improved road conditions. Such an analysis is loaded with heroic assumptions and difficult judgments. Is the condition of the road the principal constraint to particular investments? Would

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<sup>1</sup>p.4, Road Deterioration in Developing Countries: Causes and Remedies, A World Bank Policy Study, The World Bank, Washington, D.C., 1988

the investment which is made next to newly maintained road X simply be located elsewhere in the absence of maintaining road X? In this case, the overall effect on economic growth from additional road maintenance could be nil. Will a road improvement in an agricultural area lead to increased agricultural output or are there other more significant constraints which will prevent increases in production regardless of road quality? And in either case, how much of increased economic activity should be attributed to the lowering of transport costs due to higher road maintenance expenditures, and how much to the other investments which were made to achieve the higher level of economic activity?

In spite of these insuperable methodological problems, we will comment on the probable effect on the Zairian economy from the low level of road maintenance expenditure and the resulting general deterioration of the road network. However, we will not attempt to quantify the return to investment in road maintenance on the basis of its effect on overall economic activity for the reasons set forth above. The returns to investing in road maintenance have been calculated for different types of road surfaces and traffic densities using the classic method of comparing user costs for roads in bad, fair, and good condition. (See Section II below for technical definitions of bad, fair, and good condition.)

Is a shift in GOZ budgetary resources toward road maintenance warranted? The answer is unequivocally yes. According to the World Bank, "The costs to road authorities are only the tip of the iceberg, for the costs to road users operating vehicles on rough roads are much larger. High haulage costs constrain the location of economic activity, hamper the integration of economic markets, limit the gains from specialization, and render unviable many activities that rely on road transport."<sup>2</sup> The cost of road maintenance neglect in Zaire is reflected in various indicators. The growth of food imports even when real per capita incomes are declining in Kinshasa is at least in part due to the failure to integrate the rural and urban economies with a serviceable road network. As Annex 4 demonstrates, transport costs to agricultural market towns have risen considerably, often doubling with the deterioration of roads.

ODR has identified a priority 19,000 kilometer network for maintenance and rehabilitation in 1990-92. This prioritization is principally but not exclusively based on economic rates of

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<sup>2</sup>Ibid., p.5

return analyses based on vehicle operating costs and projected availability of financing. There is a balance of 39,000 kilometers of national roads and priority secondary roads which will receive minimum maintenance outlays to prevent severe deterioration. The rates of return for rehabilitation and maintenance of the 19,000 kilometer core network are in excess of 40 percent.

SNRDA with World Bank assistance has also identified pilot project areas and an approach for analyzing the internal rates of return for rehabilitation and maintenance of feeder roads. SNRDA will refine its approach during implementation of the pilot feeder road project with the World Bank, but it has generally adopted a least-cost strategy which emphasizes reopening roads and rehabilitating and maintaining roads which show an acceptable internal rate of return.

While the returns to maintenance are everywhere in the developing world very high, they will only be high if the maintenance is:

- " - (a) carried out to a sufficiently high standard to achieve the required improvement in pavement condition;
- (b) durable, so that the maintenance input is effective for a sufficiently long period;
- (c) efficiently carried out so that the cost is of the expected order."<sup>3</sup>

Achieving these conditions means overcoming ". . . severe constraints to carrying out effective maintenance caused by bureaucratic procedures, lack of management skills, low availability and utilization of maintenance equipment and, most of all, by attitudes to maintenance."<sup>4</sup> Thus the key to the success of this transport reform program is the restructuring of ODR and the reordering of national priorities which will be reinforced by the TRP. The conditions for reform of ODR are necessary to achieve the high rates of return obtainable in road maintenance activities. The risk discussed below in Section III is that these returns will not be realized while macroeconomic

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<sup>3</sup>R. Robinson, "A view of road maintenance economics, policy and management in developing countries," Research Report 145, Transport and Road Research Laboratory, Department of Transport, United Kingdom, 1988, p.7. Note: the word pavement in this quotation refers to the road surface and does not necessarily mean paved as it would in American English.

<sup>4</sup>Ibid., p.7

conditions create shortages of foreign exchange and insufficient budgetary resources. Thus, in addition to reforming ODR, it is also a necessary condition that the GOZ provide adequate, regular funding to ODR.

## II. ECONOMIC RETURNS TO ROAD REHABILITATION AND MAINTENANCE: PRIORITIZATION OF THE ROAD MAINTENANCE PROGRAM

The Office des Routes with the assistance of a study by the French government overseas consulting bureau, BCEOM, has prioritized its road maintenance program. The criteria used to determine a priority program are principally economic, but also include inter-regional roads to permit integration of all major regions, including those which are sparsely populated, into the national economy. For the economic analysis, BCEOM calculated internal rates of return (IRR) for rehabilitating and maintaining both paved and earthen roads for four or five different magnitudes of traffic flow. IRRs were not calculated for specific existing road sections, but rather for different types of road sections according to the criteria of type of road surface (earthen or paved) and level of traffic flow. Costs for specific road sections were based on actual ODR contracts for rehabilitation and maintenance work brought up to 1990 cost levels and adjusted for each road section on the basis of information about the terrain (hills, valleys, water crossings). These estimates could be too high or too low by a factor of 20 percent.

The data on vehicle operating cost savings used to calculate benefits for each road type is not significantly different from the vehicle operating costs calculated independently from primary data by Louis Berger International in March and April 1990 for specific types of truck transport (See Annex 4). This increases the level of confidence one can have in the BCEOM vehicle operating cost data. BCEOM then applies the weighted average of vehicle operating cost savings (cars, light vans, trucks of two different sizes, tractor-trailers) for the different types of road surface and traffic flow criteria to calculate the total benefits from rehabilitation and maintenance of each road type.

Three categories are defined for road condition: bad, fair, and good. There are technical definitions for each category and each type of road surface, summarized in Table 6-1.

**Table 6-1: Road Conditions**

<u>Road Surface</u>	<u>Bad</u>	<u>Fair</u>	<u>Good</u>
<u>Earthen</u>			
Surface Layer	< 5 cm	5-10 cm	10-20 cm
Avg vehicle speed	<30 km/h	30-40 km/h	>40 km/h
	Foundation damaged		
<u>Paved</u>			
Surface deterioration	> 10%	5-10%	< 5%
	Stabilized base damaged		

While the data do not come from an up-to-date inventory of the roads, the state of the 58,385 kilometer road network under ODR maintenance responsibility is currently broken down as follows (a) for paved or earthen and (b) for national, first, priority or second priority regional road in Table 6-2.

**Table 6-2: Status of Road Network Under ODR Maintenance Responsibility**

<u>Road Type</u>	<u>Bad</u>	<u>Fair</u>	<u>Good</u>	<u>Total Km</u>
<u>By Surface</u>				
Paved Roads	34.8%	46.1%	19.1%	2,801
Earthen Roads	56.4%	22.1%	21.5%	<u>55,584</u>
Total				58,385
<u>By Category</u>				
National Roads	26.9%	41.6%	31.5%	21,019
First Priority Regional Roads	56.5%	20.6%	22.9%	20,121
Second Priority Regional Roads	88.8%	4.0%	7.2%	<u>17,245</u>
All Roads	55.4%	23.3%	21.4%	58,385

The results of the BCEOM calculations for different road types and average daily traffic flows are presented Tables 6-3 and 6-4.

**Table 6-3: Rehabilitation of Earthen Roads  
(internal rates of return)**

Change in Road Condition	Bad to Good	Fair to Good	Bad to Fair
<u>Vehicles/day</u>			
1- 20	<-10%	<-10%	<-10%
21- 50	-10% to 10%	<-10%	<-10%
51-150	25% to 40%	-10% to 10%	> 40%
> 150	> 40%	25% to 40%	> 40%

**Table 6-4: Rehabilitation of Paved Roads  
(internal rates of return)**

Change in Road Condition	Bad to Good	Fair to Good	Bad to Fair
<u>Vehicles/day</u>			
<150	-10% to 10%	-10% to 10%	<-10%
150-350	25% to 40%	110% to 25%	> 40%
>350	25% to 40%	25% to 40%	> 40%

The conclusions of the BCEOM analysis are threefold:

- (1) Rehabilitate and maintain the existing 2,801 kilometers of paved roads;
- (2) Give priority to maintaining continuity of major national highways (i.e., do not have major changes in road condition from one section of the highway to the next); and
- (3) Rehabilitate and maintain all bridges and ferries.

