DECENTRALIZED FINANCE AND MANAGEMENT OF ROAD MAINTENANCE IN ZAIRE

DECENTRALIZATION: FINANCE AND MANAGEMENT PROJECT

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TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS

ANEZA	National Businessmen's Association
CRCM	Coordonnateur Regional de Cantonnage
DFM	Decentralization: Finance and Management Project
GOZ	Government of Zaire
HIMO	high intensity of labor
km	kilometer(s)
MPR	Mouvement Populaire de la Révolution
NGO	nongovernmental organization
OFIDA	The National Customs Bureau
ONATRA	Office National de Transport (the National Transportation Office)
OR	Office des Routes (the National Roads Office)
OVD	Office de Voirie et Drainage
PIO/T	Project Implementation Order/Training
PNS	Project Nord Shaba
PRAAL	Programme d'Appui á l'Autosufficance Alimentaire
SCMTP	Public Works Equipment Management Service
SNRDA	Service National des Routes de Desserte Agricole
SOW	Scope of Work
TPAT	Departement du Travaux Publics et de l'Amenagement du Territoire (Ministry of Public Works)
UNDP	United Nations Development Programme
UP	Unités de Production (Production Units)
USAID	U.S. Agency for International Development
Z	zaires (approximately 400 zaires = U.S. $1.00)

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The team met with many Zairian Government officials at the national level and in the regions of Shaba and Bandundu (see List of Persons Contacted--Appendix B). Through many hours of discussions with these individuals, our understanding of road maintenance and local public finance was enriched, and we thank them for their patience and informative insights.

EXECUTIVE SUMMARY

As an integral component of the USAID Zaire Mission strategy for fostering economic growth through increased agricultural production and marketing, rural road rehabilitation and maintenance has received and continues to receive substantial USAID financing.
There is growing concern by USAID and other international donors about the Zaire government's inability to assure adequate and regular maintenance of economically crucial transportation arteries.

This concern has resulted in a number of USAID-sponsored efforts in support of road maintenance, including technical assistance provided through the centrally funded Decentralization: Finance and Management Project (DFM). The present report is the result of a two-month assignment by a three-person team fielded under the DFM project. The major objectives of this assignment were to determine the feasibility of alternative financial and organizational mechanisms for improving the sustainability of road maintenance in Zaire, and to assess local, decentralized capabilities for financing rural road maintenance.

Principal Findings

Physical Characteristics

Zaire's road network is vast and extremely heterogeneous. The total road infrastructure is approximately 145,000 kilometers (km) and may be divided into "general interest" roads which include national roads (RN 20,700 km), regional priority roads (RR1 20,200 km), and "local interest" roads that consist mainly of agricultural feeder roads. These local feeder roads are estimated at 87,000 km.

The single most important characteristic of the road subsector in Zaire is its variability. Zaire is host to a remarkable range of topographic, pedologic, hydrologic, and climatic conditions.

The variability in road conditions prevents easy generalizations and militates against the adoption of a uniform maintenance program or uniform standards. To date, less than 40 percent of the tertiary system has been inventoried and the degree of accessibility, practicability, and economic importance of much of this system has yet to be accessed.

The bulk of the road system, national as well as feeder roads, is also characterized by the serious deterioration of road surface quality and road structures such as bridges, culverts, and drainage ditches. Without routine maintenance, the continued deterioration of Zaire's national, regional, and local roads is certain. Deterioration has already reached a point where it constitutes a serious constraint and disincentive for increased agricultural production, while restricting marketing and preventing access to important social, economic, and administrative services.

Road Maintenance Practices

Donors, local communities, agro-industries, and nongovernmental organizations (especially religious missions) have played key roles in the maintenance of specific components of the road system. Nevertheless, these actions are often isolated and, in the case of road rehabilitation, may not be subject to routine maintenance once improvements have been completed.

Manual maintenance as a practice was an integral part of the development of the road network during the colonial period. Road maintenance, like road construction, depended largely, if not entirely, on human labor. The vast colonial road network was maintained primarily by laborers who were hired, managed, and compensated locally. Above all, road maintenance in Zaire is not a technical problem. Sufficient technical and practical

expertise exists to assure the effective physical maintenance of the entire road system of the country.

Organizational Context

Currently, there are two principal executing agencies responsible for road maintenance and improvement in Zaire; the *Office des Routes* (OR) and the *Service National des Routes de Desserte Agricole* (SNRDA). The mandate of OR consists of planning, programming, budgeting, production (force account), and control of road construction, rehabilitation, and maintenance of the national, regional priority, and regional secondary networks, including ferries and bridges. SNRDA's role is to assure transportation between areas of agricultural production and consumption markets through maintenance and improvement of rural agricultural roads. SNRDA is a planning, management, and coordinating body which does not undertake production of road works but carries out its mission by means of contracting with various private-sector and nongovernmental (NGO) entities.

In addition to these two principal agencies, a number of national-level departments (Public Works, Transportation, Planning, Finance, Budget, Territorial Administration) all perform important functions in the provision of road maintenance services. At the subnational level, regional road commissions headed by the governor of each administrative region have an increasingly important consultative role to play in road maintenance and improvement activities in the regions.

Provision of Road Maintenance Services

The resources allocated to the road sector in Zaire come from a multiplicity of sources: external and internal, governmental and nongovernmental. Investment expenditures in the road sector are typically financed by external sources; however, donor and lending agencies are reluctant to support the recurrent expenditures of road maintenance. Resources for road maintenance are also mobilized by the private sector. Some agribusinesses, merchants, and nongovernmental organizations (such as churches) maintain their "own" road network as a recurrent business expense.

The national government provides the quasi-totality of resources assigned to road maintenance. The bulk of these resources are mobilized through an extra-budgetary transportation surtax on petroleum products, of which a little less than 50 percent is earmarked to the road subsector. These resources are allocated to both OR and SNRDA.

Experience has demonstrated that earmarking the transportation surtax has not been a guarantee of sustained and reliable funding of the road subsector. The conflicting objectives of resource mobilization for roads and that of petroleum price regulation has resulted in a notable shortfall in revenues at the expense of the road subsector. The petroleum taxation reform presently underway is of vital importance to the continuity and sustainability of the provision of road maintenance services in Zaire.

At the present time, within their very limited possibilities, the subnational administrative entities (regions, zones, *collectivités, cités*) manage to allocate some resources to road maintenance. Of particular relevance to financing subnational road maintenance are the local revenues generated from transportation-related taxes by regions, zones, and *collectivités*. The Shaba railhead tax is a noteworthy example of this kind of fiscal instrument.

Whereas essential financial resources are the virtual monopoly of the central government, the information on road conditions and utilization necessary for formulating road maintenance programs are concentrated at the local level. Although there is a noticeable trend toward increased participation by regional and subregional technical and administrative bodies in determining priorities for road maintenance and selection of contractors, control over financial resource allocation remains centralized. The insufficiency and irregularity of financial resources from the central government frustrates the efforts of regional and subregional entities and seriously reduces the effectiveness of their programs.

OR and SNRDA carry out their mandates essentially on models and systems handed down from their national headquarters. Procedures and standardized management systems established at the central level stifle initiatives and allow limited flexibility to local authorities and technicians to find adaptive solutions to local area problems.

A number of major problems related to inspection and oversight of road maintenance contractors severely limit the effectiveness of road maintenance services. Inadequate resources for carrying out inspections and the lack of enforceability of contracts are among the principal constraints. More realistic evaluation criteria based on technical review of the conditions of each road segment need to be developed. The utility of site visits could be strengthened by focusing on training to improve the technical and organizational capabilities of the contractors and their workers.

The validity of contractual agreements requires that terms and conditions be enforced including the application of both negative and positive sanctions to assure adequate performance and adherence to contract terms. There must also be mechanisms for recourse by contractors in the event of a dispute. Within the SNRDA program, no sanctions appear to have been applied or legal attempts made to enforce contractual obligations by either party. *Attributaires* have been powerless to take action against the State when payments are in default. Under these circumstances, it is extremely difficult to expect that proper maintenance will take place.

Production of Road Maintenance Services

Both the public and private sector are involved in the production of road maintenance services. Public-sector organizations, principally OR, are actively involved in maintaining large sections of the national, regional, and, to a lesser extent, local road networks. Manual as well as mechanized techniques are used, although the latter are by far the most important for the OR road maintenance program.

The private sector is engaged in road maintenance primarily on a contractual basis, as *attributaires* of either OR or SNRDA. Road maintenance by *attributaires* is performed almost entirely by manual laborers, who are recruited, supervised, and paid directly by the contractor.

In addition to private-sector involvement in the *attributaire* system, some large agro-industries have maintained a substantial road network of direct importance to their economic activities independent of any compensation from the State. The scale of privately financed road maintenance has diminished significantly over the years and, in all probability, this trend will continue.

The actual performance level of the private-sector *attributaires* and the public-sector enterprise responsible for road maintenance in terms of kilometers of road maintained is unknown and indeterminable at the present time, with the current reporting and performance monitoring system. The key elements influencing performance have yet to be identified and verified, and the merits of private-sector production relative to public-sector production have yet to be demonstrated.

With regard to public-sector production of road maintenance, exclusive reliance on mechanized interventions is neither technically optimal nor realistic given present priorities and technical capabilities of the regional OR offices. The advanced state of deterioration of much of the earthen road system requires that OR place highest priority on the use of its mechanical and budgetary resources for major road rehabilitation and construction activities, thereby reducing its involvement in maintenance. OR's capabilities are further weakened by the difficulty of maintaining mechanical equipment in operational condition. Limited access to needed spare parts and lengthy repairs seriously lower OR's capacity for both road rehabilitation and maintenance. OR's current equipment inventory is composed predominantly of high-cost, technologically sophisticated, heavy equipment more suitable to the demands of road construction and major rehabilitation than to the more modest needs of routine road maintenance. Greater attention should be given to the use of light machinery in conjunction with

manual labor for road maintenance as a means of alleviating the costs and problems associated with heavy equipment utilization.

Despite these problems, the role of public-sector organizations in the production of road maintenance services should not be ignored. OR will continue to be an important actor in this area. The major constraints associated with an expanded role of the road services in production activities remain the lack of sufficient funds and of management capability, and the high cost of integrating a corps of maintenance workers under public statutes regulating the treatment and benefits of employees.

Local Resource Mobilization for Road Maintenance

While any comprehensive road maintenance program has little chance of sustainability without a significant financial contribution from the subnational level, the likelihood of such a decentralized contribution is low in the short term. Significant improvement in the overall resource capabilities of decentralized units of administration will require a comprehensive reform of the Zairian local fiscal and parafiscal systems. Corollary to these reform measures, efforts will be need to taken to strengthen regional and subregional capabilities in tax collection and administration as well as in expenditure control and financial management.

This long-term perspective is warranted not only by the time span necessary to improve local management and control functions, but also by the expectation that other public services, such as health and education, and basic expenditures, such as salaries and administrative equipment, will, receive high budgetary priority if and when more local revenues are made available. In brief, road maintenance is only one of several competing local priorities.

Five distinct levels of decentralized administrative entities have the power to raise taxes: the regions, the municipalities, the urban zones, the rural zones, and the *collectivités*. Generally, the revenues collected by the regions and the *collectivités* account for approximately 80 percent of

total locally generated revenues. The intermediate levels (municipalities, urban zones, rural zones and cities) collectively raise the remaining part of the global revenue effort.

It has been estimated that the total taxes raised by the subnational administrative entities in Zaire account for approximately 4.5 percent of all government tax revenues. The relative weakness of the subnational levels of administration is evident, as is the fact that the Zairian public sector remains highly centralized.

The overall resource base of the subnational levels is strengthened in principal by the tax-sharing system, which is meant to provide each local entity with a minimum level of resources without the corresponding burden of tax administration. This system has never worked and, therefore, the only revenues available to each local entity are those that it collects for itself. Given the lack of human and technical resources in most of the local entities, as well as the very low incomes of the taxable population, especially in rural areas, it is not surprising that local entities have never become providers of public services nor effective agents of development.

The combination of nonrestrictive laws concerning local taxation and the pressing needs of local administrative entities have resulted in the proliferation of taxes at the local level. This panoply of taxes is not thoroughly recovered and huge discrepancies exist between the amounts budgeted and the amounts actually raised, as well as great variations in the proceeds from one tax to another and from one year to the next. The proliferation of overlapping and duplicated taxes and quasi-taxes (permits, licenses, fines) on goods, services, and economic activities, and the lack of control over the revenue collection process, result in gross inefficiencies and practices that lead to inequitable tax burdens.

Tax evasion is widespread. However, more significant in terms of the volume of unrealized revenues is the notorious phenomenon of tax evaporation by tax collectors, which is estimated at 70 percent of total collections. The low salaries

paid to civil servants is one reason for the existence of these practices and, to a certain extent, make them necessary. Also, many of the taxes have a poorly defined tax base or tax rate; this leads to interpretations and encourages negotiations between the tax collector and the taxpayer. In many *collectivités*, some of the more productive revenue sources are fines imposed by local administrative agents. The widespread imposition of fines easily leads to abuse and raises serious difficulties in controlling collectors and enforcing attribution of receipts to the appropriate budget.

The willingness of citizens to contribute to NGOs and private providers of services is due largely to the lack of or inaccessibility of public services as well as to popular trust that the funds raised will serve a useful purpose. The existence of these contributions demonstrates that resources are available at the local level to finance the production of local public services, but that these resources either do not enter into the public budgetary system or are allocated to uses other than the provision of public services. There is certainly room for substantially increasing the revenues of the local entities without increasing the tax burden of the population.

Local resource mobilization cannot be expected to provide road maintenance services until the taxes raised are sufficient to cover the basic costs of local administration. Local entities make few investments and although regional entities do plan investment expenditures in their annual budget presentations, they rarely have any resources to invest, except when they benefit from a special grant from the central government.

The Shaba Region is one area of the country where investment capital has actually been budgeted and disbursed. Although the amounts involved are rather modest compared to the global needs of the region, they represent a serious effort to develop an investment capacity. Road maintenance is among the priorities that benefitted from regional investment.

Principal Conclusions and Recommendations

Although the economic benefits of the country's road system are generalized throughout the entire economy, the localities, *collectivités*, and regions are the most affected by the quality of their roads. Therefore, road maintenance is a particularly appropriate domain for local action. However, national institutions will continue to play a key role in the overall planning and finance of the transportation sector, in general, and of road infrastructure, in particular.

Interest in and support for a more decentralized approach to road maintenance is developing at various levels within the Government of Zaire and among donors. Steps have already been taken and additional measures are being discussed to broaden the role of regional and even subregional authorities in key areas of road maintenance provision and production.

The transition toward a more decentralized system, although necessary, is not without risk. The institutional, financial, and technical capabilities of decentralized authorities and organizations are not sufficiently well-developed to sustain a dramatic increase in financial and operational responsibilities for road maintenance. Moreover, a much broader effort is needed to improve overall fiscal and administrative performance and to strengthen management capabilities at the regional and local levels.

The regionalization of road maintenance finance and management is both feasible and necessary for the long-term viability of Zaire's road infrastructure. The recommended focal point of decentralization initiatives should be the region. At the present time, the region is the only decentralized entity that offers sufficient technical and financial potential to allow for the successful assumption of the authority and responsibility necessary for the provision of road maintenance services.

Regionalization, then, is the first step in the process of decentralization. The reinforcement of financial and management capabilities at this level will provide the basis for subsequent involvement of more local levels of administration. Flexibility

should be maintained and encouraged to allow regions to solicit participation from the zones and *collectivités*. This will be a necessary factor in the development of a more decentralized road maintenance system.

For a regional approach to road maintenance to be effective, two critical bottlenecks must be resolved at the national level. First, the financial crisis besetting the two principal actors in road maintenance, OR and SNRDA, must be successfully settled. Continued central financing of both organizations is essential for road maintenance. Regional and subregional entities do not have the financial capacity at this time to assume full or even primary responsibility for financing road maintenance activities.

However, potential exists to improve regional revenue-generating capabilities through a combination of measures aimed at institutional strengthening, fiscal and administrative reform, and training. Furthermore, important improvements in the production of road maintenance services may be obtained by enhancing regional capabilities in programming and budgeting, liberalizing contractual arrangements and enforcing sanctions for noncompliance, reinforcing inspection and supervision, and experimenting with alternative road maintenance technologies and organizational arrangements for delivering road maintenance services. Implementing these measures will require considerable resources as well as the political will and determination of regional authorities and the central government.

It is recommended that **a minimum financing level be established for SNRDA and OR to be allocated specifically to road maintenance activities at the regional level.** Efforts should be made to obtain a commitment from the GOZ that this funding level will be guaranteed, and that funds will be disbursed on a regular basis, even if receipts from the petroleum tax are delayed or below projections.

To ensure OR's capability to respond effectively to regional and local priorities and conditions, its regional offices must be granted greater authority in determining regional priorities and resource allocation, in concert with regional authorities and the regional roads commissions. In regard to technical capabilities

at the regional level, it is essential that efforts be taken to assure the continued operation of mechanical equipment and that necessary parts and supplies be made available where they are needed in a timely and efficient manner.

The preparation of annual road maintenance and rehabilitation programs at the regional level is an essential first step in promoting decentralized provision. The objectives of an integrated regional program would be to bring together the resources of various origins and existing production capabilities with locally determined priority maintenance and rehabilitation works. In order to strengthen regional capabilities to prepare annual road maintenance programs and budgets, it is suggested that **donors be encouraged to provide regional authorities with information on their road rehabilitation and maintenance plans and activities within the regional jurisdiction to facilitate their inclusion in the regional programs.**

The regional roads commissions are becoming increasingly important as consultative bodies but still lack experience and decision-making authority. Strengthening the role of the regional roads commissions will increase the possibility for needed flexibility, transparency, and accountability in public provision of road maintenance and rehabilitation services. It is recommended that **USAID and other donors consider the possibility of technical assistance at the regional level specifically in transportation sector planning.**

Contractual obligations must be enforced to restore confidence and improve the quality of road maintenance efforts. This includes applying sanctions to delinquent contractors and establishing accessible recourse mechanisms for dispute resolution. Actions of this type can best be effectuated by regional and local authorities. Therefore, it is recommended that **contracting for road maintenance under the *attributaire* system be liberalized to allow determination of cost structures and other terms and conditions by the regional contracting authority, and that zone-level selection of *attributaires* with oversight by regional roads commissions be implemented. It is further recommended that review procedures be established at the zone and regional levels whereby *attributaires* and contracting**

authorities can be held accountable for their respective obligations.

The improvement of contractor performance can also be addressed through more rigorous inspections and constructive supervision procedures. These measures include **equipping zone engineers with vehicles**, establishing an incentive system for zone engineers, and reducing the frequency of obligatory inspections and mandatory reports. The training function of supervisory visits should be reinforced and the criteria used to evaluate contractor performance should be clarified. Finally, a system of performance bonuses for *attributaires,* perhaps modeled after the OR practice, should be institutionalized.

Increased resource mobilization at the regional level will strengthen the region as an effective level of government and enable it to provide public services, including road rehabilitation and maintenance. Reinforcing decentralization in Zaire is, in the long term, the best avenue toward sustainability of road maintenance production and finance. Existing tax bases can be developed and better managed, provided that the fiscal and financial management capabilities of the regions are improved.

Two complementary sets of measures are required to improve resource mobilization at the regional level in Zaire: a reform of the decentralized fiscal system, and the improvement of regional management capabilities. A number of measures in these two related areas are recommended. **The number of taxes must be reduced. The legal texts that define tax bases and tax rates must be simplified and clarified** as an essential measure to prevent tax evasion through divergent interpretations of the law and negotiations with tax collectors and to facilitate the establishment of more complete and more manageable tax assessment rolls.

The changes in the regional and local tax system must be accompanied by changes in tax management. There are too many tax authorities in Zaire. This leads to an uncoordinated tax collection activity which is costly, inefficient, and difficult to control. **Serious consideration should be given to consolidating collection authority into a single regional**

taxation agency with a corps of professional tax agents to reduce overlapping and improve control over the tax collection process and agents.

Improvements in accounting and audit as well as in budgetary planning and control procedures are a prerequisite to the successful implementation of any reform of local fiscal policy and revenue administration.

Current national funding levels for road maintenance and rehabilitation are not adequate to assure the viability of the road network in Zaire. **The establishment of a donor-backed matching fund for regionally based road maintenance activities to complement existing national efforts is strongly recommended.** Two options are presented, the first calling for the establishment of a multi-donor matching fund at the national level which would be available for all regions, and the second, proposing instead a USAID-financed initiative directly with regional authorities. The creation of a matching fund is in no way meant to supplant or circumvent the established funding mechanisms for road maintenance and rehabilitation. Primary financing for the road subsector will continue to be provided by the road tax and channelled through OR and SNRDA.

The primary rationale for a matching fund is to provide an incentive for regional revenue mobilization and expenditure for road maintenance and rehabilitation. The existence of a new source of funding at the regional level will also provide leverage for implementing the recommended reforms in local fiscal policy, tax administration, budgeting, and transportation sector planning and programming. The availability of funds outside the established programs in road maintenance will provide the means for experimentation with alternative contractual arrangements and road maintenance technologies, including forms of labor organization and mixed light mechanical and manual maintenance capability.

Significant economies may be obtained through the refinement of the production process. The use of national standards, norms, and costing formulae results in a lack of flexibility and imposes limitations and constraints that diminish performance levels.

Due to variability in initial road conditions and maintenance requirements, development of more local, site, and condition-specific procedures and requirements is strongly recommended.

The following measures are recommended to improve the quality of road maintenance services:

- **assess the factors influencing *attributaire* performance**. These may include training, labor management skills, supervision, access to appropriate tools and equipment, payment regularity and sufficiency, and incentive structures; and

- **establish a program of experimentation and evaluation of alternative production technologies, and assess the performance characteristics and cost-effectiveness of alternative systems of labor application for manual maintenance, techniques and appropriate mechanical equipment for specific maintenance tasks, and the mix of manual and mechanical maintenance.**

Possible USAID funding sources for the recommendations proposed above include projects 126, 098, and 105. Project 126 could be used to provide counterpart funds for the matching fund as well as technical assistance in the area of fiscal reform, financial management, and training. Projects 098 and 105 would provide an institutional framework for the provision of technical assistance in transportation sector planning, programming, and budgeting as well as for experimentation with alternative road maintenance strategies and technologies.

I. INTRODUCTION

The USAID Mission to the Republic of Zaire has had a long involvement with and commitment to the development of the transportation sector in Zaire. The rehabilitation and maintenance of rural roads has received and continues to receive substantial USAID financing and is an integral component of the Mission's strategy for fostering economic growth through increased agricultural production and marketing.

Despite the inflow of substantial external resources to the roads subsector from the international donor community, the Mission has become concerned by the financial difficulties faced by the national technical services responsible for this subsector and their demonstrated inability to assure adequate and regular maintenance of economically crucial transportation arteries, including road networks rehabilitated with external financial assistance. This concern led to, among other actions, a request for technical assistance addressed to the centrally funded Decentralization: Finance and Management Project (DFM).

A. Background

The DFM project was designed to study the problems of rural infrastructure maintenance. Through a combination of research and development efforts and activities undertaken in response to specific USAID Mission-issued work orders, the project seeks a better understanding of the institutional and public-finance issues affecting the sustainability of infrastructures, such as roads and irrigation systems.

To date, the project has prepared a state-of-the-art paper entitled, "Institutional Incentives and Rural Infrastructures", including an annex dealing specifically with the roads subsector. This document contains an extensive review of the literature relevant to the finance, management, and institutional dimensions of rural infrastructure maintenance as well as project experience world-wide in this domain. In addition to Zaire, the project is providing ongoing assistance in the area of rural roads to the

USAID Missions in the Philippines and Bangladesh.

In response to a scope of work (SOW) prepared by the Mission (Project Implementation Order/Training [PIO/T] 660-0105-3-60185), the DFM project organized a three-person team composed of a Public Administration Specialist, a Specialist in decentralized service organization and finance, and a Public Finance Economist. The team visited Zaire from 8 July through 22 August, 1989.

B. Objectives

The central objective identified by the Mission was to determine the feasibility of alternative financial and organizational mechanisms for improving the sustainability of road maintenance in Zaire. More specifically, the DFM team was to assess local, decentralized capabilities for financing rural road maintenance.

The SOW, as revised during the course of the assignment, called for the preparation of a report addressing three essential points:

- an overview of the road subsector in Zaire;
- an assessment of the local finance system and its implications for decentralized maintenance, including a review of the Shaba railhead tax effort and other local initiatives in self-financing; and
- an analysis of institutional factors in the provision and production of decentralized road maintenance services.

C. Approach

To accomplish the objectives established for this assignment, it was necessary to develop a detailed understanding of past and present arrangements for the organization and finance of road maintenance and rehabilitation. This included the nature of recent financial crises affecting the transportation sector and the measures taken or proposed to resolve these crises, the formal

organization and performance characteristics of the local fiscal and tax administration systems, and the organizational constraints to effective delivery of road maintenance services. Furthermore, the level of interest in and commitment to improvements in the road subsector on the part of regional and subregional authorities and the general population had to be assessed.

An intensive review of the literature concerning national and subnational economic conditions, national and local fiscal policy, territorial administration and decentralization initiatives, and transportation policy and issues was conducted prior to the team's arrival in Zaire. Relevant USAID project documents were reviewed when available in the U.S. and more intensively upon arrival in-country.

Comprehensive interviews were conducted with national administrative and technical authorities in several departments, including Public Works, Finance, Planning, Rural Development, Agriculture, Transportation, and Territorial Administration. In-depth discussions were held with officials from the two national services responsible for road rehabilitation and maintenance. Representatives of donor organizations active in the transportation sector were also interviewed, as were the members of the staff of the relevant USAID Mission divisions and projects.

Two intensive field visits were organized in the regions of Shaba and Bandundu. The team met with regional political and administrative officials, technical service chiefs, and specialists in various domains relevant to road maintenance and rehabilitation. Discussions and formal interviews were also held with private-sector representatives, local entrepreneurs and business leaders, and representatives of NGOs. During field trips in the interior of the regions visited, meetings were held with private citizens and community leaders, local administrative authorities and public service representatives, and USAID project staff.

Throughout this report, an implicit assumption is made that road infrastructure investments yield positive net benefits, and that maintenance of the infrastructure at some level allows a sustained flow of benefits in excess of the costs of maintenance. Although true in many instances, this assumption may not always be

correct. The level of benefits varies significantly from road to road and depends on a number of factors including the rate of utilization, production potential of the serviced area, the competitiveness of the transportation sector, and the level and quality of maintenance. Cases of road investment that do not yield net positive benefits are to be expected. The issue of the relative benefits to road maintenance is not discussed in any detail in this report, as the economic rationale for road maintenance is not its principal focus.[1]

[1] For a more thorough discussion of the larger economic issues related to investments in roads, see Ostrom, et al. Institutional Incentives and Rural Infrastructures, 1989; and particularly the annex, "Managing and Financing Rural Road Maintenance in Developing countries: The State of the Art", prepared by Larry Schroeder.

II. THE ROAD SUBSECTOR IN ZAIRE

Due to the lack of a comprehensive road inventory, estimates of the size of the Zairian road infrastructure vary from one source to the other. The generally accepted figure of 145,000 km of total linear road surface will be retained for the following discussion. The road infrastructure may be divided into "general interest" roads and "local interest" roads. The former may be further divided into national roads (RN 20,700 km), regional priority roads (RR1 20,200 km), and regional secondary roads (RR2 17,200 km). Less than 3,000 km of the entire road network consists of asphalted highway.

Road surfaces of the majority of the network consist of dirt, sand, and clay. Laterite, which occurs naturally in only a few areas, provides a highly desirable hard and compact surface. Crushed rock, gravel, or small river stone which could be used to upgrade and stabilize road surfaces is quite scarce. Much of the tertiary system lacks bridges and appropriate drainage. Only a small part of the road network is passable throughout the year and average road speed rarely exceeds 30 km/h. The two major asphalted road sections, Matadi-Kinshasa and Kinshasa-Kikwit, have been allowed to deteriorate to the point where major reconstruction will be unavoidable.

The bulk of the road network in Zaire is made up of local interest roads. These small feeder roads serve agricultural producers and merchants and link rural residents with social, economic, and administrative services. A study published in 1949 places the size of the tertiary road system at 83,000 km. A commonly cited figure today for these local feeder roads is 87,000 km. The geographic distribution of this road network is poorly understood by national and regional authorities, including the road services responsible for its maintenance. To date, less than 40 percent of the tertiary system has been inventoried (Tighe, et al. 1989) and the degree of accessibility, practicability, and economic importance of much of this system has yet to be accessed.

A. Physical Characteristics

The single most important characteristic of the road subsector in Zaire is its variability. The second largest country on the African continent, Zaire is host to a remarkable range of topographic, pedologic, hydrologic, and climatic conditions. From the volcanic mountains of North Kivu, to the dense tropical rain forests of Equateur, to the sandy plateau regions of southern Bandundu and central Shaba, the variability in road conditions prevents easy generalizations and militates against the adoption of a uniform maintenance program or uniform standards. This variability is evident at the regional level, of course, but is also quite pronounced at the subregional and local levels. A 25-km stretch of secondary road may include segments of deep sand, heavily eroded clay-sand inclines, a well-drained segment of packed earth, and a marshy lowland or watercourse that may be impassable in the rainy season.

The bulk of the road system, national as well as feeder roads, is also characterized by the serious deterioration of road surface quality and road structures such as bridges, culverts, and drainage ditches. Irregular and inadequate funding of the organization responsible for the maintenance of the national and regional road networks has contributed to the decline of the primary and secondary road systems, while the tertiary system has been allowed to deteriorate without any systematic attempt at maintenance from the time of national independence until the creation of the *Service National des Routes de Desserte Agricoles* in 1987.

The state of deterioration of road infrastructure, though widespread, is not uniform. The National Roads Office (*Office des Routes*) and donor-financed road subsector improvement projects such as USAID Projects 098 and 026 in Bandundu and Project 105 in central Shaba have contributed to the rehabilitation and upgrading of important segments of the economically important rural and agricultural road system. Local communities, agro-industries, and nongovernmental organizations (especially religious missions) have played key roles in the maintenance of specific components of the road system. However, these actions are often isolated and, in the case of road

rehabilitation, may not be subject to routine maintenance once improvements have been completed.

Without routine maintenance, the deterioration of Zaire's national, regional, and local roads is both immediate and certain. Deterioration has already reached a point where it constitutes a serious constraint and disincentive for increased agricultural production, while restricting marketing and preventing access to important social, economic, and administrative services.

B. Road Maintenance Practices

Road maintenance is neither a new nor an unfamiliar topic in Zaire. Manual maintenance as a practice was an integral part of the development of the road network during the colonial period. The same enterprises that carved transportation arteries in the heart of the land grants accorded them by the Belgian crown were also responsible for the maintenance of the network. Tax concessions, subsidies, and other forms of compensation bolstered the prime incentive--self interest--to guarantee the practicability of the extensive pre-independence road system.

In areas with more heterogeneous economic activities and those lacking a major agro-industrial enterprise, the development and maintenance of road infrastructure was assigned as one of the two primary duties of Territorial Administration, the other being increased agricultural production. Road maintenance, like road construction, depended largely if not entirely on human labor. The abuses and excesses that characterized *corvé* (forced labor) programs in the early part of the colonial experience gave way to incentive-based, generally monetary means of labor mobilization. By the 1950s, the vast colonial road network was maintained, in large part, by laborers who were hired, managed, and compensated locally.

The presence of 1950s vintage Studebakers, Chevrolets, and Buicks in remote towns and villages accessible today only with difficulty by four-wheel drive vehicles bears eloquent if generally mute testimony to the efficacy of the manual road

maintenance system. Above all, road maintenance in Zaire is not a technical problem. Sufficient technical and practical expertise exists to assure the effective physical maintenance of the entire road system of the country. The technical road services have many competent specialists in both mechanical and manual maintenance. More importantly, virtually every *collectivité* (decentralized administrative unit roughly equivalent to the U.S. county) and most large villages count a number of experienced *cantonniers* (manual road maintenance laborers) and *capitas* (road maintenance overseers). Most of these local manual maintenance specialists, who constitute the core of current manual maintenance programs, represent an aging generation of specialists who were trained during the colonial period and, consequently, are a resource in clear need of renewal.

Four organizational models for the mobilization of labor for road maintenance may be distinguished.

- ***Collective Voluntary:*** This model, sometimes referred to as "collective action for the common good", or *Salongo*, is based upon the customary practice of labor extraction organized by the traditional chieftaincy system. Though voluntary, participation is reinforced by social mechanisms including sanctions, and nonparticipation may be perceived as constituting a challenge to the political authority of the chief. This method of labor mobilization is most suited to periodic rather than routine activities. Road maintenance tasks commonly assigned to collective voluntary action include transporting dirt and rocks to fill potholes, repairing access ways to water crossings, and cleaning and rebuilding transverse drainage ditches. To be effective, collective voluntary labor mobilization requires careful organization, supervision, and a high level of participant motivation. These requirements are rarely met today. Productivity is generally low and depends largely on the authority of traditional leadership. The organizational inefficiencies of the collective voluntary model render it a type of "anti-system"

wherein the whole is often less than the sum of the individual contributions.

An important variant of this traditional practice has been developed by territorial and other state authorities. Collective voluntary labor is increasingly requested for public projects such as the collective fields established under the Programme d'Appui à l'Autosufficance Alimentaire (PRAAL). The modern-sector variant has strengthened disincentives to nonparticipation--in many cases, by adding fines to the list of existing sanctions. Farmers reported fines of 1,000 to 2,000 Z and more for not working on collective work days. Discussions with village residents revealed a high level of dissatisfaction with this type of labor mobilization practice, often associating it with corvé labor.

- ***Collective Compensated:*** The most obvious difference between the collective voluntary and the collective compensated model is the recompense in-kind or in coin of those supplying the labor. Along with payment comes an assumption of improved motivation and increased importance of the productivity of the undertaking. Food-for-work initiatives have been tested throughout Africa and applied to many sectors including roads. This model has serious promise for the production of specific forms of road maintenance and road rehabilitation services. It is particularly appropriate for nonroutine tasks of a fixed duration. The International Labor Organization has identified HIMO (high intensity of labor) programs as particularly appropriate in developing countries characterized by abundant labor and limited access to capital investments.

Despite the current popularity of HIMO programs, there are serious considerations and constraints which limit their utility. Labor-intensive programs require a high level of organizational skills to assure the productivity of labor and thereby justify compensation

of workers. Labor management and task organization skills are not widely available in Zaire. Finally, the availability of labor, even in largely agricultural societies, is not a given. HIMO activities must be planned in conjunction with the agricultural calendar. In sparsely populated areas, it may be necessary to transport people from their villages to the worksite.

- ***Individual Compensated:*** This is the most commonly applied model of road maintenance in Zaire. It is based upon the efforts of individual, trained, and equipped *cantonniers*. These laborers may work in teams for specific tasks that benefit from the concentration of labor but generally work separately on assigned road segments or on functional tasks under the supervision of a *capita*. This model of labor mobilization is suited to routine as well as periodic or emergency maintenance and requires a moderate level of organizational skill to assure productivity. When workers are paid regularly and adequately, this model provides the strongest incentives for performance. According to a wide array of engineers, road construction experts, and other specialists, routine manual maintenance by *cantonniers* is sufficient to assure the practicability of roads in Zaire.

- ***Mechanized:*** This model replaces labor with machinery, thereby reducing payroll costs, labor management requirements, and the administrative costs attendant to a large workforce. At full capacity, mechanized maintenance offers high hourly production and impressive earth moving capabilities relative to manual maintenance. Roger Poulin, in a 1984 assessment of mechanical versus manual maintenance, comes out strongly for the former on a cost and productivity basis. Despite Poulin's optimism, the case for reliance on mechanized maintenance in Zaire is not convincing. The single greatest constraint to mechanized maintenance is the extreme difficulty of keeping the machines working at even a reasonable level of capacity. The culprits are many and include

mechanical breakdowns, rapid amortization of equipment, lack of spare parts, and logistical and resupply problems. The viability of mechanized maintenance as the core of a comprehensive maintenance program is further weakened by its high initial capital expenditure requirements and by the recurrent need for hard currency to assure provision of spare parts.

Machinery used by the national road service tends to be high-capacity, high-cost, and technologically sophisticated. Such equipment, provided largely by international donors, may be somewhat appropriate for major construction and rehabilitation projects but far exceeds the more modest needs of routine and periodic road maintenance as well as the technical repair and financial capabilities of subnational administrative units and technical services.

The four labor mobilization models for road maintenance presented above are not mutually exclusive. The state of deterioration of much of the rural road infrastructure demands flexibility and innovative applications of available resources. Just as generalizations and uniform solutions are inappropriate due to the variability of topographic, hydrologic, and other environmental conditions, so too does the specificity and variety of local socioeconomic conditions and road maintenance requirements militate against the centralized adoption of a standard organizational model for road maintenance.

C. Organizational Context

At present, there are two principal executing agencies responsible for road maintenance and improvement in Zaire: the *Office des Routes* (OR) and the *Service National des Routes de Desserte Agricole* (SNRDA).[2]

[2] The Office de Voirie et Drainage (OVD) is another quasi-public entity which is responsible for urban roads. As this paper focuses on rural road infrastructure, OVD has been omitted from the discussion.

OR was created in 1971 in the hope of improving the efficiency of road network management and alleviating the enormous burden on public funds of 40,000 employees of its predecessor, the Roads Administration, which had assumed responsibility for the road subsector at the time of independence.

During its 18 years of existence, OR has evolved into an organization of approximately 8,000 employees with extensive geographic coverage of the entire country. It is organized into a number of central technical and administrative divisions which support 9 regional offices, 27 Production Units (*unités de production*), 11 equipment maintenance centers for roads and 3 for ferries, 6 training centers, and 8 public works laboratories. OR has developed a significant capacity in mechanized road construction and rehabilitation and possesses an extensive array of heavy equipment.

The mandate of OR consists of planning, programming, budgeting, production (force account), and oversight (contracting) of the construction, rehabilitation, and maintenance of the national, regional priority, and regional secondary road networks, including ferries and bridges on water crossings. The designation of the road network under OR management occurred in 1977 when simultaneous responsibility for the vast network of local interest roads (approximately 90,000 km) was accorded to the *collectivités*. The local interest road network as a key factor in the agricultural economy also received the attention and some support from the Department of Agriculture and Rural Development from 1981 to 1986.

The lack of resources and multiplicity of responsibilities of both the *collectivités* and the Department of Agriculture led to the neglect and deterioration of the local interest roads. This presented a major constraint to efforts in agricultural development. At the behest of the donor community, the Government of Zaire decided on the creation of a new service within the recently created Department of Rural Development whose responsibility would be the coordination and management of maintenance and improvement of the local interest road network.

The *Service National des Routes de Desserte Agricole* (SNRDA) was established in January 1987 to assure transportation between agricultural production areas and consumption markets. Providing transportation links involves maintenance and improvement of rural agricultural roads (local interest) through subcontracts with various private-sector and nongovernmental (NGO) entities. To avoid excessive recurrent costs and assure maximum involvement of the private sector and NGO communities, SNRDA was conceived as a small administrative and managerial organization with a minimum of personnel assigned to the national-level headquarters and regional-level offices.[3] SNRDA does not undertake force account road rehabilitation and maintenance activities and does not have any heavy equipment. SNRDA relies on personnel from OR for a number of technical and administrative functions under a formal agreement between the two organizations.