BCEOM then presents four different scenarios involving different levels of rehabilitation and maintenance. The first scenario is simply to illustrate the exorbitant cost (given likely resource availability) of expanding the paved network.

The second, third, and fourth scenarios present plausible levels of rehabilitation (restoring a road to its original standards), maintenance (preventing further deterioration), and emergency maintenance (keeping a road open and passable). Zaire's 145,000 kilometer road network is categorized as follows:

**Table 6-5: Zaire's Road Network**

<u>Road Type</u>	<u>Kilometers</u>
Paved Roads	2,801
Earthen Roads	
First Priority	10,240
Second Priority	8,633
Third Priority	<u>36,711</u>
Total ODR Roads	58,385
Local Interest SNRDA Roads	<u>86,615</u>
Total Road Network	145,000

The strategy retained for ODR in all scenarios is to rehabilitate and maintain the 2,801 kilometers of paved road. Also, in all scenarios the third priority earthen roads are to receive only emergency maintenance to keep them generally passable for four-wheel drive vehicles. The average vehicle speed on such roads permitted by emergency maintenance is estimated to be about 20 miles per hour. These ODR roads are the casualties of a triage strategy made necessary by the lack of resources. Unless they, and the other 86,000 kilometers of SNRDA local interest roads outside ODR's purview, are maintained to higher standards by regional, local, or private interests, ODR will be able to do no more than emergency maintenance as described briefly above. Finally, in order to maintain all ODR roads open, all bridges and ferries must be rehabilitated and maintained in all four scenarios.

The difference between scenarios two, three and four, is the degree to which priority one and two earthen roads are rehabilitated. In scenario two, all first priority earthen roads are rehabilitated and all second priority earthen roads are maintained. In scenario three, all first priority earthen roads which are part of national highways one through four are rehabilitated and all other first priority earthen roads are

simply maintained without rehabilitation. Second priority earthen roads are "abandoned" to the emergency maintenance system in scenario three. In scenario four, the least expensive scenario, no earthen roads are rehabilitated. First priority earthen roads are maintained, while second and third priority earthen roads receive only emergency maintenance.

BCEOM then calculates the total costs of the four scenarios and estimates the projected availability of resources.

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**Table 6-6: Road Rehabilitation and Maintenance Costs**

<u>Scenario</u>	1990-1992 (millions of dollars)			
	4	3	2	1
Paved Roads	319.7	319.7	319.7	319.7
Earthen Roads				
First Priority	139.5	235.9	307.7	1,403.3
Second Priority	8.2	8.2	23.9	23.9
Third Priority	33.0	33.0	33.0	33.0
Bridges	43.0	43.0	43.0	43.0
Ferries	<u>19.1</u>	<u>19.1</u>	<u>19.1</u>	<u>19.1</u>
Total	562.5	658.9	746.4	1,842.0
<u>Projected Resources</u>				
Internal	166.0	166.0	166.0	166.0
Foreign	180.0	180.0	180.0	180.0
<u>Financing Gap</u>	216.5	312.9	400.4	1,496.0

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Even the fourth scenario was found to be too ambitious in terms of the likely availability of domestic and foreign resources. New scenarios have since been developed at lower total resource levels of \$518 million and \$452 million as compared with the BCEOM scenarios which ranged from a low of \$562 million to a high of \$1.8 billion. Furthermore, ODR has tasked BCEOM with further refining its analysis using updated information on traffic flow, macroeconomic projections, and cost data. BCEOM will calculate IRRs for specific road sections to be rehabilitated. This will include a sensitivity analysis with respect to the assumptions of traffic flow and cost parameters.

Finally, BCEOM will define an investment program for 1990 to 1994 compatible with the Priority Public Investment Program and realistic with respect to the growth of ODR operations.

ODR has based its prioritization of road rehabilitation and maintenance activities on economic analysis. It has also recognized that any new construction would have a high opportunity cost in terms of critical maintenance activities which would have to be foregone. Thus, ODR has taken the most important steps toward obtaining the highest possible return from the resources it manages. Refinements are required since actual road segments may differ from the typical road segments analyzed by BCEOM. However, if ODR devotes 90 percent of its resources to activities which are expected to have rates of return in excess of 40 percent, it is highly likely that its road maintenance program will have a high overall rate of return. These returns would be significantly lower only if ODR squandered resources, failed to provide adequate oversight of contractor performance, and did not adopt the efficiency-enhancing reforms which the technical assistance component of this and other donor projects is meant to help ODR implement.

Several caveats must be mentioned with respect to the foregoing analyses. First, the data on vehicle condition and operating costs, estimated traffic flows, and types and quantities of merchandise moving over the roads is generally of poor quality. Second, the cost data for rehabilitation and maintenance are generally the classic cost estimates for developing countries and thus may be underestimated for Zaire. While an attempt has been made to include ODR experience in road construction, it should be remembered that ODR has not had a cost accounting system which enabled it to monitor costs on this basis. Installation of such a system is part of the reforms of ODR's conduct of business foreseen in the World Bank program. Finally, technical innovations to be tried in the road rehabilitation and maintenance program are still at a largely experimental stage. Thus, cost projections may turn out to have underestimated the durability of such rehabilitation. All these factors should lead one to use the results of this analysis with considerable prudence. However, given the sound strategy being proposed, the severely limited resources available to the program, and the further refinements of analysis underway, one can have some confidence that the resources will be employed in a manner approaching their economically optimal use.

The high rates of return obtained here are typical of road maintenance programs in developing countries. For an excellent discussion of this topic, see "A view of road maintenance economics, policy and management in developing countries" by R.

Robinson, research report no. 145 of the Transport and Road Research Laboratory, 1988. For a more general discussion, see Economic Appraisal of Transport Projects, A Manual with Case Studies by Hans Adler in the EDI Series in Economic Development, 1987:

### III. MACROECONOMIC CONSIDERATIONS

Zaire's gross national product (GNP) has grown more slowly than the population for the past three years according to official statistics, with growth rates of 2.5 percent in 1987, 2.2 percent in 1988, and only 0.9 percent in 1989 as compared to a 3 percent population growth rate. This apparent general stagnation of the formal recorded economy is not entirely consistent with other indicators such as the growth of electricity and water use, which rose by five percent in 1989. Also, the size of the informal sector, including the mobilization of financing outside the formal financial sector, makes it difficult to place any credibility in the data of the national economic accounts. This lack of credibility applies to the level of national income which all observers believe is understated, some by 50 percent, others by a factor of 3 or 4! The true level is unobservable, although there have been unpublished attempts to quantify the range of informal economic activities using Social Accounting Matrices. Lack of credibility also applies to the reported rates of growth. However, certain indicators of economic activity are sufficiently reliable, such as data on GOZ revenues and expenditures, to present a general picture of economic change over this recent period.

Significant progress in structural adjustment was being made up until late 1986 including devaluation, trade liberalization, and liberalization of agricultural prices. Further progress in economic policy reform continued in 1987 with adjustments in import tariffs, export taxes, regulations to promote private sector investment, and restructuring of state-owned enterprises. However, agreement could not be reached on a comprehensive macroeconomic package. The public expenditure rate started to increase in 1987; and 1988 was marked by a disastrous departure from sound macroeconomic policies and massive overspending by the GOZ. The overall fiscal deficit before debt relief rose to the unsustainable level of 22.3 percent of GDP. By financing this deficit through money creation, the GOZ brought about a 95 percent inflation rate in 1988. As the economic crisis from this mismanagement worsened, the GOZ sought to regain the support of the World Bank and the IMF, and negotiated a new structural adjustment program by mid-1989.

Significant progress was made in 1989, with several key policy changes which are essential to Zaire's future economic growth. The restoration of a less expansionary fiscal program contributed to dampening inflation from the 95 percent annual rate reached in 1988 to 56 percent in 1989 with the rate declining to under 30 percent on an annualized basis toward the end of 1989. Equally important, the Bank of Zaire raised its discount rate in 1989 to a level exceeding the inflation rate. The GOZ also devalued the Zaire and adopted a policy of remaining within 10 percent of the parallel market rate, thus adjusting regularly to the changing conditions of supply and demand of foreign exchange. Finally, the GOZ increased energy prices and adopted a policy of adjusting internal controlled energy prices monthly in line with international prices and the exchange value of the zaire. At the same time it changed the basis for its ad valorem fuel tax to a fixed U.S. dollar reference price, thereby creating a steady stream of tax revenue protected from erosion by inflation of the zaire and no longer varying with international price fluctuations.

As a result of these policy reforms and fiscal austerity, Zaire met all of its IMF targets for end-June and end-September except for the limit on new non-concessional loans of one to five years which the IMF waived. The end-December targets were also met with the exception of an increase in domestic arrears. The considerable progress made in 1989 is now jeopardized by Zaire's expressed intentions with respect to carrying out investment projects outside the Priority Public Investment Program, by the recent decision to increase public sector wages and salaries, and thus by the resulting expansionary rate of public expenditure. Fiscal discipline appears to have begun to break down toward the end of 1989. Public expenditure levels have remained too high in the first quarter of 1990 and the GOZ has thus far failed to come to agreement with the World Bank on either an acceptable level of public expenditures for 1990 or the level and composition of the public investment program. Without such an agreement for a macroeconomic framework, the World Bank has postponed further development of its policy-conditioned sectoral lending program and will for the moment simply maintain its core project funding. If Zaire continues to insist on an expansionary government expenditure level, it is also unlikely to be able to meet IMF programmatic targets for 1990. The potential scenario for economic developments in 1990 and the effect on the road rehabilitation and maintenance program is discussed below.

The returns to the road rehabilitation and maintenance program are clearly dependent to a large extent on the macroeconomic situation of the country. This is so for several

reasons. First, the availability of funding for road rehabilitation and maintenance depends both upon the state of the GOZ budget and the continued allocation of earmarked funds from the fuel tax to ODR. In times of stringent budgets and reduced GOZ revenues, promised investment budget allocations may be diverted to other uses and even earmarked taxes may be claimed for general purposes by the fiscal authorities. Second, either a lower level of economic activity or scarcity of foreign exchange could cause fuel imports to fall below projected levels, resulting in lower fuel tax revenues and shortfalls in funding for ODR. If funding fails to materialize at expected levels, some road maintenance projects could be partially completed, drastically lowering the return, or costs could escalate with the stop and start of funding, also reducing the return to the activity.

How significant are these risks in the near future? First, it is unlikely that there will be a repeat of ODR's 1987-88 funding crisis. The underlying ad valorem nature of the fuel tax formula will keep the real value of tax revenues from being eroded rapidly even if inflation accelerates. There is of course some risk that the GOZ will abandon its monthly adjustment of fuel prices. However, the greater risk lies in the potential for increasing arrears in fuel payments by the GOZ and parastatals. Then one could witness a repeat of the refusal to pay taxes by the oil companies, and once again there would be a shortfall in funding for ODR. The risk of non-payment by the GOZ and parastatals is tied to the issue of the budget deficit. The GOZ has recently announced salary increases for government employees equalling 78 percent at the lowest level and 55 percent for all others. This significantly exceeds recently recommended increases of 24 percent in the wage bill. If the GOZ also attempts to carry out investments outside the priority investment program, further increasing an already too large budget deficit, it may begin to increase arrears in order to finance the deficit. To the extent that the GOZ and its parastatals choose to increase arrears on fuel payments rather than arrears on other types of payments, the fuel tax system could conceivably become blocked again.

Part of the funding for the ODR program is also expected to come from the Priority Public Investment Program in 1990. The greater the budget deficit, the higher is the probability that the expected funding allocation will be met partially or not at all. The following projections of a worst case scenario for 1990 show how deep the cuts in allocations could be and what effect an increase in arrears could have on the fuel tax revenues and allocations to ODR.

Taking the budgetary and macroeconomic results of 1988 as being repeated in 1990, the following scenario is a possibility. The GOZ commits itself to carrying out several major investment projects outside the Priority Public Investment Program. The increased rate of expenditure which this occasions is added to the approximately 68 percent general increase in the GOZ wage bill just announced in April. Financing for this increased rate of expenditure is through creation of money by the Bank of Zaire, resulting in an acceleration of the rate of inflation from the current level of about 60 percent (First Quarter, 1990) to a level approaching the 95 percent per year characteristic of 1988. ODR receives its allocation from the investment budget in zaires at the nominal level set for it, but inflation reduces its real value to half what was required, effectively cutting about \$8 million of the planned \$55 million in domestic resources for ODR in 1990. The shortfall in funding cannot be made up elsewhere and the road rehabilitation program is compromised.

By not coming to agreement on a structural adjustment program with the World Bank, the GOZ also fails to meet targets established in the IMF extended structural adjustment facility (ESAF). Funding foregone by failing to reach agreements with these two institutions amounts to about \$325 million in 1990. Expiration of the Paris Club agreement in June 1990 and the absence of an IMF program mean that a new debt rescheduling agreement cannot be concluded, so the GOZ begins accumulating arrears to its creditors, amounting to \$800 million by the end of 1990. Unable to find new financing elsewhere and faced with lower than projected development assistance flows, the GOZ finds it must "borrow" resources from the earmarked fuel tax to meet more urgent requirements of the moment. These "borrowed" resources are not repaid due to the continuing scarcity of funds for the GOZ budget. As a result, ODR and SNRDA allocations barely equal half of the promised allocations, cutting ODR's allocation by about \$18 million. Together with the effective \$8 million cut in resources from the investment budget, ODR can amass only \$29 million out of its \$55 million budget for 1990. The effect on ODR's operations is severe, given that the larger donor financing flows are tied to specific road rehabilitation and maintenance operations and cannot be reallocated to the inspection, contract oversight, and other management functions of ODR. Resulting inefficiencies in the functioning of ODR have a disproportionate effect on the output of the Office. The goals of the rehabilitation and maintenance program must be cut in half and the overall program is stretched out by more than twice the time as critical maintenance expenditures must be postponed and some of the 19,000 kilometers of core roads continue to deteriorate.

The presentation above is hypothetical but within the realm of the possible. It should be considered as a worst case scenario, including a breakdown in fiscal discipline as serious as in 1988 and, in addition, diversion of earmarked funds from the fuel tax. One could also envision a less severe version of this scenario in which public expenditure exceeds resource availability, but on a more modest scale. Recourse to monetary financing would then be more limited, inflation would increase to higher levels, but not so high as in 1988. And finally, the fuel tax allocations could still function as defined, thus resulting in ODR and SNRDA funding reductions which are relatively minor, say only 5 to 10 percent below projected requirements. This latter scenario, optimistic but also in the realm of the possible, would result in significant portions of the road rehabilitation and maintenance program being carried out in spite of a poor macroeconomic environment. Such a program would improve the future prospects for growth, provided of course that the GOZ ultimately does adopt a sound macroeconomic program which will stimulate the necessary investments in the economy.

The first worst case scenario illustrates how important it may be to the road maintenance program for there to be a sound macroeconomic framework, particularly with respect to fiscal discipline by the GOZ. It is also important for the Bank of Zaire to maintain an official exchange rate in line with developments on the parallel exchange market. There is a real risk that, as a macroeconomic crisis deepens, the GOZ will decide to abandon the exchange rate adjustment system it now employs and permit the zaire to diverge significantly from the parallel market rate as it did in 1988 by about 40 percent, thus creating a shortage of foreign exchange which could affect both fuel imports and economic activity generally. Again, a lower level of fuel imports would mean a lower level of tax revenues from which to fund ODR activities. Also, a decline in economic activity would affect budget revenues and make it more likely for the allocations to ODR and SNRDA to be less than currently projected.

While we have discussed the effects of unfavorable macroeconomic developments on the funding levels of ODR and SNRDA, we should also point out that continued deterioration in the national road network itself reduces the potential for economic growth. This is particularly true given the serious state of disrepair into which main roads have fallen, due both to the long-term neglect of maintenance and the catastrophic crisis in road maintenance of 1987-89. Even the IMF felt it necessary in discussing Zaire's severe structural problems to single out the poor state of the road system as a factor limiting the prospects for export diversification and growth of the economy. The high returns to road maintenance and rehabilitation on the

top priority roads (19,000 kilometers out of the total road network of 145,000 kilometers) show that Zaire is nowhere near the margin at which one could ask if there are not better alternative uses for the funds. Also, certain indicators suggest the reversal of integration of the national economy. These are low and declining levels of traffic on the roads (40 percent below the levels attained in the fifties), increasing levels of food imports, and only slow growth in agricultural production for domestic consumption.