As a public enterprise, OR falls under the tutelage of two ministries in the Zairian public administration; the Ministry of Public Works (*Département du Travaux Publics et de l'Amenagement du Territoire* - TPAT) and the Ministry of Portfolio (*Département du Portefeuille*). The former establishes general policy and strategic orientations of the OR program while the latter exercises control over management practices. Nonetheless, OR's status as a public enterprise allows the organization a certain degree of autonomy regarding financial and personnel management. In contrast to OR, SNRDA is a service within the public administration under the Department of Rural Development.

Other departments of the public administration also play an important role in OR and SNRDA activities, notably the Department of Finance and the Department of Planning. Coordinating development planning and harnessing external funding in support

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[3] SNRDA has a total of 43 agents in various technical and administrative capacities. Two engineers and a small support staff of three to four additional personnel are assigned to each region.

[4] In conjunction with the *Programme d'Urgence des Routes de Desserte Agricole*, SNRDA's first action program drawn up in April 1987, a formal protocol was signed between OR and SNRDA which established the respective obligations of each organization for the implementation of this program.

of national development objectives is the responsibility of the Department of Planning. This role is specific to investment planning and programming and therefore has limited impact on road maintenance, the principal focus of this paper.

Due to the numerous public, quasi-public, and private organizations directly or indirectly involved in the road subsector, special commissions have been established both on the national and regional levels which provide a forum for deliberation on major policy and strategic issues. At the national level, an Interdepartmental Roads Commission exists under the authority of the Department of Public Works. The members of the Commission include high-level officials of the Departments of Planning, Rural Development, Agriculture, Finance, Budget, National Economy, and Territorial Administration. Until recently, the Commission was responsible for establishing cost structures and approving awards for maintenance contracts under the SNRDA program.

Of greater significance are the regional roads commissions headed by the Governor of each administrative region which have an increasingly important consultative role to play in road maintenance and improvement activities in the regions. Regional roads commissions are comprised of representatives of the departments of Planning, TPAT, National Economy, Finance, Agriculture, Territorial Administration (regional and subregional levels), SNRDA, OR, as well as the private sector through the National Businessmen's Association (ANEZA) and, in some cases, NGOs, including religious organizations.

III. THE PROVISION OF ROAD MAINTENANCE SERVICES

In studying the various functions required to carry out road maintenance activities by both public- and private-sector institutions, it is useful to distinguish between the provision and production[5] of road maintenance services. For public goods such as roads, provision is most appropriately the realm of the public sector and refers to decisions about:

- the design and location of roads to be provided;
- the degree to which private activities related to road construction, maintenance and use are to be regulated;
- how to arrange for the production of road infrastructure (construction, improvement, maintenance);
- how to finance road construction improvement and maintenance;
- how to monitor the performance of those who produce road infrastructure; and
- how to resolve disputes between or among the various parties involved.

The following sections on the provision of road maintenance services therefore encompass resource mobilization and allocation; planning, programming, and budgeting; and inspection and oversight.

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[5] This discussion on the distinction between provision and production of public goods and services is taken from the DFM "State of the Art" paper, Institutional Incentives and Rural Infrastructures, Ostrom, Schroeder, and Wynne 1989.

Production of goods and services refers to the actual process of transforming inputs into outputs. In road maintenance, this includes activities such as grading, resurfacing, cleaning drainage structures, and filling pot holes. These activities can be undertaken by public-sector organizations which may also be involved in providing road maintenance services or by private-sector entities under various contractual arrangements. As shown in the section on production, both sorts (force account and private-sector contracting) are practiced in Zaire.

A. Resource Mobilization

The resources allocated to the road subsector in Zaire come from a multiplicity of sources: external and internal, governmental and nongovernmental.

1. Overview

Investment expenditures in the road subsector are typically financed by external sources. Road upgrading and rehabilitation is one of the major priorities of international assistance in Zaire. Apart from the external funds assigned to OR to implement national road investment plans, many international assistance projects have major road rehabilitation components, especially in the case of agricultural projects. However, international lending agencies and donor countries are reluctant to support road programs that are viewed as recurrent expenditures and, as such, should be financed by internal resources.

So far, the Zairian government has not been able to effectively maintain the road network of the country, especially in the last three years. Part of the explanation lies in the insufficiencies of the resource mobilization system for road maintenance.

The road subsector resource mobilization system is described in Fig. III.1.

Fig. III.1. Road Subsector Resource Mobilization

	FINANCIAL		NONFINANCIAL
	Budgetary Resources	Extra-Budgetary Resources	Labor and Equipment
National Government	X	X[a]	
Subnational Entities			
• Regions	X		
• Zones	X		
• Collectivités/ Cités	X		X (Salongo)
Private Sector			
• Profit enterprises	X		
• NGOs	X	X	X

[a] Transportation surtax on petroleum products.

The national government (GOZ) provides the quasi-totality of resources assigned to the road subsector (to road maintenance). The bulk of these resources are mobilized through an extra-budgetary transportation surtax on petroleum products (*surtaxe de transport*), of which a little less than 50 percent is earmarked to the road subsector. For convenience, this latter earmarked portion will be referred to as the road tax.

Most of these resources are assigned to OR for the rehabilitation and maintenance of the national and regional priority roads. Until recently, resources allocated to the maintenance of regional and local agricultural feeder roads had to come from the GOZ operating budget; little or no budgetary resources have been made available for this purpose. However, in

1987, the GOZ created the SNRDA and assigned to it part of the revenues from the transportation surtax in an effort to rehabilitate and maintain agricultural feeder roads, in cooperation with the regional and subregional entities as well as with private-sector organizations.

Within their very limited possibilities, the subnational administrative entities (regions, zones, *collectivités, cités*) manage to allocate some resources towards road maintenance--mainly for emergency repairs and maintenance--to keep the feeder roads opened during the crop season. Shaba Region is a case in point that will be described in a later section of this report. Some *collectivités* hire *cantonniers* to perform specific road maintenance and repairs; others organize collective work tasks (Salongos) for the same purposes.

These local initiatives are punctual and scattered and have no systematic and sustained character. However, through the SNRDA program for agriculture feeder roads, the planning and budgeting responsibilities are being gradually decentralized to the regional level, even though the regional and subregional entities are presently unable to assume a significant financial responsibility for road maintenance.

Resources for road maintenance are also mobilized by the private sector. Some agribusinesses maintain their "own" road network as a recurrent business expense; so do major crop buyers in their territories. Also, nongovernmental organizations, such as churches, allocate some of their resources or mobilize resources in their community for road maintenance and repairs.

Since road maintenance resource mobilization depends so heavily on the road tax, it is necessary to comment on the problems it has raised in recent years and to assess its contribution to sustainable road maintenance provision.

2. The Road Tax

The road tax is that portion (50 percent) of the transportation surtax on petroleum products that is earmarked to the road subsector. The greatest part of the road tax (88

percent) is allocated to the *Office des Routes* and constitutes the main source of its operating revenues. The remainder (12 percent) is allocated to SNRDA, which also receives financing through regular budgetary allocations. It is used to fund 100 percent of OR's operating budget and 50 percent of SNRDA's activities.

The key problem of financing road maintenance in Zaire has been a petroleum price policy aimed at keeping retail fuel prices as low as possible. Since the road tax is a component of retail fuel price, the tax rate is set according to the objective of the fuel price policy instead of to the needs of road rehabilitation and maintenance.

To a very large extent, many of the problems encountered by OR over the years, and especially in the last two years, are a direct consequence of the GOZ policy on petroleum pricing and taxation. Prior to February 1989, the rate of the road tax was set as a fixed nominal levy per liter. Due to inflation, the proceeds of the tax were constantly eroded by monetary devaluation resulting in a decline in the real value of OR's budget.

Moreover, the reluctance of the GOZ to increase internal petroleum prices to a level that reflects import prices has resulted in a major crisis with the oil companies which claimed to suffer losses as a result of the GOZ petroleum price policy. Oil companies decided to withhold payment of the petroleum surtax and justified this decision by noting that the GOZ was in arrears with its payments for purchases from the oil companies. The inflow of funds to the road subsector stopped, thus creating a severe shortage of funds which ultimately resulted in a major cutback in road maintenance by OR and almost a complete suspension of SNRDA activities.

It would be useful to detail the foregoing analysis using data over several years of the actual funding received by OR from the road tax. Unfortunately, the team was unable to obtain the necessary information. However, the following data on the SNRDA emergency program demonstrate the gravity of the funding shortfall.

As Table III.1. demonstrates, in 1987 and 1988, only 43 percent and 24 percent, respectively, of the projected resources were made available to SNRDA for the realization of its emergency program. In both years, approximately half of the projected resources were road tax proceeds--the remainder coming from the GOZ investment budget.

Table III.1. SNRDA EMERGENCY PROGRAM

	Projected Budget	Actual Expenses	Actual /Projected
	(in millions of zaires)		
1987	462	198	43%
1988	1600	386	24%

Source: Tighe, David, et al. *Etude de Preparation d'un Programme de Rehabilitation et d'Entretien de Routes de Desserte Agricoles.* UNDP ZAI/86/005. *Rapport d'Etude Definitif,* Mars 1989.

While the approved SNRDA budget for 1989 calls for a GOZ budgetary contribution of 1.9 billion Z and road tax proceeds of 2 billion Z (for a total of 3.9 billion Z), the anticipated funding (as currently assessed by SNRDA) is 900 million Z from the investment budget and 200 million Z from the road tax, or 28 percent of planned resources.

The GOZ has also agreed to OR's request of 14.7 billion Z of national funding for 1989 which would come mainly from the road tax. At the end of July 1989, the prospects of attaining this amount are dim. Nevertheless, OR has decided to allocate a sum of 135 million Z to reactivate its *attributaire* contracts, provide a two-month advance, and, in the meantime, hope to receive the required funds to continue the *attributaire* program on a regular and sustained basis.

The lesson to be learned from this review of resource mobilization through the road tax is that earmarking a tax does not guarantee the sustainability and reliability of funding. In the present case, there has been an obvious conflict between the objective of resource mobilization for roads and the objective of petroleum price regulation. Priority was given to the petroleum price objective, and the relationship between the proceeds of the tax and the evolving needs of the road subsector was lost. The price of petroleum was kept low at the expense of road rehabilitation and maintenance.

As of February 1989, the petroleum price and taxation policy has undergone a major reform. Of particular relevance to road subsector finance are the objective of petroleum price deregulation and the new petroleum taxation which is now on an *ad valorem* basis. The road tax should now be easier to administer.[6] It will also provide a more stable foundation for road maintenance finance since the tax will be automatically adjusted for changes in the general level of prices to the extent that petroleum prices will themselves be adjusted to inflation. If and when total deregulation of petroleum prices occurs, the major obstacle to a continual flow of revenues from the road tax will be eliminated. Therefore, this petroleum taxation reform is of vital importance to the continuity and sustainability of the provision of road maintenance services in Zaire.

However, given the fact that SNRDA receives only a meager portion of the road tax which will have to be supplemented out of a very constrained national budget, rehabilitation and maintenance of agricultural feeder roads are expected to experience chronic under-financing in the future. It would be unwise to increase SNRDA's share of the road tax to the detriment of OR since the quality of the primary and secondary road network is a precondition to the economic viability of investment in

[6] The petroleum surtax is now an import tax, collected by OFIDA (the National Customs Bureau) on entry of petroleum products into Zaire. It was formerly managed as a retail sales tax. Its administration by the oil companies as well as its control by the GOZ have been facilitated by recent changes.

tertiary roads. In light of these constraints, the solution to SNRDA's financing problem may best be found in a decentralized resource mobilization effort.

3. Transportation-related Taxes at the Subnational Level

There is one aspect of subnational fiscal policy that is of particular relevance as a potential source of local revenues for rural road maintenance: the use of transportation-related taxes by regions, zones, and *collectivités*. In particular, the SHABA railhead tax experience is noteworthy.

The Shaba Railhead Tax

The so-called railhead tax is, in reality, a tax on road transportation of agricultural products. It is a fixed levy per kilogram of produce paid by the commercial agent to the region. In principle, all marketed agricultural production within the region is subject to the tax by virtue of the use of road and rail infrastructure. In Shaba, the bulk of marketed agricultural produce is transported by rail to the large consumer markets in Lubumbashi or into the Kasai regions. The road transportation tax is thus easily collected at the station (railhead) where the goods are loaded from trucks to rail cars.

The railhead tax mechanism was apparently originally proposed by the USAID-financed Project Nord Shaba (PNS) to the Shaba Region authorities in order to mobilize resources that would be allocated to maintenance of the newly rehabilitated roads in the project area. The collection procedure was put in effect but the earmarking was not retained.

The Shaba Region made arrangements with the parastatal railroad company, the SNCZ, whereby the latter would collect the tax as part of its billing and would transfer the proceeds to a regional bank account retaining a fixed percentage to cover its administrative costs.

The following table shows the receipts from the tax for the last three years as reported by SNCZ.

Table III.2. Railhead Tax Proceeds in Shaba
(in millions of zaires)

	Gross Proceeds	Administrative Cost(2)	Net Proceeds
1989 (1)	108.6	21.8	86.8
1988	136.4	18.2	118.2
1987	45.9	4.5	41.2

(1) 1989 data cover first two quarters only
(2) presently 20 percent of gross proceeds; 10 percent prior to September 1988.

The rate of the tax has been gradually increased to 300 Z per ton on corn and to 500 Z per ton on cotton, rice, palm oil, and peanuts. This tax has become the region's single most important revenue source. In fact, the railhead tax is the major element of a more comprehensive road-transportation tax which covers the transportation of manufactured goods and livestock products as well as agricultural products. The region reported actual revenues of 63 million Z in 1987 from the transportation tax. This accounted for 40 percent of all revenues for that year. It also reported actual revenues of 43 million Z for the first six months of 1988, whereas SNCZ reports having transferred 118 million Z to the region for the entire year. This discrepancy can be explained by the fact that the agricultural marketing season occurs in the second half of the fiscal year. In 1988, as in 1987, the road transportation tax was the region's single most important revenue producer and was expected to account for 30 to 40 percent of all tax revenues.

In addition to this tax collection effort by the region, some subregional entities (primarily zones and *collectivités*) also benefitted from transportation taxes with tax rates similar to and sometimes higher than the regional rates. However, it is not clear whether these zones and *collectivités* created their own transportation taxes following the example of the region or whether the railhead perception mechanism gave them the

opportunity to more fully recover existing taxes on agricultural products. Table III.3 shows that the zones of Kabongo and Kongolo, and to a lesser extent, the *collectivités* within those zones served by the railroad in the PNS area, report actual revenues from taxes on agricultural products which account for a substantial portion of total actual revenues for 1987 or 1988.

Table III.3 Revenues from taxes on agricultural products in selected zones and collectivités of the PNS area, SHABA, 1987 or 1988
(in thousands of zaires)

Entities/year	Transfer Tax Revenues (A)	Total Revenues (B)	(A)/(B)
Zone of Kabongo (1987)	440	690	64%
Collectivité of Kabongo (1987)	207	1,331	16%
Zone of Kongolo (1988)	3,304	4,628	71%
Collectivité of Bayashi (1988)	288	806	36%

Source: annual accounts, 1987 or 1988

Whether or not these examples are representative of all decentralized entities, a potential exists for pooling these regional and local taxes into one integrated tax on road transportation of agricultural and manufactured products and extending it to the entire region as a resource mobilization device that would greatly increase regional revenues and provide an avenue for possible road maintenance financing. The cumulative tax rate paid to the region, zones, and *collectivités* by traders in the PNS area varies from 800 to 1,200 Z per ton. In the case of corn, this represents less than two percent of the market price in Lubumbashi and less than four percent of the producer price. Obviously, subregional entities would expect to be compensated for the drop in their revenues entailed by pooling this productive tax.

The Bandundu Transportation Tax

The Bandundu Region also has a transportation tax on agricultural and manufactured products, but the administration and control of the tax is much more complex than is the case in Shaba. In Bandundu, goods are transported either by road or by river. Goods that enter or leave the region must either be taxed on the road (tolls) or at the points of transshipment from truck to boat, or vice-versa. These methods of collection immediately pose the problems of Zairian tax evaporation by tax collectors: resources that go into the regional public coffers often bear little relation to what truckers and merchants actually pay at the point of collection.

The recovery rate of this tax in Bandundu is very low. Until mid-1988, the Region was collecting the road transportation tax at the Kwango river bridge which all road transportation to Kinshasa must cross. However, crossing the bridge became so complicated and allegations of malfeasance so common that the national government intervened and forbade all tax and toll collection at the bridge. Before the ban, receipts approximated 1 million Z per month. This is low by Shaba standards, especially when one considers that tax rates are similar and the volume of agricultural production larger in Bandundu. Furthermore, and contrary to what has been observed in Shaba, no significant revenues from transfer or similar taxes on agricultural products were found in the accounts of the Bandundu zones or *collectivités*.

Efforts have also been made to collect transportation taxes on agricultural products at river ports. The relatively small amount of river transportation using *Office Nationale de Transport's* (ONATRA's)[7] infrastructure precluded the use of this parastatal as the sole collection agent. In other than ONATRA port facilities, it is necessary to employ individual tax agents with all the problems of collection evaporation implied. Another

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[7] The National Transportation Office is responsible for river transportation facilities.

attempt at the point of convergence of the Kwamut river failed due, reportedly, to collection difficulties.

While the region is attempting to reinstitute tax collection at the Kwango bridge, plans are being made to implement a number of collection points at the market places being reorganized or created by the region--at ONATRA ports as well as in a number of public storage facilities.

These collection problems, not specific to the transportation taxes, provide support for consideration of streamlining collection procedures and control mechanisms through the creation of a single corps of professional tax agents employed by the region.

B. Planning, Programming, and Budgeting

Planning road maintenance and improvement requires processing complex information in order to establish long-range objectives, targets for physical outputs, and intervention strategies. To be most effective, planning for road works should take into account the spatial characteristics of development plans in other sectors. Programming and budgeting for road maintenance and improvement is the process of translating plans into operational terms to accomplish specific activities over a given time frame with a given set of resources. The desired results from planning, programming, and budgeting activities are benefits in excess of costs incurred.

In an environment of limited resources and a vast existing road network, decision makers in Zaire are continually confronted with choices among a wide variety of options including:

- major rehabilitation;
- periodic maintenance;
- routine maintenance; and
- emergency repair.

With the pressing needs to "open" roads which are unusable, emergency repairs of bridges and sections damaged by erosion most

often take understandable precedence over routine and periodic maintenance. The resulting neglect of routine maintenance activities often results in increased rates of deterioration requiring additional emergency repairs. Eventually, road segments may deteriorate to the point where major rehabilitation is the only solution--an undertaking which demands significant resources and requires external financial assistance. In fact, donor assistance in the road subsector has contributed substantially to the reinforcement of the bias for rehabilitation and repair over routine and periodic maintenance. Although there are no easy solutions to this dilemma, it is obvious that time and place information on the state of particular road segments and their use coupled with control over financial resources is essential to allow the required level of flexibility in decision making regarding the mix and location of maintenance activities.

The previous section has shown that the principal source of funding for the road subsector in Zaire is a centralized tax instrument over which regional and subregional public entities have no control. Whereas essential financial resources are the monopoly of the central government, the information on road conditions and utilization necessary for formulating road maintenance programs are concentrated at the local level.

Planning of road maintenance, as it is defined above, is virtually nonexistent in Zaire. Instead, planning is primarily concerned with capital investments for upgrading and/or rehabilitation. However, both OR and SNRDA have maintenance components in their annual programming documents and there is a noticeable trend toward increased participation by regional and subregional technical and administrative bodies. Although participation by decentralized entities in the establishment of provisional maintenance programs is on the rise, control over financial resource allocation remains centralized. The problems resulting from the insufficiency and irregularity of financial resources are well-known and constitute the principal cause of the dysfunction which characterizes programming and budgeting of maintenance activities. This situation frustrates the efforts of regional and subregional entities, renders their programs meaningless, and erodes confidence on all levels.