In conclusion, there are significant risks to the TRP from an unfavorable macroeconomic environment. It would therefore be unwise to attempt to proceed with the funding of road rehabilitation and maintenance activities on a large scale until agreement with the World Bank and the IMF are reached on a structural adjustment program.

**ANNEX 7**

**SOCIAL SOUNDNESS ANALYSIS**

USAID/Zaire  
May 1990

# SOCIAL SOUNDNESS ANALYSIS

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## SOCIAL SOUNDNESS ANALYSIS

### I. PREFACE

This annex focuses primarily on the impact of fuel imports, institutional and policy reforms, decentralization, and road rehabilitation on various populations, particularly rural households and private sector enterprises. The annex identifies ways in which the Transport Reform Program (TRP) may affect fuel importers, road contractors, manual road workers, transporters, and farmers. Gender and urban/rural differentials are discussed as well as socio-political issues.

Since TRP is primarily national in scope, analysis of the social context for "projectized" activities in Bandundu and Shaba is limited. A more detailed description can be found in recent agricultural and transport project papers. See Annexes 4, 5, and 6 for discussion of related transport and economic issues.

### II. BACKGROUND

Building and maintaining Zaire's road infrastructure is a formidable task given the country's size (eleventh largest in the world), varied terrain and soil conditions, and abundant rainfall. Integration of Zaire's 250 ethnic groups into the national economy depends on a functional transport network serving both urban and rural populations. In the past large sums of money were spent by the GOZ and international donors on developing this network. The deteriorated state of the roads is testimony to the need for a revised strategy.

The Transport Reform Program is designed to facilitate the restoration of the road network and ensure its sustainability. Provision of \$28 million of fuel under USAID's Commodity Import Program (CIP) will be contingent upon the adoption and implementation of policy and institutional reforms aimed at establishing a systematic, efficient, and adequate road maintenance system. Revenue from fuel taxes will provide Office des Routes (ODR) and Service National de Routes de Desserte Agricole (SNRDA) with a steady source of funds for road maintenance and rehabilitation. ODR is responsible for the national and regional road network, SNRDA for agricultural feeder roads. Counterpart funds generated under the program will help finance road network planning and management as well as institutional reorganization and development. Bandundu and Shaba, regional sites of USAID's agricultural projects, will

receive most of the counterpart funds that are specifically designated for road activities.

### III. KEY POPULATION GROUPS

TRP benefits include financial savings, sales and investment opportunities, and employment generation. Groups that will be affected most immediately by TRP are oil importers and retailers, road maintenance contractors and their employees, transporters, marketing intermediaries, and major road users such as the mining industry and agro-industries. Long-term benefits resulting from sustained success in building a viable road maintenance system will accrue to farmers, traders, and urban and rural consumers. The Mission has identified rural households and private sector enterprises as TRP's key population since they are the focus of the Mission's overall strategies to increase agricultural production, productivity, and rural household income, and to develop the private sector.

#### A. Rural Households

Around 70 percent of Zaire's population lives in rural areas. Local agricultural feeder roads represent 60 percent of the total inventoried road network but account for less than one percent of the country's traffic. During agricultural marketing campaigns, merchants send trucks to pick up produce; however, during much of the year, there are few motorized vehicles on the feeder roads. Goods are carried on the head or back and to some extent by bicycle. Animals and intermediate travel aids are used to a very limited degree.

Without transport corridors, be they roads, waterways, or railroads, rural households are isolated from the national economy and dependent on subsistence agriculture. Completion of the 525 kilometer paved road from Kinshasa to Kikwit in 1977 stimulated cash cropping in the Kwilu area of Bandundu. Accessibility to the area and increased agricultural production resulted in Bandundu replacing Bas-Zaire as the principal source of Kinshasa's food supply.

When asked to identify priorities for local development, villagers frequently mention transportation and roads. In 1988 over 40 villages in Central Bandundu were surveyed as part of a Rapid Rural Appraisal. In response to the question "What is the first problem in your village that you want to resolve?" medical care ranked as the first priority for local development, followed by the need for buyers, markets, and transportation for

agricultural products. Improved housing and improved roads and bridges ranked third and fourth.

#### **B. Private Sector Enterprises**

Many private sector enterprises will benefit from the Transport Reform Program -- fuel importers and retailers, industries, transporters, merchants, and private road contractors. Potential road contractors include agro-industries, private voluntary organizations (PVOs), and small local operators. The sections below discuss the impact of TRP on these groups.

#### **IV. CONSTRAINTS AND INCENTIVES**

As noted earlier, villagers are quick to identify roads and transportation as priority needs. They also associate improved roads with increased agricultural production. The 1987 Impact Evaluation of Projet Nord Shaba (PNS) reported that:

Almost all of the farmers located in PNS roads attributed their increased production to improved roads. The ability of traders to get to their villages or areas of production was cited by farmers as the determining factor in their deciding to increase production. In areas where roads were not improved, difficulty of evacuation was cited as the major constraint to increased production. Corn traders also mentioned roads as the most important factor explaining the increase in production.

Bad roads are disincentives to increased production for several reasons. First, they hinder the delivery of agricultural inputs. Improved corn seeds have not been distributed in some areas of Shaba due to poor road conditions. Second, bad roads can reduce competition, lower farmgate prices, and increase the risk of post-harvest loss. Not knowing whether another merchant will come to their village, farmers often accept a low price for their produce. Post-harvest loss due to delays in crop evacuation discourages farmers from increasing production. The extent to which this loss can be attributed to lack of transport varies in different areas.

In Bandundu, transporters interviewed as part of a recent road transport study (see Annex 4) claimed that produce is, for the most part, reaching the market. However, this may not be true for villages located beyond the average 140 kilometer radius

served by individual transporters. Farmers, traders, and transporters interviewed during a 1988 Commercial Survey Baseline Study in Central Shaba identified lack of transport as the major impediment to improving commercial marketing channels. Project officers in Central Shaba continue to report a surplus of corn in some villages despite consumer demand. To reach villages in this area, trucks coming from the west must travel over cattle tracks and make a lengthy detour because there is no ferry across the river. Given the limited number of trips that can be made over such roads, traders prefer to maximize their trips by purchasing higher profit commodities such as palm oil and peanuts.

Merchants and other transporters are not inclined to extend their areas of operation or increase their transport fleet if roads are in a state of disrepair. Due to deteriorated road conditions between Kinshasa and Kikwit, some transporters have stopped operating on this road. Kikwit merchant transporters who used to average four trips per month per vehicle to Kinshasa are now averaging two. Difficulty in obtaining spare parts and credit for new vehicles also hinders development of the transport sector. Improved, maintained roads should be an incentive to transporters to increase the number of trips they make, since both the time and vehicle operating costs of each trip will decline.

For many private sector organizations, poor roads mean lost vehicles, markets, and revenues. To protect their interests, many of these organizations have repaired local roads at their own expense. In the future, SNRDA will be contracting with private sector organizations for maintenance of rural feeder roads. In Bandundu and Shaba alone, nearly 300 organizations have expressed interest in road maintenance. These organizations will benefit as both consumers (road users) and as producers (recipients of government contracts). However, a major impediment to participation is skepticism that contractors will be compensated for their services. This skepticism is based on earlier, negative experiences with government maintenance contracts.

## **V. PROGRAM IMPACT**

This section identifies the ways in which different groups, by virtue of their occupation, gender, or place of residence, could be affected by the Transport Reform Program. Road improvement is one variable interacting with others to stimulate change. Some of the related variables which will shape the impact of TRP are:

- . The inflation rate and corresponding changes in consumer purchasing power and relative prices of manufactured goods.
- . The availability of credit to traders and transporters for agricultural campaigns.
- . The regulatory environment (cost of taxes, fines, licenses, trade barriers, and informal taxes).
- . Competition generated by the import of commodities which are produced locally (sugar, rice, and corn).
- . The availability of credit for purchase of vehicles and spare parts.
- . Investments in agriculture, health, industry, and education.
- . Elasticity of supply for rural commodities. In some areas, labor constraints may inhibit intensification of agriculture and economic growth.

#### **A. Occupation**

##### **1. Fuel Importers**

The most immediate beneficiaries of TRP are fuel importers, particularly those in Kivu and Shaba. TRP will increase their access to foreign exchange for the purchase of fuel imported under the Commodity Import Program. Fuel price adjustments will allow fuel companies to receive adequate compensation for their purchases. Between 1987 and mid-1989, government-controlled fuel prices were set below importers' cost. In addition to losing money on fuel sales, the companies were not receiving payment for the fuel bills of GOZ ministries and parastatal organizations. Consequently, the companies refused to pay fuel taxes, thereby, depriving the government of its major source of funds for road maintenance. A regular supply of petroleum products at market prices will provide a systematic funding mechanism for road maintenance and may encourage retailers to reopen depots closed during periods of shortages.

##### **2. Private Sector Road Contractors**

The next group to benefit from TRP are private sector road contractors and their employees. During the past ten years, Office des Routes contracted with private sector organizations,

referred to as "attributaires," to complete approximately 25 percent of manual road maintenance. ODR performed almost all road work requiring equipment. ODR's reorganization calls for the transfer of maintenance, rehabilitation, and construction work to the private sector, with ODR functioning as a management and planning institution. Transfer of maintenance activities is expected to proceed fairly rapidly, since many private sector organizations such as agro-industries, merchant transporters, and PVOs are already experienced in road maintenance. The private sector will be slower in assuming responsibility for rehabilitation and construction because major investments in equipment and training may be required.

### 3. Manual Road Workers

The Transport Reform Program will generate employment for thousands of manual road workers, referred to as "cantonniers." SNRDA projects that maintenance will be performed on 21,000 kilometers of agricultural feeder roads in 1991, rising to 35,000 kilometers in 1995. Manual labor requirements are determined on the basis of one "cantonnier" for every two kilometers, and one "capita" (overseer) for every ten "cantonniers." On the basis of these projections and calculations, manual road maintenance would provide seasonal, part-time employment for 10,000 to 17,000 manual road workers and for over 1,000 overseers.

During the colonial period, "cantonniers" acquired a certain status in their communities because they were paid for their labor. The post-independence Roads Administration employed as many as 40,000 workers, most of them manual maintenance laborers. In the mid-1980s, Office des Routes dismissed all its manual road workers, who by then numbered 8,000 and represented about half of ODR's employees.

Today "cantonniers" are an aging generation of specialists. New recruits are often the poorest individuals in a community. In a 1989 study of "Private Sector Road Maintenance in Zaire," Brown and Musungu reported that manual road laborers lived in conditions of extreme insecurity and frequent exploitation. They found cases in which "cantonniers" were not paid for their labor. An effective fuel tax, which provides stability for road maintenance financing, will help ensure that ODR has funds to pay "attributaires" so that they, in turn, can make regular salary payments to their workers. Another form of protection would be to stipulate as a selection criterion that "attributaires" have a record of being a reputable employer.

#### 4. Transporters

The most immediate beneficiaries of improved roads are transporters. Annex 4 gives a detailed description of the three categories of truck owners:

- . the formal trucking industry which transports goods for third parties.
- . producers, mainly of manufactured goods, who operate their own truck fleets.
- . merchant transporters.

The third and largest category is the one which most directly affects rural households -- TRP's key population group.

Merchant transporters purchase produce directly from the village and transport it to large urban centers. In the cities they buy goods such as salt, soap, and cloth which they then sell in their stores. Merchant transporters interviewed in Bandundu said that with new trucks and better roads, they could increase the number of trips they make. Improved roads will extend vehicle life, reduce vehicle operating costs, and lower fuel consumption per trip. Improved roads will also provide merchants with opportunities for new markets and increased sales. Inefficient operators and those who have profited from lack of competition may not benefit from improved road conditions.

#### 5. Farmers

Provided that there is no collusion among merchants, a well-maintained feeder road network should encourage competition, resulting in increased marketed surplus. Following the rehabilitation of a road in Central Shaba, the price farmers received for corn increased from approximately 50 percent to 90 percent of the railhead price. Lower transport costs for manufactured goods and higher farmgate prices should result in a more favorable exchange for farmers.

Serviceable rural roads are part of a set of interventions aimed at increasing agricultural production and maximizing farmers' benefits. In order to take advantage of higher farmgate prices, farmers require agricultural inputs and extension services. For instance, Kinshasa consumers prefer cassava from Bas-Zaire over cassava produced in Bandundu. Lubumbashi consumers prefer Zambian corn. USAID-supported agricultural projects are introducing new crop varieties and cultivation techniques that can increase agricultural production and improve quality. Extension agents provide marketing information which helps farmers determine how much of their fields should be planted in various crops.

## B. Location

### 1. Rural Areas

Without a viable road network, rural areas are isolated from markets as well as services. The absence of all-weather roads hinders recruitment of health professionals for employment in rural health facilities. Due to the poor state of the roads, adequate supervision is difficult to provide under the USAID-assisted Basic Rural Health Project. If a bridge is washed out or if a road is impassable, a detour can add significantly to travel time and reduce the actual number of hours visiting doctors are able to spend at rural health centers. At certain times of the year, some health centers are cut off from supplies and supervision. Motorcycles used by health workers soon require maintenance due to the bad roads. The majority of the motorcycles provided by the project are in disrepair, awaiting spare parts.

With a good road system, villagers can more easily travel to towns that offer specialized care. When emergency care is required, road conditions are a critical factor.

On the negative side, greater movement of people between areas increases the spread of disease. In Zaire, AIDS has been confined primarily to urban areas, but the number of rural cases is increasing and would most probably rise even higher if there were better urban-rural road linkages.

Some studies have noted the potential negative impact of roads on nutrition. Findings from a 1983 nutritional survey in Bandundu suggested that the incidence of malnutrition among children was highest in forested areas and second highest in areas near roads in the Kwilu subregion. It was reported that much of the peanut crop (an important protein source) was sold to traders for shipment to Kinshasa after the Kinshasa-Kikwit road was paved in 1977. It appeared that many households near roads had elected to sell a greater proportion of their crops, using the money to buy consumer goods and higher cost food, and to pay taxes and school fees. The survey focused on the incidence of malnutrition and did not generate enough information to analyze the causes of malnutrition. However, it points to the need for nutrition education and monitoring.

Road rehabilitation can have consequences on land tenure and the environment. Increased land values associated with improved access to economic centers can result in land disputes and displacement. Population pressures can lead to diminished fallow time, deforestation, and erosion. These problems have already been identified in some areas of Bandundu where roads have been

rehabilitated. Kivu, with its high population density, will likely experience more pressure on the land as rural areas become more accessible.

One benefit sometimes mentioned in connection with roads is increased personal mobility. Some believe that roads will hasten migration to urban areas. These issues are likely more relevant in areas with new road construction and a developed public transport system. At present, the public transport system is fairly limited. Road rehabilitation will encourage the expansion of bus service between urban and rural areas.

## 2. Urban Areas

Urban streets and roads do not fall under the jurisdiction of Office des Routes; therefore, they will not be maintained as part of the Transport Reform Program. However, the prices urban residents pay for fuel, transport, and agricultural products are likely to be affected by TRP. This section will focus on the possible impact on food prices and reserve discussion of fuel prices to a later section of the paper.

Lower transport costs and increased agricultural output should drive down the price consumers pay in the market for agricultural goods. A recent study comparing annual deflated retail prices of two cassava products in the Kinshasa market lends support to this relationship. The paving of the Kikwit-Kinshasa road transformed Bandundu into the dominant exporting region of "cossettes," the most common form of marketed cassava. As supply increased, the real price of "cossettes" (in 1988 zaires) dropped from Z 144 per kilo in 1978 to Z 85 per kilo in 1988.

Because of its perishability, improved road conditions had little effect on the supply of "chikwangué," a ready-to-eat cassava product, since Kinshasa remained dependent on areas closer to the city. Based on the price reference above, the price of "chikwangué" rose from a low of Z 86 in 1981 to Z 151 in 1987. Reflecting these price changes, per capita "cossette" consumption has grown slightly since 1975 while consumption of "chikwangué" has fallen substantially.

In addition to food, cities are dependent on rural areas for raw materials. Many agro-industries, such as jute, soap, and textile manufacturers, are operating at less than full capacity. Improved rural-urban linkages and increased rural incomes should increase the production and sales of locally manufactured goods.

### **3. Regions**

About a third of Zaire's primary and secondary roads are included in ODR's 1990-92 priority program for rehabilitation and maintenance. Selection of roads for rehabilitation and maintenance is always subject to various pressures. In order to protect against favoritism, Office des Routes has developed a set of selection criteria. (Refer to Annexes 3, 5, and 6.)