Despite this movement toward increased involvement of regional administrative and political personalities in decisions affecting maintenance activities, OR and SNRDA, the implementing agencies responsible for regional maintenance programs, carry out their mandates essentially on models and systems handed down from their national headquarters. This again serves to stifle initiatives and adaptive solutions to a variety of situations found at the local level.

To illustrate these fundamental problems facing effective provision of road maintenance services, this section will discuss the planning, programming, and budgeting practices in place as well as the various actors and their responsibilities for these functions.

1. Planning

As previously stated, planning in the road subsector is limited essentially to capital investments, although the paucity of information on traffic, road conditions, production statistics, and the lack of integration with development plans in other sectors reduce the utility of these decisions. The Executive Council, OR, and the donor community have recognized the need for a major planning exercise and have begun preparing a Road Master Plan (*Plan Directeur Routier*) which will establish road subsector policy in relation to overall development objectives. It will be carried out by OR under the supervision of the departments of Public Works, Planning, and Transportation and Communications, and prepared in conjunction with the Planning Department's proposed National Transportation Plan.

The Road Master Plan will define medium- and long-term perspectives for road infrastructure development, establish programming criteria for decisions on future upgrading, rehabilitation and maintenance, and determine the institutional framework under which the plan will be executed. It will be an important document for harnessing external resources; however, as with all national planning exercises, may present disadvantages in terms of decisions that would best be left to local government entities.

Regional-level planning in Zaire is not well-developed, although the Department of Planning, with assistance from the United Nations Development Programme (UNDP), has embarked on a program to improve regional capabilities in this area. Unrelated to this effort but an example of note is found in Bandundu where a regionally initiated planning exercise has resulted in the preparation of a three-year regional development program[8]. Although the program is basically a collection of projects, it reflects an overall strategy for increasing agricultural production and the development of market infrastructure to provide incentives for producers and traders. The implications of such a program for the regional road network are obvious, and the regional authorities recognize the need for road maintenance and improvement plans consistent with the other elements of their program.

The Governor of Bandundu will propose to the National Assembly the establishment of a Regional Development Fund (*Fond Pour la Promotion de Développement Régional*) for which the region will set aside 20 million Z of its own resources and count on mobilizing an additional 73 million Z from the national investment budget and possibly from donor resources.

2. Programming and Budgeting

As noted above, one of the principal problems related to effective programming of road maintenance activities is the absence of linkages between the determination of sites and work to be performed (programming) and corresponding financial resource allocations (budgeting).

Office des Routes

Annual maintenance programs of OR concern two basic components: periodic mechanized maintenance done on force account by work brigades and routine manual maintenance through

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[8] *Programme du Developpement Socio-Economique de la Région de Bandundu* - 1989 - 1991

contractual arrangements with private-sector, local government (*collectivités*), and nongovernmental entities. In the past, OR has also carried out force account manual maintenance but the problems of costs and management of a large work force have largely precluded this option. It is important to note that in 1987, as a result of OR financial difficulties, contracts for manual maintenance of approximately 17,600 km were suspended.

OR relies on a decentralized system of annual programming and budget preparation including the participation of regional and subregional administrative authorities. OR Production Units (*Unités de Production* - UP) located in each administrative subregion of the country, prepare annual programs of mechanized maintenance and repair work based on the inputs of the work brigades under their jurisdiction[9]. These programs are approved in principle by the subregional commissioner and, in certain subregions, a consultative body in the form of a subregional roads commission also gives a stamp of approval to the proposed program, although it is not clear how prevalent these commissions are or the relative importance of their role.

From these UP programs the OR headquarters in each region prepares an overall program for the region which is submitted to the regional governor and reviewed by the regional roads commission. This commission is primarily a consultative body and appears to have limited decision-making authority. Each regional program is then presented and defended by the OR regional director at the national headquarters in Kinshasa where the final determination of financial and material resources is made. OR national headquarters elaborates a national program and budget based, in principle, on the regional proposals.

The recent technical audit of OR has pointed out that the UP and regional programs are conceived on the basis of physical inputs measured in terms of machine capacities rather than on outputs and desired results of road improvements. Program

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[9] Each work brigade is composed of a number of specialized units called "chantiers". Specializations include grading, resurfacing, and localized repair, and depend on the configuration of heavy equipment assigned to each chantier.

implementation is evaluated by the same type of measurements thereby limiting any real assessment of the organization's accomplishments.

The OR annual budget consists of three basic components: investments, equipment, and maintenance. The investment budget includes external resources and is managed exclusively by the services of the national headquarters. The equipment budget comes under the domain of the Public Works Equipment Management Service (SGMTP). The maintenance budget is divided between force account and contract manual maintenance and comes under regional management authority.

Before OR's financial crisis in 1987, there were attempts to allow more autonomy at the regional level, but the inability of the organization to cover anything above its fixed operating costs presented obvious limitations for this kind of initiative and the respect of regional programming. Funds are provided to the regions on a month-by-month basis with no assurance of continuation to achieve annual programmed levels. In addition, the state of repair of much of OR's heavy equipment and the difficulties with finance and management of spare parts inventories seriously reduce the effective capacity of the local maintenance units which, in turn, prevents realization of the regional programs. A number of cases have been reported of nonprogrammed and budgeted maintenance activities funds being undertaken after intervention by political authorities in the capital. Under these circumstances, the incentives for regional and subregional technicians and administrative authorities to produce credible programs for maintenance are extremely low.

Contracting for manual maintenance under OR financing requires national-level authority (as is the case for all contracts over 100,000 Z). Before the suspension of OR's manual maintenance contracts, preselection of contractors was based on requests of private-sector and NGO entities with approval from local administrative authorities. These contracts, once approved at the national level, are integrated into the regional program.

Service National des Routes de Desserte Agricole

During its brief history, SNRDA has undergone a series of negative experiences but, at the same time, has shown an ability to adjust its program and propose new approaches to improve its effectiveness. The initial setbacks were partly the result of:

- politically driven decisions to award maintenance contracts to companies and individuals having little to do with the areas in which they were to undertake road maintenance; and

- the inability and/or unwillingness of OR to carry out its assigned responsibilities for financial management and technical oversight.

Local authorities and communities have been frustrated and deceived by this experience, especially when workers were hired and received little or no payment. SNRDA was frustrated in its efforts to obtain the services from OR which had been the object of a formal agreement between the two organizations.

Steps have now been taken to reduce substantially the degree of national-level control over programming of road segments and the choice of contractors. However, budget allocations still remain under the authority of the national government and confidence in the continuation of funding has not been restored. Only recently has the flow of funds been reinstated and, despite the new arrangements for financial control at the local level, workers and contractors will require better assurance that contractual agreements will be honored before it is reasonable to expect adequate performance.

The regional roads commissions are becoming more important, and greater responsibilities have been delegated to the subregional and zonal administrations. Final approval of the choice of priority road segments for manual maintenance and repair work (bridges and culverts) as well as the selection of contractors proposed by the regional level has been delegated to zone commissioners and OR zone engineers. There are indications that, in certain areas, zone commissioners are involving the

comités populaires[10] in these decisions. The degree to which these local bodies actually influence decisions is unclear and is an area that merits further study.

Other revised procedures include payments to contractors which are to be made upon the submission of inspection reports prepared by the OR engineers and co-signed by the zone commissioners. Financial management has become the joint responsibility of SNRDA regional agents and the governors. In Shaba, the governor has delegated this role to the subregional commissioner and the UP chief.

These are all positive steps to correct the initial problems encountered by the SNRDA program. They represent a firm move toward decentralized management of agricultural feeder roads maintenance and there are obvious attempts to build in checks within the system. However, there is a great degree of uncertainty regarding the ability (and integrity) of local authorities and technical personnel to implement the system--especially at the zone level, where the administrative authorities and OR engineers have few resources to carry out the activities for which they are responsible.

However, an implicit level of centralized control remains in that the authority given over to the regions has been "delegated". Delegations can be rescinded. SNRDA is still a national service under the authority of the Commissioner of State for Rural Development and the Executive Council. Procedures and standardized management systems established at the national level allow limited flexibility to local authorities and technicians to find adaptive solutions to local area problems. Contracts for manual maintenance are the same throughout the country with standardized cost structures and technical specifications. The variations in geophysical, economic, and social conditions that prevail throughout the country would certainly argue against such standardization. Several cases have been reported where experienced and well-established maintenance contractors refused

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[10] The popular committee is the local organ of the national party, the *Mouvement Populaire de la Révolution* (M.P.R.).

to accept maintenance contracts due to the refusal of the contracting agency to negotiate terms.

As mentioned earlier in this section, the principal funding source for the existing SNRDA program is a portion of the fuel surtax. There has been some funding from the national investment budget as well. These funding sources are subject to constraints that can jeopardize the contracting authority given to the governors and the ability of the contractors to respect their obligations vis-á-vis their workers and the regional governments.

C. Inspection and Oversight

Production of road maintenance services requires inspection and oversight. These are provision functions and, as such, are usually the responsibility of the public sector. It is also possible to contract with the private sector for inspection services, leaving oversight to public-sector entities. Inspection refers to the verification of adherence to contractual obligations and/or the respect for technical specifications by those producing the services. Oversight consists essentially of a check on the validity and regularity of inspections and should also involve the routine monitoring of provision and production activities.

This section will discuss these provision functions in terms of the responsibilities assigned to various actors, the norms as applied to inspection (frequency and evaluation criteria), reporting, and the sanctions which may be applied to correct inappropriate behavior. The major problems revealed from this discussion concern the measurability of road maintenance activities, the resources necessary to perform adequate and useful inspections, and the lack of enforceability of contracts.

1. Responsibilities

Under a formal agreement between OR and SNRDA concluded in April 1987, OR was given the responsibility to provide technical supervision, technical and financial evaluation services, financial management services, and training of SNRDA agents in

the context of the *Programme d'Urgence des Routes de Desserte Agricole*. The agreement stipulated that OR would provide SNRDA with monthly and quarterly reports on work progress. For these services, OR was to receive the equivalent of one percent of the total amount of the SNRDA *attributaire* contracts to cover general administrative and overhead costs. The variable costs of transportation, *per diem*, vehicle repair, and salary bonuses were also to be covered by SNRDA financing. Initially, the funding for payment of *attributaires* and these associated internal costs was put under the direct control of OR, but due to the problems previously noted, financial management responsibilities have been transferred to the regional administrative and SNRDA authorities.

At present, OR zone engineers are assigned as the principal technical inspectors for the SNRDA attributaire contracts. They are to conduct the initial technical and financial evaluations of the road segments assigned to the *attributaires*, including constructing and repairing bridges and culverts (*travaux speciaux*), and preparing progress reports based on monthly inspections of each site. They receive some assistance from the OR *Coordonnateur Regional de Cantonnage Manuel* (CRCM). Direct oversight is the responsibility of the *Commissaire de Zone* who reviews and co-signs the monthly reports. Additional oversight is provided by the *Coordonnateur Regional of SNRDA* and the regional governor who jointly approve payments based on the reports of the zones.

The terms of the initial OR/SNRDA protocol were unrealistic. The rate of expansion and geographic dispersion of SNRDA activities exceeded the capabilities of OR, and the haste applied to the implementation of the emergency program in 1987 led to inadequate coordination and programming of resources. In the midst of its own financial crisis and management burdens, it is not surprising that its obligations to SNRDA stipulated in the protocol were of low priority. This was the cause of a round of disputes which have taken place between the two organizations over the past two years. It would appear that corrective steps have been taken but a number of fundamental problems persist.

OR has its own program of *attributaires* for manual maintenance and assigns inspection responsibilities to the zone engineers as well. This part of OR activities was suspended in 1987, but as of August 1, 1989, reactivated throughout the country on approximately 16,000 km of roads.[11] The zone engineers who, over the past two years have had difficulties in fulfilling their role under the SNRDA program will now have the added responsibility of the OR *attributaires*. It would appear that no formal consideration has yet been given to this problem.

Outside of the SNRDA program, OR has its own system for inspection and oversight of force account and attributaire maintenance work. These internal management issues of OR are not the focus of this report and have been adequately covered by the recent technical audit.

2. Inspections: Frequency and Evaluation Criteria

Once the priority road segments have been determined through the programming exercise described above and the *attributaires* selected, OR and SNRDA engineers carry out an initial technical and financial evaluation of the sites. As the costs of manual maintenance by *cantonniers* are fixed, these evaluations concern the *travaux speciaux* for which detailed estimates of costs and materials are included in the individual contracts.

In addition, the zone engineers are required to establish a *procès verbal de demarrage* which confirms that appropriate materials and workers are on-site. Receipt of this document at the regional level, co-signed by the *Commissaire de Zone* constitutes authorization for future payments to the *attributaire*.

[11] Before the creation of the zone engineer positions in 1985, the OR production unit and work brigade chiefs as well as *collectivité* chiefs were responsible for the inspection of attributaire maintenance.

Zone engineers are supposed to perform monthly inspections on each road segment under contract once work has begun. In many cases, these inspections are difficult to accomplish for the following reasons:

- coverage of all zones by OR engineers is not complete; and
- not all zone engineers are equipped with vehicles[12];

The problems of work stoppage due to nonpayment of *cantonniers* and failure of OR and SNRDA to provide timely incentives to the zone engineers also limit the motivation of these agents to carry out monthly inspections. As a result, the frequency of the inspections seems to vary. Some *attributaires* report receiving regular visits by both zone engineers and SNRDA regional coordinators although not on a monthly basis. Others claim they have received only one inspection since the outset of the program.

Even when zone engineers are equipped with vehicles, the distances involved would require extremely long hours on the road and, in many cases, half of their time away from home. There are conflicting opinions about the feasibility of zone engineers performing monthly inspections with or without adequate vehicular support but, overall, the system definitely requires some adjustments and guaranteed incentives in the form of travel *per diem* if regular inspections are to take place. Vehicle procurement is envisioned under the World Bank 6th Highway Project and priority assignments will be to zone engineers.

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[12] Out of 144 zones in the entire country, only 84 are covered by OR engineers. Among the 48 vehicles assigned to zone engineers, a number of them are inoperable. In Shaba, 11 out of 22 zones have engineers and only four have working vehicles. The Shaba regional program provides that in the zones not staffed with engineers or where there is no vehicle, OR send an agent to the sites or to assist the engineer with vehicular support in order to perform the monthly inspections. In Bandundu, zone engineers cover 10 out of 16 zones and only two have vehicles.

More importantly, there is question as to what the zone engineers are expected to accomplish even when inspections are performed. *Attributaire* contracts contain a standard list of manual maintenance activities that should be carried out, but the need for any one task varies even along the same road segment. The importance of different maintenance tasks may also change depending on the time of year. Quantitative and qualitative measurements of maintenance tasks are therefore difficult, particularly on long road segments.

Because of the elusive nature of assessing maintenance quality, evaluation criteria such as the average speed at which a vehicle can travel on a particular road and ratings of "good", "average", and "bad" have been used. These measurements serve little purpose in terms of evaluating contractor performance. Other criteria used for inspection of *attributaire* maintenance performance include verification of worker salary payments and the existence and condition of tools. Although not unimportant, these factors may or may not have any direct effect on the quality of maintenance or the condition of the road.

More realistic evaluation criteria for inspections need to be developed. A standard check-list is useful but not sufficient. Evaluation of *attributaire* performance should be based on a technical review of the conditions of each road segment at the outset of work and the determination of problem areas needing attention. The utility of site visits by zone engineers may be strengthened by adding a supervisory role which would focus on training. Rather than concentrating efforts solely on inspection, a more constructive approach would involve training of *cantonniers*, *capitas*, and *attributaires* to improve their technical and organizational capabilities in road maintenance. Although this discussion has not evoked the cost factor of regular inspections (non-evaluated at this point), the cost-efficiency ratio would certainly be improved by this more formative strategy.

3. Reporting

Much of the management system of SNRDA relies on the monthly reports prepared by the zone engineer and co-signed by the *Commissaire de Zone*. The principle of oversight by the politico-administrative authority provides a necessary checkpoint and control over both engineer and *attributaire*. Public awareness of the distribution of *attributaire* responsibilities in the zone resulting from the *Comité Populaire's* participation in the selection process provides an additional implicit control thereby increasing the probability of adequate performance.

Copies of the monthly reports are transmitted by the *Commissaire de Zone* to the governor's office and by the zone engineer to OR regional headquarters via the OR Production Unit at the subregional level. Following review by the OR CRCM, the SNRDA regional coordinator also reviews the report and approves payment. Direct transmission of the reports from the zone engineer to SNRDA has also been practiced but frowned upon by OR. Actual disbursement to the *attributaire* is done by direct transfer to the account of the *attributaire*. For this transaction to take place, the signature of the governor and Regional Coordinator of SNRDA is required. A recently designed monthly inspection report format imposed on zone engineers by SNRDA Kinshasa calls for a nominative list of all *cantonniers*, their location on a particular road segment, tasks performed during the month and a verification of salary payments.

The workload entailed by the requirement of monthly reports for each contractor imposes a heavy and unrealistic burden on the zone engineers. Although routine and frequent supervision of contractor performance is highly desirable, written reports could reasonably be required on a quarterly rather than a monthly basis. The zone engineer would be expected to report nonperformance to his superiors at any time.

4. Sanctions

The validity of contractual agreements requires that terms and conditions be enforced. The possibility of applying sanctions, both negative (withholding of payment or termination

of the agreement) and positive (monetary rewards for good work) is a necessary element in contractual arrangements if adequate performance and adherence to the terms of the contract are to be expected. There must also be mechanisms for recourse by the contractor in the event of a dispute. Maintenance contracts with SNRDA have none of these attributes although some are present in the OR system.

Before the suspension of OR *attributaire* contracts in 1987, payments were made on a monthly basis automatically by the regional headquarters. In Shaba, *attributaires* were required to submit monthly salary statements signed by each *cantonnier* and *capita*. Systematic reporting by OR engineers was not required but a negative evaluation could result in withholding payment. The OR system does have an interesting feature of retaining 20 percent of the contract value which is paid in the form of performance bonuses twice a year contingent on a positive evaluation report.

To date, the experience of SNRDA *attributaire* contracting has seriously undermined the credibility of the program. The initial lot of contracts let by SNRDA was widely criticized in the national press and by national, regional, and local leaders. Again in the fall of 1988, although more effort was made to select contractors on the basis of local interest and capability, a number of politically motivated awards resulted. Several *Commissaires de Zone* interviewed attested that *attributaires* responsible for road segments in their areas were unknown to them and to the local population. Many cases have been reported of *attributaires* having received advances as high as 40 percent of the contract amount and after using only a portion of the money to purchase tools and hire *cantonniers* suspended activities. No sanctions appear to have been applied or legal attempts made to recuperate the funds.

Attributaires have no legal recourse to enforce the contractual obligations of the State. When SNRDA has failed to make payments as provided for in their contracts, *attributaires* have been powerless to take action. This has eroded the confidence of *cantonniers* and *attributaires* alike. At the present time, after six months of nonpayment, *attributaires* and

cantonniers are uncertain as to whether back payments will be paid. Under these circumstances, it is extremely difficult to expect that proper maintenance will take place.

In principle, payment of SNRDA *attributaires* is contingent upon the receipt of favorable monthly reports. However, this rule apparently has not been applied as SNRDA *attributaires* have been paid quarterly and even then not on a systematic basis. It was surprising to hear from virtually all the zone engineers interviewed that they felt obliged to conduct the monthly inspections (or more likely to prepare the monthly reports with or without a site visit) from fear of being blamed for nonpayment of the *attributaires*. In reality, the problem of payment to *attributaires* has been largely due to the insufficiency and irregularity of funding from the central government and possibly to the use of funds for other purposes by OR when it was responsible for the financial management of the SNRDA program.