Shaba and Bandundu will receive most of the CIP-generated counterpart funds specifically designated for road maintenance and rehabilitation. The two regions that will benefit directly from TRP fuel imports are Shaba and Kivu. They were selected because their fuel consumption corresponds to the magnitude of USAID's funding and the entry points for fuel imports are in the east and south. The other regions, which receive their fuel via Matadi, will be serviced through World Bank fuel imports.

Decentralization is one of the major components of the Transport Reform Program. Under TRP, regions and local communities will increasingly be given greater authority and responsibility for road work. Increased regional and local participation will encourage transparency, accountability, and better performance. The rate at which decentralization takes place will differ from region to region. There are presently great variations in the capacity of different regions to manage road maintenance and rehabilitation and to mobilize local resources. (See Annex 5 for a discussion of decentralization.)

## **VI. GENDER CONSIDERATIONS**

Women are likely to benefit from TRP mostly in their roles as farmers, market vendors, and particularly traders. Women are unlikely to benefit from the program's employment and training opportunities since "cantonniers" and ODR/SNRDA professional and technical employees are men. Two studies planned under TRP will be of particular relevance to women. One will examine the potential for intermediate technologies in rural transport; the other will research the informal transport sector.

### **A. Women as Farmers**

Zairian women play a critical role in the production, processing, and transportation of food. A 1970 Agricultural Census showed regional male/female ratios in smallholder agriculture ranging from 73/100 in Bas-Zaire to 98/100 in Equateur. In both Bandundu and Shaba, there were 83 men farmers

for every 100 women farmers. These ratios do not reflect gender differences in the amount of time spent in agricultural activities. In Bandundu, men's agricultural involvement is limited primarily to the clearing of fields. Women are responsible for sowing, weeding, and harvesting food crops.

Studies in USAID project areas indicate that many women farmers are heads of household. Out of more than 13,000 households surveyed in one zone in Bandundu, 17 percent were headed by a woman. Female-headed households represented 27 percent of the more than 17,000 households surveyed in another zone.

The premise that improved access to markets will increase women's agricultural productivity is the subject of some debate. One concern is that transporters will continue to favor low bulk, high value cash crops such as coffee over cassava, traditionally a woman's crop. A second concern is that time constraints will hinder women's ability to respond to new opportunities. In the 1988 study, "Agricultural Labor Productivity and Rural Development in Kwango-Kwilu, Zaire," Springer-Heinze concluded that women's productivity in traditional farming systems will not improve given the constraints on women's time and their limited access to innovations and education. There are two possible responses to this conclusion: 1) since men have fewer constraints on the use of their time, men should be introduced to improved farming practices and promising agricultural activities such as livestock raising, fish farming, and cash cropping, or 2) efforts should be made to extend agricultural services to women and to alleviate their time constraints.

For the most part, the first approach, which confines women to less productive activities, is the one that has been applied in Zaire. USAID agricultural projects are attempting to take the second approach by extending agricultural services to women and advocating the elimination of time constraints such as imposed cropping. In the area of USAID-assisted activities in Shaba, over one fourth of the contact farmers are women. Contact farmers are trained by extension agents to provide information on improved farming practices to other farmers. Five of the 35 extension agents are women. In Bandundu, a Women in Development pilot activity provides extension services to 500 women. These efforts, along with programs to improve women's health and education status, will increase women's ability to take advantage of development opportunities, including those made possible through road improvements.

## B. Women as Transporters and Traders

Significant recognition has not been given to women's contribution in the transportation of goods, much of it done on foot, carrying heavy loads on the head or back. In areas of Zaire where fields are several kilometers from the village, the first stage of the transportation system is both labor and time intensive. Even in Central Shaba, where the division of agricultural labor is more equitable than in many parts of Zaire, transport of cassava from the fields to the family granary is performed exclusively by women.

Some women farmers sell their produce to merchant transporters. Others headload their goods to local markets. In rural areas women are also seen transporting such items as combs, candles, and notebooks. E. Reid, in her 1982 survey of the Kwilu area of Bandundu, observed: "All bicycle commercants are men. However, there are many women commercants ambulants who walk, often long distances, from villages to larger market towns where they purchase small items for resale at village markets."

The impact of improved roads on these "commercants ambulants" will likely be minimal. However, traders dependent upon transport will be among the first beneficiaries of TRP. Although the formal transport industry and the merchant transporter class are male dominated, women traders play a significant role in the transportation of goods. Some women own their own trucks; others rent trucks or space on traders' trucks. In Shaba, the majority of traders who travel up and down the Kasai River on passenger/cargo boats are women. A few women from Kinshasa, Bandundu city, and Kasai buy limited amounts of agricultural products in villages in Bandundu. They sell these goods in urban centers in exchange for salted fish, cloth, second-hand clothing, and other consumer items.

In her study of Kisangani businesswomen, MacGaffey (1987) found that women represented 28 percent of the owners of sizable businesses who were not connected with politics. These women specialized in retail and semi-wholesale trade, travelling commerce, and the transport of goods to and from Kinshasa and to the interior of the country. In addition to women who had commercial licenses, many more operated in what MacGaffey calls the second economy. The number of women in this informal sector is unknown since their activities are unmeasured and unrecorded.

In Kinshasa there are prosperous businesswomen who trade in goods they have purchased in Europe. They also buy large quantities of rice, dried fish, chicken, and palm oil from the interior. These enterprising businesswomen also function as semi-wholesalers or market intermediaries. Of 500 market women

surveyed in Kinshasa, 20 percent said that they bought agricultural produce from market intermediaries; 53 percent purchased their goods from depots where merchant transporters sell produce from Bandundu and Bas-Zaire (Departement de la Condition Feminine et des Affaires Sociales, 1984).

The food and transportation cycle ends, as it often begins, in the hands of women. In 10 Kinshasa markets surveyed, 83 percent (13,000) of the food vendors were women. Among 500 women surveyed, 40 percent depended on pushcarts to transport goods from the point of purchase to the market; nearly one fourth carried the produce themselves or hired a porter.

### C. Women as Road Maintenance Workers

ODR's plans for road maintenance in rural areas will generate employment for thousands of road maintenance workers. Women have not been employed as "cantonniers," but they have been involved in road work. Reid (1982) reported that in the Kwilu area of Bandundu, women cultivators often worked on the roads for no pay to ensure that traders had access to their village.

Until a few years ago, the political party organized a labor supply for public works projects, including road maintenance. This practice is referred to as "salongo." Neighborhoods and communities were "strongly encouraged" to participate in these projects. Under "salongo" a 12 kilometer road in Bandundu was built manually by local women cultivators. Three male road workers, paid by the collectivity, supervised their work. Although "salongo" is no longer an official policy, it continues to be practiced in some areas, especially in places where there are no recognized "attributaires." An extension specialist working in Bandundu recently reported that women in her area still do road maintenance as part of "salongo."

It would appear that manual road work becomes a "man's job" when it is remunerated. Every effort should be made to find equitable solutions to road maintenance needs, including increased reliance on "attributaires" who regularly pay their workers and do not rely on "salongo."

## VII. SOCIO-POLITICAL ISSUES

### A. Distribution of Benefits

A.I.D. found in its evaluation of road projects (Anderson and Vandervoort, 1982) that few of them had resulted in a reduction of inequities. The most immediate beneficiaries of improved roads are often major road users and people with access to capital, such as owners of industries, commercial enterprises, and trucking firms. This is not to say, however, that benefits do not accrue to people of lower socio-economic groups. A sustained rural infrastructure and overall improvements in the economy, in part stimulated by investments of the above mentioned groups, can bring long-term benefits to the rural poor in terms of their purchasing power and access to services. As pointed out by Howe in his study of "The Impact of Rural Roads on Poverty Alleviation: A Review of the Literature" (1984), "...the extent to which road investments will affect the distribution of incomes and people's response to possibilities of new services remains speculative."

### B. Fuel Price Adjustment

Fuel price adjustment is one of the critical components for meeting the TRP conditionality of adequate domestic resources for road rehabilitation and maintenance. Prices are to be adjusted for inflation and changes in the world price of fuel. In recent years, oil importers incurred a loss because the fixed price of fuel did not cover their costs. Due to lack of liquidity, distributors' operational stocks were insufficient, resulting in irregular distribution, shortages, and consumer dependency on the parallel market where prices were nearly ten times the official rate.