This environment of uncertainty and nonrespect for contractual agreements and administrative procedures plays havoc with the individual incentives of the various actors involved. When zone engineers expect that their *per diem* will not be forthcoming even when they carry out the inspections, they will not be motivated to do so. Furthermore, if they know that, despite a negative report no sanctions will be taken against the *attributaire*, they will attach little value to preparing the report. In cases where the engineer receives his transportation and *per diem* from the *attributaire*, the incentive will obviously be to provide a glowing report regardless of the actual performance of the attributaire. If the experience of the attributaires teaches them that the quality of maintenance carried out has no relation to the payment received, there will be no incentive to provide adequate services. Finally, if the *cantonniers* cannot rely on regular salary payments and are not regularly supervised and inspected, they cannot be expected to work up to standards. The actors at all levels feel powerless to influence decisions, cannot rely on predictable outcomes and therefore have little incentive to perform.

IV. THE PRODUCTION OF ROAD MAINTENANCE SERVICES

Both the public and private sectors are involved in the production of road maintenance services. Public-sector organizations, principally the *Office des Routes*, are actively involved in maintaining large sections of the national, regional, and, to a lesser extent, local road networks. Both manual and mechanized techniques are used, although the latter are by far the more important for the OR road maintenance program.

Local public authorities, especially the *collectivités*, perform some road maintenance using *cantonniers* financed out of *collectivité* revenues. In the cases encountered during field visits, the numbers of *cantonniers* employed and the actual road area maintained were both quite modest and appeared to be on the decline as *collectivité* resources were weakened by inflation, rising costs, and budgetary restrictions.

The private sector is engaged in road maintenance primarily on a contractual basis, as *attributaire* of either the *Office des Routes* or the *Service National des Routes de Desserte Agricole*. *Attributaires* are drawn from various vocations. Road maintenance by *attributaires* is performed almost entirely by manual laborers who are recruited, supervised, and paid directly by the *attributaires*. These laborers are drawn primarily from the group of *cantonniers* who were trained and active during the colonial period. Many *attributaires* lack basic transportation; even fewer have any form of mechanical maintenance capability.

In addition to private-sector involvement in the *attributaire* system, some large agro-industries, such as PLZ and MADAIL in Bandundu and ESTAGRICO in Shaba, have maintained a substantial road network of direct importance to their economic activities independent of any compensation from the State.[13] Interviews with large agro-industries and merchants suggest that

[13] Both PLZ and MADAIL have or have had major contracts with OR and SNRDA. PLZ is one of the largest contractors nationally for SNRDA, with substantial networks in several regions. More information relevant to the activities of these two private-sector organizations is presented in Table IV.2.

the scale of privately financed road maintenance has diminished significantly over the years and that this trend will continue. MADAIL, for example, at one time maintained 1,750 km of road. In 1989, the firm maintains 924 km of which 742 km are under contract with SNRDA. PLZ employed 950 *cantonniers* just two years ago but has cut back to approximately 400 road maintenance workers in 1989. The reasons for reduction in private road maintenance are multiple and vary among actors. However, the prolonged malaise of the national economy has been a key contributing factor. Cash flow in a highly inflationary economy is a major problem for private-sector actors. *Cantonniers* must be paid, even if wages are modest.

The relative importance of mechanized and manual maintenance in terms of total kilometers maintained or percentage of road network maintained is difficult to estimate. The difficulty lies not with the absence of figures, for there are plenty of data to choose from, but in the interpretation and reliability of the numbers provided. The following table was constructed using data provided in the annual reports of *Office des Routes* for 1985, 1986, and 1987. The figures in parentheses were provided in a different section of the same annual report. The 1989 data were provided by the OR central management.

Table IV.1 Mechanized and Manual Maintenance Performed by OR Production Units (UP) and by OR *Attributaires* 1985 - 1989 (in Kilometers)

	MECHANIZED		MANUAL		
YEAR	UP	ATTRIB.	UP	ATTRIB.	TOTAL KM
1989 *	17,828	NA	NA	16,123	33,951
1988	NA	NA	NA	NA	NA
1987**	36,073	1,061	392 (4,170)	16,135	53,661 (57,439)
1986	31,126	97	4,650 (3,288)	15,381	51,254 (49,892)
1985	30,620	0	0 (11,565)	10,626	41,246 (52,811)

* August 1, 1989 OR resumption of *attributaire* program.
** *Attributaire* contracts suspended as of April 1, 1987.

The reliability of these figures is suspect on several counts. First of all, if these figures were accurate, virtually the entire national, regional priority, and regional secondary road networks would have been maintained in 1987. The numbers of kilometers maintained mechanically by the Production Units, according to the table above, would suggest that OR has the capability of maintaining all national and regional priority roads with little change in level of operation from what existed in 1987. This is very definitely not the case.

In contrast to the figures presented, 1987 was a year of crisis and virtual paralysis for OR due to severe budgetary problems. It would appear that these figures should not be taken to represent effective maintenance capability or road network maintained. The numbers may be misleading due to the definition of road maintenance used rather than any intention to inflate performance levels. For example, these figures may represent the number of kilometers traveled by road maintenance machinery (i.e., where some form of maintenance activity was performed), yet not imply that the roads received anything approaching adequate and routine maintenance.

Similarly, the figures provided for *attributaires* should be viewed with caution. At most, they represent the number of kilometers for which contracts were approved. Performance levels, that is actual kilometers of road maintained routinely and adequately, are not systematically recorded. In brief, the actual performance level of both the private-sector *attributaires* and the public-sector enterprise responsible for road maintenance in terms of kilometers of road maintained is unknown and indeterminable at the present time with the current reporting and performance monitoring system.

A. Private-sector Production: The *Attributaire* System

As of August 1, 1989, approximately 320 individuals, private firms, enterprises, and NGOs had been selected to maintain 35,500 km of general and local interest roads throughout Zaire. This consists of 103 *attributaires* for 16,123 km of national and regional roads under OR contracts, and 216 *attributaires* for a total of 19,377 km for the SNRDA network.[14] In addition to these contracts for road maintenance, contracts are also let for special road rehabilitation activities, bridge repair, and the maintenance of river ferries.

[14] These figures were obtained from internal documents of the agencies concerned.

To date, no systematic study of the *attributaire* system has been conducted.[15] The key elements influencing performance have yet to be identified and verified, and the merits of private-sector production relative to public-sector production have yet to be demonstrated. However, a review of the recent history of OR and SNRDA as well as discussions with key informants, *attributaires*, merchants, village residents, and *cantonniers* have led to the identification of four priority issue domains that influence the performance of private-sector actors in the production of road maintenance services.

1. Selection Criteria

After years of experience and some very dramatic setbacks, both OR and SNRDA have adopted similar base criteria for the selection of *attributaires*. Of greatest importance appears to be the existence of a clear and direct interest in the state of the road segments to be maintained. Scale of activities, technical capability, and reputation are other key selection criteria. Experience indicates that the lack of a local interest correlates with poor performance. Specifically, outside organizations or individuals residing at some distance from the road sections in question tend to view maintenance contracts as income-generating activities. The less they spend on road maintenance, the more income they are able to generate.

Political influence has led to the selection of *attributaires* despite the lack of economic or other vested interests in the area. Some recently selected *attributaires* were said to be unaware of the location of the segments they had been awarded. The poor performance of some *attributaires* has resulted in the vocalization of popular discontent. The case of the politically well-connected firm, SOZADEV, is a good illustration. SOZADEV received a contract for the maintenance of 676 km of tertiary roads in northern Shaba

[15] A study is presently being conducted by members of the USAID/PDO staff based on approximately 300 responses to a questionnaire distributed to prospective applicants for road maintenance contracts in the regions of Shaba and Bandundu. The results of this study should provide important information on the capabilities, experience, and economic activities of the respondents.

(constituting the greater part of the road infrastructure rehabilitated by the USAID-financed *Projet Nord Shaba*, which represented 24 percent of the total SNRDA-financed road network for the entire region of Shaba. After a couple of months of perfunctory effort, payment to locally hired *cantonniers* ceased. The well-amortized grader that had been put into use during the rainy season and was actively destroying rather than rebuilding the road surface ground mercifully to a halt, and the SOZADEV representatives withdrew from their temporary office in Kongolo.

Aware that the organization had received SNRDA funds to maintain their roads, local residents began to complain vocally to local administrative authorities. In the Mini-Assembly of the *Mouvement Populaire de la Révolution* (M.P.R.) of the Zone of Kongolo held in late July, the decision was made to request suspension of the contract with SOZADEV due to nonperformance. Similar examples of the application of local sanctions against *attributaires* for poor or nonperformance were cited elsewhere.

However, the definition of local interest presents some problems. Many of the smaller *attributaires*, though they may be local residents, do not necessarily have a clear interest in the quality of the road network. Although they often attested to a strong patriotic desire to develop the country by maintaining local roads, further discussion generally revealed that their beneficence was accompanied by the hope for profit from the contract. This latter motivation is fully appropriate for a private-sector actor. Unfortunately, the national standardized rate of forfeit for road maintenance was set consciously below anticipated actual costs. According to national officials of OR and SNRDA, the amount was to serve as a subsidy, not as a source of profit to the *attributaire*. There are two principal ways an *attributaire* without a direct economic or social interest in improved road transportation may benefit from the contracts. The first is through cutting costs by either reducing that part of the contract intended for wages by paying substandard wages or by paying for a period less than that specified in the contract. The other avenue for reducing costs is by cutting back on the purchase of tools for the *cantonniers*. Either of these measures will have a direct negative effect on performance and therefore, on the quality of the road.

The following groups receive the bulk of road maintenance contracts: private entrepreneurs, agro-industries, religious missions, and politicians. Some *collectivités* have also received road maintenance contracts. In the case of Bandundu, the decision was reportedly made to award SNRDA contracts to individual *collectivité* chiefs rather than to the *collectivité* as an administrative entity. The performance of *attributaires* varies considerably, even within categories. Due to the lack of clear evaluation criteria and comparable initial road conditions and maintenance requirements, the utility of a standard evaluation instrument is suspect. Some longtime actors in the field of road maintenance in Zaire suggest that good results have been obtained primarily by religious missions headed by expatriates and expatriate-managed private enterprises. The performance of Zairian-led missions and Zairian businessmen were assessed as being less consistent though not uniformly unsatisfactory. Some political leaders (*Commissaires du Peuple*) proved to be capable *attributaires*, their interest in demonstrating competence and commitment to the voters in their area serving as an incentive for good performance (Le Carré 1989).

It is clearly neither desirable nor realistic to base the sustainability of a rural road maintenance strategy on the presence of expatriate personnel. In the particular case of missions, expatriates are being increasingly replaced by Zairian diocesan priests; the remaining expatriate missionaries, especially in the dominant Catholic missions, are aging and are unlikely to be replaced by other expatriates (Hall, et al. 1989).

The scale of operations as a selection criterion is closely related to technical capability. Larger entrepreneurs, agro-industries, and active NGOs are likely to benefit from more sophisticated and structured organizational capabilities and experience. Similarly, they are more likely to have vehicles for transporting materials and workers as well as for effectuating routine supervision. Of perhaps greater importance, these *attributaires* may be able to continue payment of *cantonnier* salaries during the periods when the contracting authority is unable to meet payment schedules. Prolonged nonpayment (as was the experience with SNRDA in 1988 and 1989) or suspension of contracts (as was the case with OR from April 1987 until August of this year)

will create problems for even the largest *attributaires* who may have been willing and able to cover a one- or two-month delay in disbursements.

Small merchants and financially fragile NGOs are not able to assume responsibility for the recurrent costs of manual road maintenance, even for a short period, without suffering severe cash flow problems. The deposit of a sizeable amount of money for the purchase of tools or the payment of *cantonnier* salaries also represents a serious temptation to the small merchant who encounters few opportunities for access to credit. A number of the *attributaires* interviewed during field visits had no means of transportation and were unable to provide routine supervision to workers on the road segments they were to maintain. Even those that had a truck noted that their contracts were not adequate to cover the cost of fuel and transportation for supervisory visits.

Tables IV.2 and IV.3 present scale data for the regions of Bandundu and Shaba. The largest *attributaires* for both OR and SNRDA programs are presented along with kilometers accorded and the percentage of the regional total each contract represents.

In Bandundu Region, the five largest OR *attributaires* account for 50 percent of total contracts awarded in the region. The average number of kilometers per contract for the five largest is 459 km. Average contract size for the remaining 17 *attributaires* is 138 km.

SNRDA maintenance contracts follow a similar pattern in terms of according large contracts to the major enterprises and merchants. Forty-two percent of SNRDA contracts for Bandundu are held by four *attributaires*. Contracts with the three *collectivité* chiefs of Bulwem, Kipuku, and Yassa Lokwa account for an additional 13 percent of the total. The remaining 2,402 km of road are distributed among 54 *attributaires*, providing an average of 44 km per contract. Over 60 percent of SNRDA contracts are for less than 50 km in Bandundu Region. Though awarding small contracts need not lead to inefficiencies or contribute to poor performance, it does result in higher supervision and inspection costs for the service charged with this task (the zone engineer of OR).

TABLE IV.2 Major Attributaires - Kilometers Accorded and % of Regional Total BANDUNDU REGION August 1989

OFFICE DES ROUTES Bandundu Total: 22 Attributaires, 4,636 Kms

Attributaires	Km accorded	% Total
MAISTRIAU	517	11
PLZ	504	11
KAMPEW	440	9.5
BORGES	418	9
MBUKU NUNI	417	9
TOTAL	2296	50

SNRDA Bandundu Total: 61 Attributaires, 5,306 Kms

Attributaire	Km Accorded	% Total
MADAIL	742	19
PLZ	536	14
KIMBONDJA	516	13
AUTOZA	414	10
TOTAL	2208	56

TABLE IV.3 Major Attributaires - Kilometers Accorded and % of Regional Total SHABA REGION August 1989

OFFICE DES ROUTES Shaba Total: 15 Attributaires; 1,925 Kms

Attributaire	KM Accorded	% Total Region
Kikunda Kabenga	379	20
MC Kipushia	240	12
ONDE Kasimba	168	9
ONDE Kayembe	177	9
CESSA	164	9
TOTAL	1128	59

SNRDA Shaba Total: 15 Attributaires; 2,783 Kms

Attributaire	KM Accorded	% Total Region
SOZADEV	676	24
ETS. LUMBI US.	367	13
Gr. MUNGANGA	226	8
TOTAL	1269	45

The situation in Shaba is similar to that described above. Five OR *attributaires* account for 59 percent of the kilometers accorded. The level of concentration jumps rather dramatically in the case of SNRDA contracts. Twenty-four percent of the road network assigned to SNRDA *attributaires* in the Shabe Region was accorded to one company, SOZADEV. According to the data available, this contract also represented the largest single award by SNRDA in Zaire. Discussions with local authorities in the zone of Kongolo, site of the SOZADEV award, revealed that the company did not meet any of the selection criteria presented above. The company had no clear local interest, demonstrable technical capability, or established reputation in the area. The outcome for SOZADEV has been detailed above.

The reputation of the candidate as a criterion for selection is of obvious importance. Local authorities and community members are the most competent judges of the suitability of an organization or individual for the responsibilities of an *attributaire*. For this and the other criteria mentioned above to be effective, the selection process must be isolated from political influence from above. Regional and zone authorities are aware of this and have voiced complaints about *attributaires* selected by or "strongly recommended" by central authorities.

The reputation of the applicant is not the only one of importance to production of road maintenance services. Discussions with agro-industry leaders, large and small entrepreneurs, and religious leaders revealed that the demonstrated unreliability of OR and SNRDA and their perceived susceptibility to political influence and corruption has created a lack of confidence on the part of potential *attributaires*. The suspension of OR contracts in 1987 and the poor disbursement performance of SNRDA since it began operations in late 1987 has raised serious doubts among *attributaires*. Private entrepreneurs in particular are concerned that payments will once again be delayed or suspended and that they (the *attributaire*) will be accused of malfeasance and the misuse of funds by their employees and community members. *Attributaires* are concerned that their reputations as honest and trustworthy entrepreneurs and community members will suffer as a result of OR and SNRDA actions.

Some respondents with substantial experience as OR *attributaires* voiced unwillingness to accept SNRDA contracts due to the increased likelihood of requests for kickbacks or other payments by the political authorities responsible for *attributaire* selection. A number of SNRDA *attributaires* confirmed that they paid the transportation costs and, in a few cases, even the *per diem* expenses of the agent responsible for inspection of their road segments (required prior to authorization of payment).

2. Contractual Norms and Costing

Road maintenance contracts are based upon a standardized forfeit fee per kilometer. Both OR and SNRDA have agreed upon the rate of 53,000 Z per kilometer per year. The rate was established according to the following norms.

1 *cantonnier* for 2 km of road
1 *capita* for 10 *cantonniers*
1 bicycle for each *capita* amortized over five years
Tools for the *cantonniers*

The tool list differs rather substantially between the OR and the SNRDA formula. For example, SNRDA estimates that each *cantonnier* will need two machetes and long knives (*coupe-coupe*) per year while OR's calculations are based on one per *cantonnier*. SNRDA calls for an axe for five *cantonniers* and a watering can and hammer for each *cantonnier*, whereas OR does not include any of these items in their calculations. OR, on the other hand, estimates the cost of wood for bridge repair at approximately 8,500 Z per kilometer, but provides neither an axe nor a saw in its *cantonnier* tool kit. SNRDA provides no wood in its calculations but does furnish axes and saws as well as hammers for its *cantonniers*.

Of greater significance, SNRDA includes a 10 percent adjustment for administrative charges and supervision by the *attributaire*, whereas these costs are not represented in the calculations furnished by OR for the 1989 manual maintenance program. Even the salary level for capitas is set 500 Z lower by OR than SNRDA. Despite these and other differences, the two

organizations have a unique rate of 53,000 Z per km per year, as mentioned above.

Two points are of particular salience here. First, the norms, despite minor variations in the tool list, are standard across the entire country and do not take into account the specific road conditions or the maintenance requirements of the road segments to be maintained. As was emphasized in an earlier section on physical characteristics and road maintenance requirements, variability not uniformity in road conditions is the norm in Zaire. A uniform requirement for the organization of road maintenance services, including the distance assignments and tool kit for *cantonniers*, is neither efficient nor realistic; nor is the assignment of a standard fee regardless of road conditions or maintenance requirements appropriate.

The use of standardized production norms is a function of centralized planning. Road segments that require substantial rehabilitation, contain large stretches of deep sand, are without drainage ditches, or contain heavily eroded areas will be unattractive to serious private-sector *attributaires* due to the additional costs required to maintain the segments in acceptable condition. However, easily maintained segments with a solid road surface, good drainage, and few difficult areas are amenable to a different form of maintenance organization--perhaps using fewer but more mobile *cantonniers*--and may be maintained at a satisfactory level at a lower cost.

The case for greater flexibility in establishing norms and calculating costs for road maintenance is even more pertinent when considering the differences in maintenance requirements between a feeder road that receives fewer than three trucks a day during the height of the marketing season and a regional priority road that receives 20 or 30 trucks a day during the marketing season and five to ten trucks a day during the rainy season. The economic value of a kilometer of road surface is not constant across all road networks, yet this basic fact is denied by the imposition of national norms.

Finally, the estimated cost of tools used to determine the standard maintenance contract was seriously exceeded by the impact of inflation long before the new price structure was implemented. Casual observation of tool prices in major supply stores in Kinshasa suggests that the cost of some of the more essential tools has at least doubled. *Attributaires* will not be able to equip their *cantonniers* with the funds available to them from the contracts. The small margin allowed for administrative costs and supervision will quickly be consumed by the increased cost of tools. Private-sector *attributaires* will find it difficult to fulfill the requirements of their contracts given available funding.

The greater economic efficiency and operational control to be gained by establishing locally relevant norms and costing procedures provides a clear argument for greater decentralized programming, budgeting, and contract determination. A transition toward decentralized authority is not without risks. Careful experimentation and performance monitoring will be required to assure that the benefits to be gained are effectively realized.