A reliable source of fuel will be one of the benefits consumers receive from frequent fuel price adjustments. Regular fuel supplies will benefit consumers in the interior of the country who are often the first to suffer from shortages. If free market conditions prevail, competition should result in better service. In addition, revenues generated from fuel sales will help to finance road rehabilitation and maintenance. (For an in-depth discussion of the fuel sector, see Annex 2.)

Frequent fuel price adjustments will likely lead to price increases, creating hardships, especially for urban residents and lower economic groups dependent on kerosene for lighting and cooking. Kinshasa residents get to work each day by walking or

by riding in a bus, taxi, or personal car. Bicycles and motorcycles are very rarely seen. It is not unusual for workers to spend two hours travelling to their place of employment. Transport costs can take one third of a domestic household employee's salary. An FSN at grade 5 who is employed by the Mission stated that 17 percent of his salary is spent on public transportation.

Major increases in fuel prices can have serious repercussions. In February 1989, the doubling of fuel prices (and consequent doubling of public transport rates) precipitated student demonstrations in Kinshasa and Lubumbashi. The demonstrations quickly took on a more political tone; there were reports of numerous injuries and the deaths of from two to over 20 students. It is hoped that regular, frequent adjustments to fuel prices will help avoid this type of reaction to price changes.

### **C. Decentralization and Reorganization**

One of the potential benefits of decentralization mentioned earlier is employment generation in rural areas for local manual road workers and private sector organizations. With local interest groups assuming greater responsibility for the road network in their area, accountability and performance should improve. This transfer of power, however, will not take place without some resistance and obstruction. Based on the positive reception decentralization has received at the ministerial and regional level, TRP will initiate pilot activities and case studies of decentralization and local resource mobilization. (Decentralization is addressed more fully in Annex 5.)

Reorganization of Office des Routes entails a dramatic reduction in staff. Between December 1988 and March 1990, the number of ODR employees was reduced from 7,500 to 5,800. Another 800 are scheduled to be released by the end of this year. There is discussion now of reaching a staff level of 2,000 by 1993. These reductions have resulted in some disturbances. After an announcement was made that the number of contract personnel would be reduced in August 1989, cases of vandalism and violence were reported in Kasai, with threats of similar actions in Shaba. In response, ODR decided to postpone the release of these workers until their contracts had expired.

ODR plans to give seven billion zaires in severance pay to the 1,200 employees who will be released in 1990. This amount is about three billion zaires more than it would cost to keep the employees on the payroll for a year. The assumption is made that most of ODR's technical people, such as mechanics and equipment

operators, will be employed by the private sector organizations awarded contracts for road work. ODR is considering a contract stipulation that would require the hiring of former ODR employees whenever contracts of a certain magnitude call for the recruitment of new personnel. Seventy ODR engineers will be seconded to SNRDA. Other employees will receive training so that their skills match the institution's requirements. Assistance for training will be provided through TRP. (See Annex 8 on training.)

#### **D. Conditionalities**

There are inherent risks in building a program on a set of conditionalities. In the best case scenario, TRP will operate without any interruptions. However, the World Bank's experience with structural adjustment in Zaire suggests that the Mission carefully consider the implications of withdrawing assistance whenever conditionalities are not met. One of the objectives of TRP is to help establish regular, systematic financing for road maintenance. If USAID and/or the World Bank delays delivery of fuel imports, there could be fuel shortages and disruptions in payments of the fuel tax. ODR then would once again be unable to maintain roads or pay contractors. Breach of contract on the part of ODR would in turn seriously jeopardize the prospects for decentralization.

Another objective of TRP is to develop ODR's planning and budgeting capability. Conditionalities and counterpart funding will make this task difficult. If TRP is halted, there will be no counterpart funds for ODR operations or road maintenance in Shaba and Bandundu. Even if TRP is operational, the Mission may find itself in the position of needing some of the fuel-generated counterpart funds for other project activities or for operational expenses.

With program assistance contingent on compliance with conditionalities, USAID might find itself acting as an enforcement agent rather than a development partner. Care should be taken in the selection of the technical assistance team. The efforts of technical advisors will be counterproductive if team members see their task primarily as policing ODR and SNRDA.

## VIII. CONCLUSION

The purpose of developing a sustainable road network is to facilitate the movement of goods and services. A viable road network can help rejuvenate Zaire's economy. Roads connect minerals and coffee with export markets, food and agricultural raw materials with urban markets, and manufactured goods with rural markets. Roads provide an incentive for economic investment in agriculture, industry, or commerce, and link people with services that can improve their productivity, health, and welfare.

The impact of road improvements will be limited if not accompanied by improvements in Zaire's macro-economic investment climate and other interventions. Potential benefits could be eroded by high inflation rates, restrictive government pricing policies, or a decline in world prices for cash crops. The most promising prospects for TRP are in areas where roads are one component of an integrated development approach. Rural households will be able to capitalize on the opportunity provided by better access to markets if they can increase their yields, improve the quality of their produce, and alleviate women's time constraints.

The potential long-term impact of TRP is greater than many traditional road rehabilitation projects for two reasons. First, TRP's emphasis is on road maintenance. In the absence of a maintenance program, new or rehabilitated roads soon fall into disrepair. Second, TRP addresses the structural problems that have handicapped ODR's operations. TRP will make a significant contribution to the transport sector by establishing a systematic funding mechanism for road maintenance and developing the institutional capacity to plan and manage a sustainable road network.

TRP's socio-economic impact will be monitored through changes in traffic, transport costs, commercial activity, rural-urban terms of trade, and marketed surplus in USAID project areas. Program impact will be monitored through the information units of the Central Shaba Development Project and the Agricultural Marketing Development Project, Mission research activities, TRP-funded impact studies, and ODR's Cellule d'Information. TRP studies will examine the social impact of fuel price adjustments and the transporters' response to improved road conditions. Two studies, one on the informal transport sector and the other on the transport needs of lower income groups, will suggest programs for addressing the transport needs of women. Annex 9 (Research and Analysis) describes the monitoring activities and research studies that will form the basis for evaluating TRP's socio-economic impact.

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**ANNEX 9**

**RESEARCH AND ANALYSIS**

USAID/Zaire  
May 1990

## RESEARCH AND ANALYSIS

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## RESEARCH AND ANALYSIS

### I. INTRODUCTION

The TRP research agenda is fourfold:

- . to study alternative funding mechanisms for road rehabilitation and maintenance;
- . to develop the capacity for the collection and analysis of transport information;
- . to monitor and assess the program's impact; and
- . to provide the analytical framework for future project design and sector activities.

This agenda is based on the analyses done in preparation for the PAIP and the PAAD. The research program is discussed in this annex under the headings of Alternative Road Financing, Transport Information System, Impact Analysis and Evaluation, and Future Programming. The research budget appears in Annex 12.

### II. ALTERNATIVE ROAD FINANCING

Office des Routes (ODR) and SNRDA, the two institutions responsible for Zaire's road network, are dependent on revenues from fuel taxes and the GOZ's investment budget. In recent years these two funding mechanisms failed to provide adequate resources for road maintenance. As a result, the road network rapidly deteriorated. Alternative, supplemental funding options will improve the prospects for a sustainable and effective road maintenance system. Two of the options to be studied under TRP are road user fees and local resource mobilization.

#### A. Road Use Fees and Road/Vehicle Damage Tests

Road use taxes would place more financial responsibility on users for road maintenance and repair. Presently owners of motorized vehicles, most of whom are urban residents, support road maintenance through fuel consumption taxes. Vehicle owners are not assessed according to the axle load or the damage their vehicles cause to the roads. Consequently, the financial contribution to road maintenance made by trucks is low compared to that made by cars.

In order to assess the viability of road user fees, two studies will be done. The first will require Road and Vehicle Damage Tests. Road damage tests will measure the damage inflicted on a variety of road surfaces by different types of vehicles and the cost of repairing this damage through road rehabilitation and maintenance. Vehicle damage tests will be used to estimate owners' operating costs according to the quality of road conditions.

The Road User Fee Study will utilize the results of the road and vehicle damage tests to calculate equitable road user fees. The study will also propose efficient and appropriate methods for collection of these fees. Another aspect of the study will be to examine measures for limiting road damage, such as axle load regulations, customs regulations on the importation of oversized trucks, and rain barriers.