3. Compensation

The production of road maintenance services is rarely a philanthropic exercise. However, the decision to set maintenance contracts on a below-cost basis requires some *attributaires* to use their own resources to assure that a satisfactory level of road maintenance is produced. The logic of a subsidy rather than a full cost approach to road maintenance financing is defensible in cases where the economic return from improved transportation conditions decreases the costs of the *attributaire* and thereby increases profits in his other economic activities. For example, large merchants and agro-industries directly benefit from improved road conditions and can therefore assume some financial costs for road maintenance. Similarly, religious missions and other locally based NGOs may depend upon road transportation in meeting their primary objectives and therefore be willing to contribute to the costs of maintaining critical road segments.

There are limits to the applicability of the subsidy approach to road maintenance finance. As was delineated in the section above on selection factors in the production of road maintenance services, not all *attributaires* have a direct economic interest in the condition of the road network. Furthermore, the level of economic return is not the same among those *attributaires* who receive economic benefits from an improved road network. The benefits to an *attributaire* who has an established monopoly on marketing in a specific area are likely to be significantly higher than the benefits to one who must compete with other merchants for a share of the agricultural production of the area covered by his contract. The problem of free-riders is a common issue in public service finance. That part of road maintenance costs paid for by the *attributaire* from his own resources, whether it be in the form of money for salaries and tools or supervision time, is transferred to his competitors and other road users as unearned benefits.

This point is not lost on local businessmen. Discussions with private entrepreneurs regarding their interest in being selected as *attributaires* routinely elicited the following comment: "Why should I help my competitors by maintaining a road if I'm not going to make a profit?" If public authorities wish to encourage private-sector involvement in the production of road maintenance services, this question must be resolved. The current centralized system of establishing compensation levels is incapable of responding effectively to the highly locality-specific factors that enter in to cost determination for local road maintenance.

4. Legal Considerations

Under the current system, the legal obligations of contractual partners is decidedly one sided. *Attributaires* are required to maintain a clearly specified road segment using a contractually specified number of *cantonniers* and *capitas* who are to be reimbursed at a rate that is provided in the contract. The contract can be terminated by the responsible state authority at any time. The *attributaire* has literally no ability to alter the contract in the key areas of compensation, production norms (including personnel), or the definition of conditions that constitute acceptable performance. More importantly, the *attributaire* appears to have no recourse against the contracting

authority in cases where payment is delayed or suspended. Direct costs borne by the *attributaire* due to contract authority misfeasance have not been reimbursed to date. The effect of payment delays and nonpayment of *attributaires* by the contract authority on the reputation of the *attributaire* was discussed in an earlier section. Several *attributaires* raised the issue of back payments to *cantonniers* and confirmed that they had been subjected to numerous reclamations and accusations by their employees resulting from the unreliability of SNRDA funding.

The recent decision by SNRDA to decentralize the contracting system and to make the regional governor the signatory for the contracting authority does not resolve the issue of legal obligations and rights. The question remains whether the governor's signature will hold him personally (or the region which he represents) financially responsible for the payment of contractual obligations to *attributaires* in cases where resources from SNRDA are not available. The nonpayment of *attributaires*, and consequently, the *cantonniers* under their employ, is the single greatest threat to the viability and productivity of private-sector involvement in the production of road maintenance services. The legal obligations, rights, and recourse procedures for all contractual partners remain a serious constraint.

B. Public-sector Production: Force Account Road Maintenance

The *Office des Routes* is responsible for the rehabilitation and maintenance of approximately 58,000 km of national, regional priority, and regional secondary roads. Responsibility for a very limited number of road sections of the tertiary network has also been assumed by OR. Due to the serious level of deterioration of the national road system, OR, since its creation, has favored mechanized capabilities over manual. According to figures provided by OR, approximately 36,000 km of its mandated road system may be maintained mechanically, provided the funding is adequate. Since 1987, funding levels have been deficient resulting in lowered capacity and productivity. The 1989 quota for mechanical maintenance was reduced to less than 18,000 km in July of this year. As mentioned earlier, the actual condition of the OR road network provides adequate reason to question the reliability of maintenance figures.

1. Constraints on Force Account Road Maintenance

National and regional OR officials generally agree that exclusive reliance on mechanized interventions is neither technically optimal nor realistic given present priorities and technical capabilities of the regional OR offices. The advanced state of deterioration of much of the earthen road system requires that OR place highest priority on the use of its mechanical and budgetary resources for major road rehabilitation and construction activities. OR capabilities are further weakened by the difficulty of maintaining mechanical equipment in operational condition. Limited access to needed spare parts and lengthy repairs seriously lower OR capacity for road rehabilitation and maintenance. These issues have been addressed in the recent Technical Audit, and it is expected that measures will be taken to resolve them in the future.

The high-cost, high-capacity mechanical equipment used by the *Office des Routes* tends to reflect the preferences of the supplier (i.e., the donor community) rather than the maintenance needs and technical capability of the country. Drag graders, small tractors, and small-scale mechanical equipment offer important advantages given their lower purchase cost and repair needs, versatility, and complementarity to labor-centered maintenance strategies. To date, virtually nothing has been attempted in the area of light machinery to be used in conjunction with labor for road maintenance.

Despite its reliance on mechanical capabilities, OR has maintained a certain emphasis on manual road maintenance. Three systems for the use of manual maintenance may be distinguished.[16] A system of force account road maintenance by *cantonniers* who were recruited, trained, and supervised by OR at the Brigade level has been used in the past. Although the results have generally been positive, force account manual maintenance is not widespread due to the serious management and payroll burdens that are entailed. According to both national and regional OR officials, one of the key factors limiting the hiring of *cantonniers* by OR is the cost of

[16] The following description is drawn largely from materials provided by Mr. Boonen, technical advisor to the Maintenance Division of OR.

social benefits demanded by the workers, especially health coverage for the employee and his family. The further development of this system is very unlikely, given budgetary constraints.

OR also works directly with *collectivités* for some manual maintenance services, generally in support of mechanized road activities. More specifically, individual Production Units may contract directly with the *collectivité* chief who agrees to supply a given number of *cantonniers* whose work will then be organized and supervised directly by Production Unit staff. *Cantonniers* are paid by agents of the Production Unit in the presence of the chief. The latter receives a bonus as payment for his assistance in recruitment. The success of this system depends largely on the relationship of the chief with the local population. Results have not always been satisfactory.

The third system of manual maintenance organized by the *Office des Routes* is the *attributaire* system discussed at length in the preceding sections. The organization and execution of maintenance activities is left largely to the *attributaire* while supervision and inspection is assured by the regional direction of OR and more immediately, by the zone engineer. This system, though operated by the public sector (provision), represents an example of private-sector production of road maintenance services.

The role of public-sector organizations in the production of road maintenance services should not be ignored. OR will continue to be an important actor in this area. There is a strong recommendation for organizing road maintenance under the zone engineer and combining manual with light mechanical capabilities (Le Carré 1989). The major constraints associated with an expanded role of the road services in production activities remain the lack of sufficient funds and of management capability, and the high cost of integrating a corps of *cantonniers* under public statutes regulating the treatment and benefits of employees.

2. The *Collectivité* and Road Maintenance

Other public-sector institutions, such as the *collectivité*, may also play an important future role in road maintenance. The UNDP-financed study of road maintenance correctly identifies the

collectivité as the administrative level most suited to road maintenance programming and execution. It is acknowledged that there are practical limits to *collectivité* responsibility, especially in the area of finance (Tighe, et al. 1989). However, the UNDP study proposes a major reorientation of road maintenance responsibilities toward the *collectivités*, and, more specifically, toward a yet-to-be-created institution referred to as the Local Road Maintenance Management Committee. This entity is not clearly defined, although it is suggested that it be separate from territorial administration while having some powers to raise and allocate tax revenues.

The UNDP proposal is perceived by the team as seriously over-optimistic (at least when applied on a large scale) and potentially dangerous to the extent that local experiments, when inadequately supervised and evaluated, often lead to high expectations, the expenditure of much energy, and great deception when these expectations are not met. Local organizational and financial management capabilities are not highly developed in Zaire. Trust and confidence in the integrity of officials and even of neighbors is low. Failure in such an important undertaking could lead to even greater demobilization at the local level. Some *collectivités* have already acquired experience as *attributaires* under the OR and SNRDA systems. Others have organized relatively modest manual maintenance programs with their own resources. This is an area where experimentation and observation are clearly called for.

V. RESOURCE MOBILIZATION FOR ROAD MAINTENANCE AT THE LOCAL LEVEL

This section describes the present capacity of local and regional entities to generate revenues for road maintenance. The analysis is based on data collected during field visits in the regions of Bandundu and Shaba; therefore, the conclusions may not be applicable without modification to other regions. Other recent studies, such as those conducted by researchers from the *Laboratoire d'Observation de l'Economie et des Institutions Locales de l'Institut de l'Urbanisme de Paris* (Université Paris-Val-de-Marne) on local finance in Zaire and the UNDP/IBRD program proposal for the rehabilitation and maintenance of rural roads were also consulted.

The general position taken here is that, while any comprehensive road maintenance program has little chance of sustainability without a significant financial contribution from the subnational level, the likelihood of such a decentralized contribution appears low in the short term. Significant improvement in the overall resource capabilities of decentralized units of administration will require a comprehensive reform of the Zairian local fiscal and parafiscal systems. Corollary to these reform measures, efforts will need to be made to strengthen regional and subregional capabilities in tax collection and administration as well as in expenditure control and financial management.

This long-term perspective is warranted not only by the time span necessary to improve local management and control functions but also by the expectation that other public services such as health and education and basic expenditures such as salaries and administrative equipment will, if and when more local revenues are made available, receive high budgetary priority. In brief, road maintenance is but one of several competing local priorities.

A. Observations on Local Finances

1. Local Revenues

Five distinct levels of decentralized administrative entities have the power to raise taxes: the regions, the municipalities, the urban zones, rural zones, and *collectivités*. In addition, some *cités* also raise taxes, although they are not formally considered to be a decentralized administrative entity. In other cases, revenues collected in a *cité* appear in the accounts of the rural zone that serves as its administrative authority.

Generally, the revenues collected by the regions and the *collectivités* account for approximately 80 percent of total locally generated revenues (Prud'Homme 1987). The intermediate levels (municipalities, urban zones, rural zones, and *cités*) collectively raise the remaining part of the global revenue effort. In some instances, the *collectivités* together raise more revenue than the region. This was the case of the Kivu Region in 1986 as reported by Prud'Homme (1987) and the case of Bandundu Region in 1988 where the region collected approximately 20 million Z of taxes while the municipalities collected more than 125 million Z.

It has been estimated that the total taxes raised by the subnational administrative entities in Zaire account for approximately 4.5 percent of all government tax revenues (Prud'Homme 1987). The relative weakness of the subnational levels of administration is evident, as is the fact that the Zairian public sector remains highly centralized. Subnational levels of administration are a long way from being truly decentralized local governments.

The Tax-sharing System

The Zairian system of fiscal decentralization includes a tax-sharing mechanism defined by law. Some regional taxes are to be raised by the central government and redistributed by the region among the local entities in accordance with a sharing formula: the region keeping 50 percent of the proceeds; all

municipalities receiving 10 percent; all urban zones, 5 percent; all rural zones, 25 percent; and all *collectivités*, 10 percent. The amount available to each level is then shared between them in proportion to their population. The property tax[17] and the vehicle registration tax (vignette) are centrally raised shared taxes.

The same type of revenue-sharing applies to other regional taxes that are also declared to be of common interest. In this case, the tax is administered by the region and shared in the same way as the national shared taxes. Examples are the beer tax and the transportation tax on agricultural and livestock products.

However, in practice, the sharing system, which was meant to provide each local entity with a minimum level of resources without putting on it the whole burden of tax administration, never worked. The only revenues available to each local entity are those that it collects for itself. Given the lack of human and technical resources in most of the local entities, as well as the very low incomes of the taxable population, especially in rural areas, it is not surprising that local entities have never become providers of local public services or effective agents of development.

The Nature of Taxes Raised

The list of taxes that subnational entities are authorized to levy is of little help in characterizing the structure of local revenues in Zaire. This list is indicative and not limitative; consequently, a number of taxes actually raised by local entities do not appear in the list. Also, all local entities do not raise all authorized taxes, and, among the taxes

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[17] This tax, *taxe sur les terrains bati et non bati*, is levied exclusively in urban areas and is not applied to rural real assets. Thus, it is not a potential resource for road maintenance finance as such. Though referred to as a property tax, it should not be confused with the tax of that name used in the United States.

effectively raised, the proceeds vary greatly from one tax to another.

From the data that the team could gather in the Shaba and Bandundu regions, it appears that the taxes raised by the regions are primarily consumption taxes while the taxes raised by rural zones and *collectivités* are mostly taxes on economic activities (excise taxes, permits, and licenses).

Table V.1 describes the taxes raised by Shaba Region classifying them into taxes on consumption, activities, and capital. This table shows that consumption taxes account for 70 to 80 percent of the total revenues of the region in 1987 and 1988. The most productive taxes in terms of revenues are the beer tax and the transportation tax on agricultural and manufactured products. The vehicle registration tax, which is one of the national shared taxes, also produced significant proceeds in 1987.

TABLE V.1

Taxes Raised by the Region of Shaba, 1987 and 1988 (six months)

(in thousands of zaires)

Types of Revenues	1987	1988 (6 months)
Taxes on Economic Activities		
Tax on local production of corn flour	1,181	3,418
Building permits	38	18
Trade licenses on agricultural products	1,291	442
Other licenses and permits	11	128
Sub-Total	2,521	4,006
Taxes on Consumption		
Tax on beer consumption	34,364	16,004
Tax on consumption of local cement	---	11,106
Tax on consumption of imported corn flour	---	15,670
Taxes on transportation of agricultural and manufactured goods	61,295	43,190
Non-resident tax on the use of roads	6,287	17,645
Tax on consumption of oil, soap, detergent and margarine	---	10,486
Other taxes on consumption	3,684	13,851
Sub-Total	105,630	127,952
Taxes on Capital		
Property Tax	7,088	8,591
Vehicle Tax	29,790	-
Sub-Total	36,878	8,591
Administrative Revenues	6,007	22,196
TOTAL REVENUES	151,036	162,745

By contrast, as Table V.2 shows, the taxes on economic activities are the most important revenue producers for the rural zones and *collectivités* visited in North Shaba. In particular, the taxes on the purchase, sale, or transfer of agricultural products account for a very significant portion of total revenues of the Kabongo and Kongolo zones. Unexpectedly, the head tax (*Contribution Personnelle Minimum*) is not raised by all *collectivités*, even though they retain all receipts of this local tax. Also, the tax on public market stands is generally the most important source of revenue of a municipality in developing countries; this is not the case in the *collectivités* visited by the team. However, a tax exists on almost every possible activity (economic, cultural, social) that can be found in a rural human settlement. This panoply of taxes cannot be thoroughly recovered, and huge discrepancies exist between the amounts budgeted and the amounts actually raised, as well as great variations in the proceeds from one tax to another and from one year to the next.

Weaknesses of the Local Fiscal System

A general mistrust and widespread complaints related to the inefficiencies of the decentralized fiscal system were noted in the regions visited. Two important causes of inefficiency are:

- the proliferation of taxes and quasi-taxes (permits, licenses, fines) on goods, services, and activities that often overlap and duplicative taxes or quasi-taxes being levied by various authorities on the same good, service, or activity; and

- the lack of control over the tax collection process, allowing practices that lead to inequitable and poorly recovered taxes.[18]

[18] On the inefficiencies of the fiscal system in Zaire, see the comprehensive works of L.O.E.I.L. reported in the bibliography.

Table V.2: Revenues of Selected Rural Zones and Collectivités in North Shaba
(in thousands of zaires)

Types of Revenues	Zone of Kabongo (1987)	Zone of Kolongo (1988)	Collectivité of Kabongo (1987)	Collectivité of Bayashi (1988)
Poll (C.P.M.) and related taxes	--	119	365	--
Taxes on Economic Activities				
Business tax (patente)	55	55	161	--
Taxes on purchase, sale, or transfer of agricultural products	440	3,304	207	288
Taxes on public market stands	34	10	72	28
Taxes on construction and land acquisition	--	95	16	22
Other miscellaneous taxes	95	306	4	66
Sub-Total	624	3,770	460	404
Taxes on wealth				
Tax on bicycles	13	8	150	--
Taxes on consumption				
Tax on landowners and renters	--	101	--	--
Tax on alcoholic beverages	--	--	2	--
Tax on hotel lodging	--	14	--	--
other sales taxes	--	110	--	13
Sub-Total		225	2	13

Table V.2 continued..

Types of Revenues	Zone of Kabongo (1987)	Zone of Kongolo (1988)	Collectivité of Kabongo (1987)	Collectivité of Bayashi (1988)
Administrative Revenues				
Fines	30	86	66	91
Judiciary and administrative	23	171	186	98
Sub-Total	53	254	252	189
Other Revenues	--	249	102	200
TOTAL REVENUES	**690**	**4628**	**1331**	**806**

Source: annual accounts

The proliferation of taxes in itself has a negative impact on the collection of taxes and on the economic development of the country. The management and control of 25 or more different taxes exceeds the capabilities of most local administrative units. Many of these taxes do not produce sufficient revenue to meet the cost of their collection. More important are the negative impacts on specific economic activities that are heavily burdened by a series of accumulating taxes. This results in continual uncertainty as to the amounts that will have to be paid in any specific year--due, for example, to the creation of new taxes and the revision of tax rates. Local populations are regularly visited and importuned by collectors from a variety of departments and agencies as well as by officials requesting voluntary contributions in the interest of the community. All this makes business even more difficult and handicaps the growth of production and commercial activities.

Tax evasion by taxpayers is certainly widespread. However, more significant in terms of the volume of unrealized revenues is the notorious phenomenon of tax evaporation by tax collectors. Evaporation refers to the discrepancies between the amount actually collected and the amount recorded in the entities' accounts. Tax evaporation is estimated at 70 percent of total taxes collected. The very low salaries paid to civil servants are certainly one of the reasons for the existence of these practices and, to a certain extent, make them necessary. Also, many of the taxes have a poorly defined tax base or tax rate; this leads to interpretations and encourages negotiations between the tax collector and the taxpayer. In many *collectivités*, some of the more productive revenue sources are fines imposed by local administrative agents. The widespread imposition of fines easily leads to abuse and raises serious difficulties in controlling collectors and enforcing attribution of receipts to the appropriate budget.

In addition to official local taxation, Prud'Homme (1987) points out that a parallel system of resource mobilization also exists that involves "impositions" in-cash or in-kind to finance certain activities, such as public ceremonies, official receptions, and even public investments. Voluntary or semi-voluntary contributions to schools and school teachers, and gifts

to nonprofit organizations which produce useful services, such as health and road maintenance, are other examples of public finance that exist outside of the formal fiscal system. Willingness to contribute to NGOs and private providers of services is due, in large part, to the lack of or inaccessibility of public services as well as to popular trust that the funds raised will serve a useful purpose.

Therefore, it appears that resources are available at the local level to finance the production of local public services, but that these resources either do not enter into the public budgetary system or are allocated to uses other than the provision of public services. There is certainly room for substantially increasing the revenues of the local entities without increasing the tax burden of the population.

2. Local Expenditures

Local resource mobilization cannot be expected to provide road maintenance services until taxes raised are sufficient to cover the costs of basic local government services. However, it must be noted that the resources available to local entities are not only the taxes they raise or the centrally raised taxes they may eventually share. Personnel, equipment, and materials are also put at their disposal by the central government. Local administrative units are only partly decentralized entities; they are also subsidiaries or deconcentrated extensions of the central government. It appears from Prud'Homme's calculations that this resource transfer from central government amounts to approximately half of the value of locally raised revenues.

The local entities essentially fulfill an administrative as well as a political function. They provide few public services other than the local judiciary services (local courts), the maintenance of civil registers (births, marriages, deaths), and the delivery of numerous authorizations and licenses (mainly for revenue-raising purposes).

Local entities make few investments. Regional entities do plan investment expenditures in their annual budget presentations but rarely have any money to invest, except when they benefit

from a special grant from the central government. For example, in 1988, the Bandundu Region reports having invested 24 million Z out of total revenues of 55 million Z, but 34.8 million Z were a gift from the *President-Fondateur*.

The case of the Shaba Region offers one interesting exception. For 1988, Shaba Region reports having invested 135 million Z, of which 67 million Z went to road rehabilitation and maintenance. The revenue accounts were not available from the regional authorities, and it was not possible to determine the origin of the invested funds. However, data reported in 1989 regional budget document indicate revenue collection of 162.7 million Z and operating expenditures of 81.7 million Z for the first semester of Fiscal Year (FY) 1988, but no investment outlays were recorded. The situation is still unclear, but there are indications that a functional decentralized government is emerging at the regional level in Shaba. The next section further analyzes the Shaba case.

Generally (and this is confirmed by every study of local finances in Zaire as well as by the examination of local accounts and budgets in the regions visited), the major part of total expenditures is spent on personnel costs including salaries, allowances, and benefits. The remainder is generally spent on office supplies, materials, and other minor expenditure items.

Table V.3 gives the breakdown of expenditures of selected zones and *collectivités* in North Shaba, as reported in the entities' annual accounts for 1987 or 1988. Table V.4 provides the same type of information, but with less detail, for almost all *collectivités* and *cités* taken together in the Bandundu Region.

TABLE V.3: Expenditures of Selected Rural Zones and Collectivités in North Shaba, 1987 or 1988
(in thousands of zaires)

Types of Expenditures	Zone of Kabongo (1987)	Zone of Kongolo (1988)	Collectivité of Kabongo (1987)	Collectivité of Bayashi (1) (1988)
General administration				
Salaries	338	388	n.a.	229
Allowances (2)	76	826	n.a.	342
Sub-Total	414	1,214	751	571
Medical expenses (employer)	--	117	30	50
Materials and equipment	148	566	78	61
Visitors' lodging and reception	--	1,131	--	--
Total General Administration	562	3,028	859	682
Rural Development	--	--	128	--
Public Works	41	201	270	5
Schools	--	--	31	--
Hospitals and Dispensaries	--	--	8	--
Other (3)	--	2,415	20	126
Total Expenditures	**603**	**5,644**	**1,316**	**813**

(1) The Collectivité of Bayashi is located in the Zone of Kongolo.
(2) Travel expenses and miscellaneous personal allowances, including housing of officials.
(3) Public festivities, social welfare, non-identified extraordinary expenditures.

Source: Annual accounts

Table V.4: Expenditures of Collectivités and Cités (1) in the Bandundu Region, 1988 (in millons of zaires)

Type of Expenditures (2)	Amounts
Administrative	66
Judiciary	14
Public Works	19
Economic development	9
Schools	--
Health	3
Miscellaneous	17
TOTAL EXPENDITURES	128

Source: Annual Report, Département d'Administration du Territoire et de la Decentralisation, division of BANDUNDU, 1988.

(1) Except the collectivités and cités located in the rural zones of Bulungu and Nungu that did not report their revenues and expenditures in 1988.

(2) Administrative and judiciary expenditures usually consist mainly of salaries and personnel allowances. Most expenditures for office supplies are also recorded in those categories.

Generally, salaries and allowances paid to local officials, political agents, and civil servants account for at least half of total expenditures. The relative importance of allowances, as compared with salaries, is explained by the fact that salary scales are very low for public servants, and that some public servants are employees of the central government assigned to local entities. Their salaries are therefore paid directly by the central government, but they also receive premiums or allowances from the local entities.

B. Resource Mobilization for Road Maintenance: The Case of Shaba

Table V.5 presents the structure of the 1989 Shaba regional budget. The region intends to distribute 130 million Z of shared taxes to the subregional entities and to save 194 million Z for investment purposes, out of a total budget of 520 million Z, keeping for its own operating expenditures a total of 196 million Z or 38 percent of total regional revenues. Operating expenditures at the regional level are limited to those necessary for the functioning of the Executive Office of the Governor and the Regional Assembly. Adequate coverage of these expenditures is possible to the extent that above levels can be attained. A substantial part of regional resources could be made available for distribution to the subregional entities for their operating needs and regional investment purposes.

TABLE V.5 Shaba Regional Budget for FY 1989
(in millions of zaires)

REVENUES	
Revenues to be shared with subregional entities	258.8
Regional revenues	257.0
Administrative revenues	3.7
TOTAL	520.5
EXPENDITURES	
Local portion of shared revenues	129.9
Operating Expenditures:	
Governor's Executive Office	139.9
Shaba Regional Assembly	56.7
Sub-total	326.5
Investments	194.0
TOTAL	520.5

Note : the revenues and expenditures that only transit through the region's account (*Budget pour ordre*) are not indicated.

Available budgetary data indicate that these expectations may be attainable. The substantiating information includes the following:

- The actual reported revenues of the region are approximately 150 million Z for 1987 (which is seven times more than what the Bandundu Region collected in 1988) and about 160 million Z for the first half of 1988. The region also reports having invested 135 million Z and distributed 68 million Z in shared taxes for FY 1988. Prior to those dates, it can be assumed that total revenues for FY 1988 were in the magnitude of 325 million Z, if an investment/revenue ratio of 37 percent (1989 budget) is used.

- Results for the first six months of 1988 show substantial increases in the collection of consumption taxes over the entire year 1987: 128 million Z and 106 million Z, respectively. This increase appears to be attributable to dramatic improvements in the collection process as well as to the development of additional tax bases (see Table V.1).

- The railhead and other transportation-related taxes should yield close to 200 million Z in 1989 based on SNCZ collection data (Table III.2), although only 100 million Z are projected in the budget.

- A genuine mobilization effort is reported to be made regarding the property and vehicle registration shared taxes. At mid-year 1989, the Contributions Department was expecting collections for FY 1989 to be 150 million Z from the property tax and 50 million Z from the vehicle registration (vignette) tax. Those figures fall short of projections by 50 percent, but constitute a substantial improvement over receipts from preceding years.

- The proceeds of the beer tax should easily reach the projected 40 million Z in 1989; in the cases of the cement tax and the excise tax on locally produced corn flour, the total 1988 proceeds already come close to the 1989 projections (17 million Z).

If budgetary expectations are attained, the 193 million Z investment funds are to be allocated in the following way:

- 78 million Z for agricultural development, of which 38 million Z are to be allocated for road maintenance and 6 million Z for bridge repairs and construction;

- 32 million Z for hospital equipment and pharmaceuticals;

- 51 million Z for administrative buildings (Lubumbashi Town Hall) and equipment;

- 20 million Z for the *Commission Regionale d'Assainissement du Milieu;* and

- 12 million Z for other miscellaneous projects.

Although these amounts are rather modest compared to the global needs of the region, they represent a serious effort to develop an investment capacity. Road maintenance is one of several regional priorities; others include mainly health services and basic urban and regional administrative infrastructure and equipment. With a 32 million Z budget for manual maintenance, the region can take care of 600 km of rural roads by itself, which covers about 10 percent of present needs. It is a beginning.

Meanwhile, part of the 130 million Z of shared taxes that would be distributed to *collectivités*, could permit additional initiatives in rural road maintenance. With the present sharing formula, the *collectivités* would get 10 percent, or 13 million Z, and the rural zones would receive 25 percent, or 32.5 million Z.

Of course, Shaba Region's resource mobilization capacities contrast sharply with those of Bandundu Region. The latter only raised 20 million Z of taxes in 1988. Allowing for the fact that Shaba Region is economically richer (mining production), its recent performance illustrates that resource mobilization and investment development efforts can be successful. However, the pursuit of those efforts will require improvements in the regional fiscal system as well as in the region's management and financial capabilities.

VI. REGIONALIZATION OF ROAD MAINTENANCE FINANCE AND MANAGEMENT

Roads, with the possible exception of principal national arteries, are a peculiarly local public good. The secondary and tertiary road networks in Zaire are of most immediate benefit to local producers, traders, and residents. Although the economic benefits of the country's road system are generalized throughout the entire economy, the localities, *collectivités*, and regions are the most affected by the quality of their roads. Road maintenance is therefore a particularly appropriate domain for local action.

The inability of central institutions to assure the long-term viability of the approximately 145,000 km of roads in Zaire has been amply demonstrated in the preceding chapters and in numerous technical reports and studies. Irrefutable, empirical support for this finding may be obtained by attempting a five-hour drive in any direction from any major city in the country. The fact that the road infrastructure has not been maintained and, consequently, has deteriorated seriously during the past 30 years cannot be attributed to the failure of one particular institution or organization. To a very great extent, the explanation for the current situation may be found in the underlying conception of central responsibility for the provision and production of road maintenance services.

Interest in and support for a more decentralized approach to road maintenance is developing at various levels within the Government of Zaire and among donors. Steps have already been taken and additional measures are being discussed to broaden the role of regional and even subregional authorities in key areas of road maintenance provision and production. The transition toward a more decentralized system, although necessary, is not without risk. The institutional, financial, and technical capabilities of decentralized authorities and organizations are not sufficiently well-developed to sustain a dramatic increase in financial and operational responsibilities for road maintenance. Moreover, a much broader effort is needed to improve overall fiscal and administrative performance and to strengthen management capabilities at the regional and local levels. National institutions will continue to play a key role in the overall planning and finance of the transportation sector, in general, and

of road infrastructure, in particular.

This mission had as its primary task the assessment of decentralized capabilities for the finance and management of road maintenance. To do so, it was necessary to develop as complete a picture of the road subsector as possible. The capacity of national institutions and organizations, the history of road maintenance practices and organization, and the nature of recent financial crises and the measures taken and envisioned to resolve them were all important components of the task at hand. Field visits and extensive interviews in the regions of Shaba and Bandundu provided the necessary data for assessing decentralized capabilities, identifying areas that offer promise as well as those that will require strengthening if an effective decentralized role is to be developed.

The regionalization of road maintenance finance and management is both feasible and necessary for the long-term viability of Zaire's road infrastructure. The region is the focal point of the decentralization initiatives developed in this chapter. At the present time, the region is the only decentralized entity that offers sufficient technical and financial potential to allow for the successful assumption of the authority and responsibility necessary for the provision of road maintenance services. Regionalization, then, is the first step in the process of decentralization. The reinforcement of financial and management capabilities at this level will provide the basis for subsequent involvement of more local levels of administration.

The points presented below do not represent a comprehensive program for reform of the road subsector, nor is the intention to provide an implementation plan for decentralization. In the following sections, concrete measures are proposed to strengthen the capabilities of regional authorities and organizations to improve their performance as their responsibilities in road maintenance increase. Specific recommendations are offered in the areas of planning, programming and budgeting, resource mobilization and financial management, and the production of road maintenance services.

A. National-level Initiatives

For a regional approach to road maintenance to be effective, two critical bottlenecks must be resolved at the national level. First, the financial crisis besetting the two principal actors in road maintenance, *Office des Routes* and SNRDA, must be successfully settled. Continued central financing of both organizations is essential for road maintenance. Regional and subregional entities do not have the financial capacity at this time to assume full or even primary responsibility for financing road maintenance activities. The effectiveness of the *attributaire* system, which will be the foundation of any decentralized maintenance system, depends on the regular provision of an adequate level of funding to meet contractual obligations. A breakdown in the provision of funds to *attributaires*, as occurred in 1987 in the case of OR and in 1988 for SNRDA, would have disastrous consequences. Private-sector confidence in the system is already weak; further demonstration of the unreliability of central funding could be crippling.

One of the major constraints to regional planning, programming, and budgeting is the uncertainty surrounding the amount of funding to be made available.

- **It is recommended that a minimum financing level be established for SNRDA and OR to be allocated specifically to road maintenance activities at the regional level. Efforts should be made to obtain a commitment from the GOZ that this funding level will be guaranteed and that funds will be disbursed on a regular basis even if receipts from the petroleum tax are delayed or below projections.**

The second point that requires national-level consideration involves the ability of the *Office des Routes* to respond effectively to regional and local priorities and conditions. Although national planning is essential for the development of the road subsector, the regional offices of OR must be granted greater authority and leeway in determining regional priorities and resource allocation, in concert with regional authorities and the regional roads commission. In regard to technical capabilities at

the regional level, it is essential that efforts be taken to assure the continued operation of mechanical equipment and that necessary parts and supplies be made available where they are needed in a timely and efficient manner.

- **Further consideration should be given to the regionalization of OR's planning and technical capabilities. Specifically, SGMTP must be structured in a way that will ensure the optimal utilization of mechanical equipment in the Production Units and Brigades.**

B. Improving Regional Planning, Programming, and Budgeting

The preparation of annual road maintenance and rehabilitation programs at the regional level is an essential first step in promoting decentralized provision. Assuming that the national road network will be under the responsibility of OR at the central level, regional programs should seek to integrate planning for the regional priority, regional secondary, and agricultural feeder road networks. The objectives of an integrated regional program would be to bring together the resources or various origins and existing production capabilities with locally determined priority maintenance and rehabilitation works.

The regional roads commissions are becoming increasingly important as consultative bodies but still lack experience and decision-making authority. They have begun to take a more active role in contractor and site selection and need additional incentives and technical know-how to improve their planning capabilities. Budgetary authority at the regional level with guaranteed minimum financing is one way of providing such incentives. Planning and programming for an integrated regional network requires information on a number of different parameters. Local knowledge on population densities, marketing locations and infrastructure, alternative routings, and other key transportation infrastructure such as ferries, barges, and railroads should improve on difficult choices involved in priortizing road maintenance and rehabilitation programs.

Technical assistance may also be considered to strengthen the capabilities of the regional administrative and technical staff. UNDP-financed initiatives in regional planning presently underway, although much broader in sectoral focus will provide added support to efforts in the road subsector. Strengthening the role of the regional roads commissions will increase the possibility for needed flexibility, transparency, and accountability in public provision of road maintenance and rehabilitation services.

- **It is recommended that USAID and other donors consider the possibility of technical assistance at the regional level, specifically in transportation sector planning. It is further recommended that this technical assistance be placed at the level of the governor's cabinet, if possible. This would directly assist the regional administration in focusing on transportation priorities while allowing for technical support to the regional roads commission and to the two technical services involved in road maintenance and rehabilitation activities. The objectives of technical assistance would include:**

  *** elaboration of procedures for establishing priorities for road maintenance and rehabilitation activities;**

  *** development of an annual regional road maintenance and rehabilitation program which would integrate OR, SNRDA, regional and subregional, donor-supported, and private-sector and NGO activities;**

  *** initiatives in contract management, including methods for costing and determining road maintenance requirements; and**

  *** evaluation of organizational alternatives for the delivery of road maintenance services, including increased private-sector involvement.**

For USAID, technical assistance could be provided through existing projects (105 or 096) that have road rehabilitation components and would serve as an effective complement to the technical assistance envisioned at OR national headquarters.

Attempts to impose rigid classifications of the road network and assigning portions of it to the national agencies (OR and SNRDA) and to different levels of the territorial administration are to be avoided. Highly technical planning methodologies using modeling and investment choice criteria will not be appropriate for the regional level. This kind of approach has been suggested in the terms of reference of the Road Master Plan.

- **Donors involved in the road transportation subsector should review the implications of the proposed Road Master Plan for future endeavors in decentralization of road maintenance and rehabilitation activities.**

Preceding sections of this report have pointed out in several instances how standardized norms and models lead to inefficient outcomes in terms of resource allocation and restrict local initiatives and adaptive solutions. It is reasonable to expect that given the necessary authority, regional political and administrative authorities, technical personnel, and representatives of interest groups will devise innovative contracting arrangements to meet specific rehabilitation and maintenance requirements. Our purpose here is not to prescribe any one set of solutions but to suggest that, over time and under the proper conditions, regional actors will seek to allocate resources to a mix of manual and mechanized maintenance and rehabilitation works that reflect the preferences of road users and beneficiary populations. Specific knowledge and information on available resources is an essential condition to this result.

One positive outcome of a regionally determined program would be the assurance of systematic maintenance activities on rehabilitated roads. But just as in overly centralized decision making, a natural bias will, in most cases, favor rehabilitation over maintenance in an environment of scarce resources. Continued support for SNRDA and OR private-sector contracting will partially alleviate this tendency.

A previous section of this report has underscored the disincentives associated with regional programming in the absence of budgetary authority. The suggested approach is not to place the entire package of financial resources for the road subsector in the regional budgets but to allow the regional administrative and technical personnel to construct an overall road budget based on the annual road maintenance program and available resources. The regional roads commission would provide oversight and approve the proposed program and budget.

An annual road maintenance program and budget would consist of a list of road segments and the various maintenance and rehabilitation works to be carried out as separate line items. Each item would indicate the origin or origins of the funding (OR, SNRDA, region, donor), and the contractor or public agency responsible for production. Scheduling of the different undertakings would also be included. In order to strengthen regional capabilities to prepare annual road maintenance programs and budgets it is suggested that:

- **donors be encouraged to work with regional authorities by providing information on their road rehabilitation and maintenance plans and activities within the regional jurisdiction to facilitate their inclusion in the regional programs;**

- **SNRDA funds for road maintenance from central sources continue to be managed jointly by the regional authorities and SNRDA regional representatives with oversight provided by the regional roads commission;**

- **OR continues to manage its own funds, assigning them to priority maintenance, repair, and rehabilitation works included in the regional program; and**

- **regionally generated revenues allocated to road maintenance and rehabilitation be budgeted in the overall regional program and managed as determined by the regional roads commission.**

Strong emphasis has been placed on concentrating responsibilities for planning, programming, and budgeting road maintenance and rehabilitation activities at the regional level where more managerial and technical competence now exists. Other levels of the territorial administration and the populations of those areas are presently implicated and should become more involved over time. Flexibility should be maintained and encouraged to allow regions to solicit participation from the zones and *collectivités*. This will be a necessary factor in the development of a more decentralized road maintenance system.

C. Improvement of Contracting for Road Maintenance

We have pointed to a number of major problems which undermine the effectiveness of contractor performance, particularly concerning manual road maintenance. This is a critical area and is directly related to decentralized management systems supported in this report. Contractual obligations must be enforced in order to restore confidence and improve the quality of road maintenance efforts. This includes applying sanctions to delinquent contractors and establishing accessible recourse mechanisms for dispute resolution. Actions of this type can only be realized by regional and local authorities. Therefore, it is recommended that:

- **contracting for road maintenance under the *attributaire* system be liberalized to allow determination of cost structures and other terms and conditions by the regional contracting authority;**

- **recent decisions to allow zone-level selection of *attributaires* with oversight by regional roads commissions be implemented; and**

- **review procedures be established at the zone and regional levels whereby *attributaires* and contracting authorities can be held accountable for their respective obligations.**

The improvement of contractor performance can also be addressed through more rigorous inspections and constructive supervision procedures. These measures include:

- **establishing an incentive system for zone engineers;**
- **equipping zone engineers with vehicles;**
- **reducing the frequency of inspections, allowing more flexibility in timing, providing more training, and simplifying evaluation criteria; and**
- **instituting a system of performance bonuses for *attributaires*.**

D. Regional Revenue Mobilization and Financial Management

The approach to decentralization developed in this report favors the mobilization and allocation of resources by regions to the rehabilitation and maintenance of their road network. First, it was argued that the national road tax should continue to support OR's activities. The allocation of a larger share of the road tax to SNRDA, in the absence of adequate funding for OR, would be prejudicial to the quality of the country's primary road network. Second, although the road tax is a necessary source of resources for the rehabilitation and maintenance of the tertiary road network, it cannot be expected to be sufficient. A significant portion of the provision of road maintenance services should be decentralized, in keeping with regional revenue capabilities.

1. Financing Options at the Regional Level

The increased resource mobilization that is sought at the regional level has a dual purpose: to strengthen the region as an effective level of government, and to enable it to provide public services--including road rehabilitation and maintenance. Two options are available: the linkage (earmarking) of transportation-related taxes to road rehabilitation and maintenance, and the improvement of the overall revenue-raising capacities of the regional governments.