#### **B. Local Resource Mobilization**

In addition to road user fees, local revenue generation is another alternate financing mechanism that will be studied under TRP. An analysis of fiscal mechanisms, organizational options, tax assessments, and collection procedures will be the task of the TRP regional technical assistants based in Bandundu and Shaba. These two advisors will work with short-term consultants, local officials, researchers affiliated with the university system of Zaire, and USAID staff to develop specific recommendations for improving the revenue performance, collection efficiency, and financial management of local administrative jurisdictions. The recommendations resulting from the study will be implemented in selected test zones to provide an operational study of their effectiveness.

### **III. TRANSPORT INFORMATION SYSTEM**

The establishment of a sustainable infrastructure will require reliable financing and sound investment choices. At present, ODR lacks the reliable information and planning tools needed for the development of a highway master plan and a road network maintenance strategy. One of the objectives of TRP is to improve the institutional capacity to plan and manage the road network through the establishment of a road information system.

TRP will provide technical and commodity assistance to ODR's Cellule d'Information (CI) to assist in the development of this system. The institutional contractor will provide one long-term

transport economist to work with a Zairian counterpart in directing the information unit. TRP will also support the unit by supplying vehicles, computer hardware and software, and pneumatic traffic counting devices.

The Cellule d'Information will be responsible for inventorying the road network and classifying roads and bridges according to their type, condition, and construction and maintenance history. In addition to these road quality inventories, CI will develop a program for origin/destination studies and for nation-wide traffic counts on priority paved highways and selected earth roads. Road data collection activities will be piloted in Bandundu and Shaba.

#### **IV. IMPACT ANALYSIS AND EVALUATION**

In order to assess the impact of TRP, information will be gathered from several sources: the information units of the Central Shaba Development Project (660-0105) and the Agricultural Marketing Development Project (660-0098), Mission research activities, and TRP-funded impact studies. TRP will draw upon data being collected as part of the Mission's agricultural, health, private sector, and PVO activities. The Cellule d'Information will provide basic information that can be used for impact analysis, including records of private sector road maintenance contracts. Except for CI's nationwide data, most of the monitoring and impact data will be collected in Bandundu and Shaba, the regions of USAID-assisted project activities. The program's economic impact will be measured primarily through changes in traffic, transport costs, and commercial activity.

##### **A. Ongoing Data Collection**

As part of their ongoing monitoring activities, the Cellule d'Information and the 105 and 098 information units will be recording traffic counts and travel times. The Cellule d'Information will measure transport (vehicle operating) costs. CI will use the traffic counts and vehicle operating costs along with the actual costs incurred in rehabilitation and maintenance to calculate internal rates of return for upgraded, rehabilitated, and maintained road sections. The calculations from these benefit-cost analyses can be applied to future road rehabilitation and maintenance programs. These calculations will enable ODR to verify the accuracy of its assumptions and estimate the true returns to road rehabilitation and maintenance.

Commercial activity, another impact indicator, is currently being monitored under the 105 and 098 projects. Commercial baseline surveys have already been conducted in these areas with follow-up surveys scheduled for 1991-92. The Central Shaba Development Project will soon begin monitoring the market prices of approximately 10 commodities. This data will show changes in the terms of trade as will price monitoring activities under the Shaba Refugee Roads Project.

Marketed surplus will also be used as a measurement of commercial activity and agricultural production. Since 1988 the Central Shaba Development Project has been collecting and analyzing the volume of produce leaving eight railheads. For several years records have been kept of Bandundu produce marketed in Kinshasa. Market prices and marketed surplus will be indicative of the impact of development interventions on women's food crops and men's cash crops.

The information unit of Project 105 will also be gathering household data on production, productivity, marketed surplus, and income. These variables will be correlated with the distance from transport infrastructure. Census and regional data bases, currently being developed by the Mission for its Program Impact Evaluation framework, will be another tool for studying the relationship of transport infrastructure to labor productivity, per capita consumption of goods and services, and nutritional status. Research from the Cornell Food and Nutrition Policy Program may also provide relevant data for analysis.

#### **B. Special Impact Studies**

Two areas that will require special TRP impact studies are 1) the social impact of fuel price adjustments and 2) transporters' response to improved road conditions. One of the TRP covenants is that the GOZ's fuel pricing policy reflects changes in world fuel prices, foreign exchange rates, and inflation. Fuel price adjustments usually mean higher prices. The Social Soundness Analysis (Annex 7) notes that sharp fuel price increases can negatively affect lower income groups dependent on kerosene for lighting and urban residents dependent on public transportation. In 1989 the doubling of fuel prices triggered public disturbances.

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The Fuel Pricing Impact Study will look at such issues as:

- . the proportion of household expenditures going to fuel and transport;
- . the impact of fuel price adjustments on public transport fares, transporters' fees, and consumer prices; and
- . the costs and benefits of fuel price increases versus benefits derived from regular fuel supplies, improved distribution and, ultimately, improved roads.

Another impact study will focus on Transporters' Response to Improved Road Conditions. Information gathered during the pre-PAAD study of the transport distribution industry (see Annex 4) will serve as the starting point for the TRP impact study. Thirty-seven road transporters were interviewed as part of the March 1990 study. In 1994, the same transporters will be interviewed to determine whether there have been any operational and/or attitudinal changes associated with improved road conditions. Specifically, the study will determine whether any changes are reported in the size of vehicle fleets, the number of trips per vehicle, travel times, trucking rates, vehicle operating costs, areas of operation, and levels of competition.

The transporters will also be asked if any constraints, such as lack of spare parts or credit, hindered them from taking full advantage of improved road conditions. The March 1990 study indicated that the transporters were skeptical that Office des Routes and SNRDA would promptly meet their financial obligations to road contractors. The 1994 study will attempt to identify any attitudinal changes of transporters toward ODR and SNRDA.

To complete the picture, villagers from areas in which the transporters operate will be interviewed. They will be asked about changes in the number of merchant transporters visiting their village, farmgate prices, and post-harvest losses attributable to transportation problems. Another question will be whether transporters continue the practice of issuing credit for the purchase of goods at their stores in lieu of direct cash payments to farmers.

### C. Evaluation

In sum, the two special impact studies, monitoring information collected throughout the program, and data from the Mission's research activities will provide the tools for evaluating TRP. Within the first six months of the program's start-up, the institutional contractor will develop a TRP monitoring and evaluation plan. A start-up evaluation will be

conducted in 1992 and a final evaluation in 1994. The first evaluation will focus primarily on the status of policy and institutional reforms. The final evaluation will concentrate on program impact on the GOZ road maintenance system (planning, financial/administrative management, decentralization, local resource mobilization, private sector involvement), road infrastructure, and socio-economic indicators.

## **V. FUTURE PROGRAMMING**

In addition to research activities directly related to program implementation and impact, TRP will fund three studies to provide the analytical framework for future project design and sector activities. A brief description of each study follows.

### **A. Potential Expansion of Transport Services**

As noted in AID's Rural Roads Evaluation Summary Report (1982), "A healthy, competitive transport industry is necessary to realize the benefits of rural road improvements." The TRP study on the expansion of transport services will outline options for USAID assistance to the transport industry. The study will analyze policy, regulatory, financial, and other constraints hindering expansion of the industry.

### **B. The Informal Sector in Transport Services**

The activities of the informal transport sector remain unmeasured and unrecorded for the most part. The purpose of the TRP-funded study will be to determine the extent to which transportation of goods is dependent on the informal sector, and the potential for development of this sector. Particular attention will be given to the role of women traders and entrepreneurs. As discussed in Annex 7, many women specialize in retail and semi-wholesale trade, travelling commerce, and the transportation of goods to and within Zaire. This study will describe in detail women's contribution to the distribution and delivery of goods and will identify opportunities for assistance to these traders/transporters.

### C. Transport Needs of Lower Income Groups

The first objective of the study will be to identify the transport needs of lower income groups, especially small-scale urban and rural producers and entrepreneurs. Several sites will be selected for the study of transport requirements associated with work, marketing, and social travel. Social travel includes visits to health and educational facilities and attendance at religious services, ceremonial rites, and political meetings. Gender differences in transport needs and access to alternative transportation technologies will be analyzed.

The second objective of the study will be to determine the feasibility of meeting these needs with intermediate transport technologies. The researcher will review evaluation reports and visit areas that are experimenting with animal traction and alternative, lower cost transport technologies. Based on these visits, the literature review, and the site studies, the researcher will recommend future USAID activities that respond to rural mobility needs and gender-specific transport requirements of lower economic groups.

**ANNEX 14**

**STATUTORY CHECKLIST**

**USAID/Zaire  
May 1990**