The Linkage Option

The main argument in favor of the linkage option is that it provides a direct, straightforward allocation of the proceeds of transportation-related taxes to road maintenance. Road services would not compete with other needs and priorities at the regional level for the use of the revenues raised. However, this would reduce the overall economic efficiency of public resource allocation at the regional level, since the benefits derived from the last portion of tax monies spent on road maintenance would be less than the benefit it would provide in a competing use. This option can then only be recommended when strong biases exist against (or for) road maintenance allocation in the budgeting process. There are no indications that such is the case in Zaire.

It may also be argued that earmarking provides a clear relationship between taxes paid and the benefits produced since it is the road users who are called upon to support the costs of road maintenance services.[19] While this argument is valid, it must be pointed out that earmarking is already predominant in road maintenance finance in Zaire in that the national road tax is earmarked for OR and SNRDA activities.

In assessing the opportunity of the linkage option, it is also necessary to take into consideration that transportation-related taxes, in agricultural regions like Shaba and Bandundu, are, in effect, taxes on the evacuation of agricultural products to markets. These taxes could have a disincentive effect on agricultural production--especially in more distant villages--by increasing the costs of marketing or by lowering farmgate prices.

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[19] A number of transportation-related taxes imposed on road users have been cited in this paper. In assessing the efficiency of tax instruments, such as the road tax and the tax on the transportation of agricultural products, consideration should be given to the costs in terms of road deterioration resulting from road use, as well as the benefits derived from road services, in order to appropriately assign the tax burden and determine the level of these taxes. To date, work in this area in Zaire does not permit precise analysis of these factors, and a more thorough analysis of the economic implications of specific tax measures intended to provide revenues for road maintenance is needed.

Finally, it is not at all evident that tax earmarking for road maintenance is presently politically feasible. Most regional governments still lack resources to cover their operating costs and provide minimum levels of services in the fields of education, health, and social welfare. Until these financing thresholds are attained, tax linkage will prove to be politically very difficult to implement.

The General Revenue Option

The improvement of overall revenue-generating capabilities would have the major advantage of strengthening the regions as effective decentralized local governments. Reinforcing decentralization in Zaire is, in the long term, the best avenue towards sustainability of road maintenance production and finance.

The arguments in favor of a more decentralized system of planning, programming, budgeting, and financing have already been explicated in an earlier section of this chapter. The question of feasibility remains.

The Shaba case demonstrates that potential exists for a significant improvement in resource mobilization at the regional level in Zaire. The successful mobilization efforts by the Shaba regional government in many areas of its fiscal domain (railhead tax, property tax, vehicle registration tax, consumption taxes) exemplify the available potential. Existing tax bases can be developed and better managed, provided that the fiscal and financial management capabilities of the region are improved.

2. Measures to Improve Regional Fiscal and Financial Management Capabilities

Two complementary sets of measures are required to improve resource mobilization at the regional level in Zaire: a reform of the decentralized fiscal system, and the improvement of regional management capabilities.

Reform of the Decentralized Fiscal System

The need for reform of the local fiscal system is acknowledged by the researchers and experts who have studied the matter in this country. It is also shared by the GOZ, which is studying the question in cooperation with international organizations such as the World Bank and UNDP. The following comments are in agreement with the above ongoing discussions and findings.

- ***Fewer and more productive taxes***

The number of taxes must be reduced, especially in the case of quasi-taxes and taxes on activities at the regional and subregional levels. There are too many taxes that yield little or no revenues and these should be eliminated. In many instances, the bulk of revenue comes from a limited number of taxes.

Taxes should be assigned to the entities that are best suited to collect them and use them efficiently. In particular, the nationally raised shared taxes (the property and vehicle registration [vignette] taxes) should be assigned to the regions, and eventually, in the case of the property tax, to the urban municipalities, as they have the greatest vested interest in those taxes. The decentralization of these taxes would be opportune since little effort seems to have been devoted so far to the recovery of those shared taxes that constitute the financial basis of the present decentralized fiscal system.

- ***Simpler and clearer tax bases and tax rates***

The simplification and clarification of legal texts that define tax bases and tax rates are an essential measure to prevent tax evasion through divergent interpretations of the law and negotiations with tax collectors. It would also facilitate the establishment of more complete and more manageable tax assessment rolls and their periodic revision.

- ***More activity level or income-related taxes***

A fiscal system that better relates tax bases or tax rates to the capacity of taxpayers to pay is not only more equitable but also more productive since it tends to levy the taxes where the money is. There are many examples in the local fiscal system in Zaire of lump-sum or uniform tax rates that apply without reference to the level of production of activities or to the level of income of taxpayers. For example, the Contributions Department in Shaba decided to improve the collection of the property tax by imposing a uniform rate of 40,000 Z on all housing units larger than 100 square meters. In the same way, many of the authorization fees required for the purchase, sale, or production of specific goods or services are lump-sum fees regardless of the level of activity.

- ***Consolidation of tax collection authority***

The changes in the regional and local tax system must be accompanied by changes in tax management. There are too many tax authorities in Zaire. Each regional or subregional division of the national department is responsible for the collection of a variety of taxes, fines, and fees on specific activities within its territory. Regional and local entities also administer their own taxes.

The coexistence of such a multiplicity of tax-raising activities results in considerable tax overlapping whereby a single good or activity may be the object of multiple and uncoordinated taxation and might support an excessive total tax burden. From a fiscal management point of view, this type of uncoordinated tax collection activity is costly and inefficient. Moreover, control over the tax collection process becomes practically impossible.

Serious consideration should be given to consolidation of collection authority into a single regional taxation agency with a corps of professional tax agents. The centralization of the tax collection process would eliminate overlapping and improve control over the tax collection process and agents.

- ***Improvement of financial management***

Improvements in accounting and audit as well as in budgetary planning and control procedures are a prerequisite to the successful implementation of any reform of local fiscal policy and revenue administration. Measures to strengthen capabilities in these areas should be assigned high priority by regional authorities.

To accomplish the more fundamental objective of securing funds for road maintenance, it would be inappropriate to take a shortcut and select a specific set of road-related taxes or sources of revenues, improve their collection, and earmark them for road purposes. Instead, the overall resource mobilization capabilities of the regional and subregional entities must be enhanced. This, in turn, means that a reform of the decentralized fiscal system of Zaire has to be undertaken and that the local and regional entities' management capabilities has to be improved.

E. Donor Assistance for Regional Road Maintenance Finance

Current national funding levels for road maintenance and rehabilitation are not adequate to assure the viability of the road network in Zaire. As has been emphasized in preceding sections, regional and subregional administrative units have very limited financial resources and cannot be expected to assume significant financial responsibility for road maintenance in the short term. However, the potential exists to improve regional revenue-generating capabilities through a combination of measures aimed at institutional strengthening, fiscal and administrative reform, and training. Furthermore, important improvements in the production of road maintenance services may be obtained by enhancing regional capabilities in programming and budgeting, liberalizing contractual arrangements and enforcing sanctions for noncompliance, reinforcing inspection and supervision, and experimenting with alternative road maintenance technologies and organizational arrangements for delivering road maintenance services. Implementation of these measures will require considerable resources and especially political will and determination on the part of regional authorities and the central government.

- **The establishment of a donor-backed funding mechanism for regionally based road maintenance activities to complement existing national efforts is strongly recommended.**

The mechanism of a matching fund is preferred. Monies would be made available on a matching basis (according to an established formula, not necessarily equal amounts) to a regional road maintenance fund administered by the regional roads commission, with clear provisions for expenditure and accounting procedures. It must be emphasized that the creation of the proposed matching fund is in no way meant to supplant or circumvent the established funding mechanisms for road maintenance and rehabilitation. Primary financing for the road subsector will continue to be provided by the road tax and channelled through OR and SNRDA.

The primary rationale for the creation of a matching fund is to provide an incentive for regional revenue mobilization and expenditure for road maintenance and rehabilitation. The existence of a new source of funding at the regional level will also provide leverage for implementing the recommended reforms in local fiscal policy, tax administration, budgeting, and transportation-sector planning and programming. The availability of funds outside the established programs in road maintenance will provide the means for experimentation with alternative contractual arrangements and road maintenance technologies including forms of labor organization and mixed light mechanical and manual maintenance capability.

Two paths for implementing a matching fund program are presented in Figure VI.1. The first option calls for the creation of a multi-donor matching fund at the national level that would make monies available for all regions. It is recommended that the fund be placed under Zairian management and supervised by an executive board with significant participation by representatives of the contributing donor agencies. The major drawback of Option 1 is the difficulty of obtaining donor agreement and the complexity of shielding the fund from political influence and official predation. The existence of a substantial pot of monies for the road subsector may also weaken government commitment to allocating scarce national revenue for this purpose and therefore supplant

rather than supplement GOZ efforts. Finally, an initial phase of experimentation and evaluation on a smaller scale is desirable to identify problem areas and develop effective control and management strategies and procedures.

Option 2 presents a more modest and manageable method for supporting regional efforts in road maintenance and rehabilitation. Under this scenario, USAID would establish a funding mechanism that would transfer funds directly to the region and place them under the authority of the regional roads commission. These funds and the activities they would finance would be integrated into the region's annual road maintenance and rehabilitation program and budget along with those of OR, SNRDA, donors and other actors. The monies could be used to finance private-sector road maintenance by contractors and NGOs as well as public-sector production. In the latter case, emphasis could be placed on contracting with OR to provide specific maintenance or rehabilitation services to be paid for by the region. Targeted and carefully monitored assistance could be provided to selected *collectivités* for experimentation in the management and execution of maintenance activities at the local level.

A schematic presentation of the overall funding picture with the creation of the proposed matching fund is provided in Figure VI.2. Possible USAID funding mechanisms for the recommendations proposed above include projects 126, 098, and 105. Project 126 could be used to provide counterpart funds for the matching fund as well as technical assistance in the areas of fiscal reform, financial management, and training. Projects 098 and 105 would provide an institutional framework for the provision of technical assistance in transportation-sector planning, programming, and budgeting as well as for experimentation with alternative road maintenance strategies and technologies.

Figure VI.1. Options for Donor-financed Road Maintenance (RdMt) Matching Fund

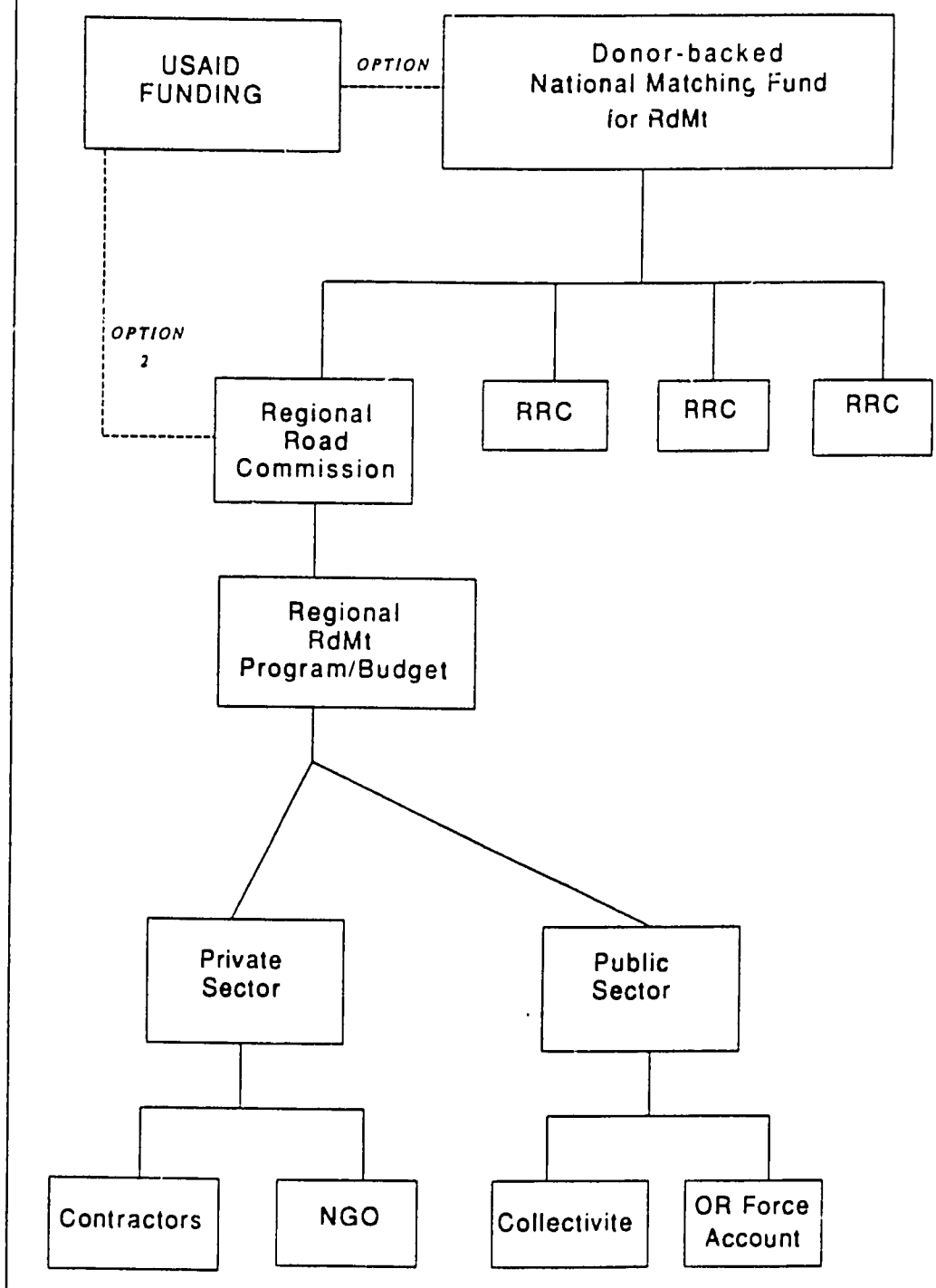
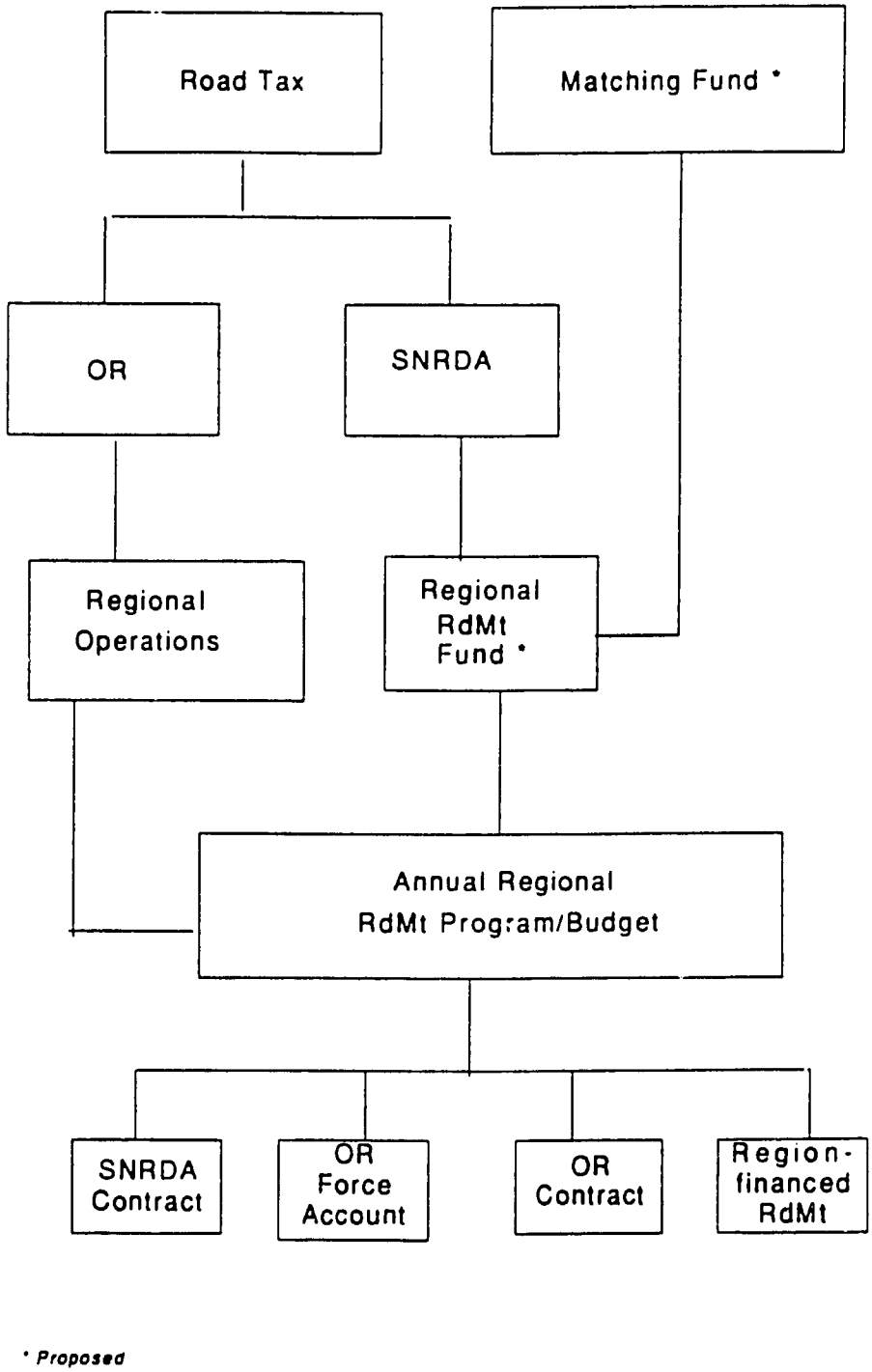


Figure VI.2. Proposed Funding Schema for Road Maintenance



* *Proposed*

F. Experimentation in the Production of Road Maintenance Services

Significant economies may be obtained through the refinement of the production process. The use of national standards, norms, and costing formulae results in a lack of flexibility and imposes limitations and constraints that diminish performance levels. Variability in initial road conditions and maintenance requirements strongly recommends the development of more local, site, and condition-specific procedures and requirements. Differences in population concentration, road utilization, and the technical characteristics of the road should influence the type of maintenance to be performed, frequency of interventions, labor organization, and the utility of mechanical equipment as part of the maintenance program. Organizational alternatives for road maintenance production exist and must be evaluated.

The following measures are recommended to improve the quality of road maintenance services.

- **Assess the factors influencing *attributaire* performance. These may include training, labor management skills, supervision, access to appropriate tools and equipment, payment regularity and sufficiency, and incentive structures. The assessment should also be structured to permit an evaluation of the influence of *attributaire* type on performance.**

- **Establish a program of experimentation and evaluation of alternative production technologies. Specifically, assess the performance characteristics and cost-effectiveness of alternative systems of labor application for manual maintenance, techniques and appropriate mechanical equipment for specific maintenance tasks, and the mix of manual and mechanical maintenance.**

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APPENDICES

APPENDIX A

USAID/Zaire Buy-in to the
Decentralization: Finance and Management Project

The purpose of this TDY is to use the expertise of the Decentralization: Finance and Management (DFM) Project to begin to answer the research question listed below.

I. BACKGROUND

The rehabilitation and maintenance of Zaire's rural roads infrastructure has been and continues to be the focus of a substantial part of USAID Zaire's development effort. The mission's traditional partner in this effort, the GOZ Roads Bureau (OR), has suffered severe financial difficulties in the recent past because of a shortfall of fuel tax receipts. The fiscal problems of the GOZ cast a troublesome shadow over the future of the mission's roads projects. USAID took steps to ensure road maintenance funding for the Project North Shaba (PNS) roads by negotiating the institution of a railhead tax with the GOZ. Several hundred thousand dollars in taxes were collected, but the money never made its way to the Office des Routes Coffers. One fundamental question relevant to the continued development of the mission's transport sector portfolio is, what is an appropriate USAID contribution (financial, technical assistance, research and studies, other) to the resolution of the problem of unsustainable rural road maintenance in Zaire in the context of failed past efforts?

II. RESEARCH QUESTION

The purpose of the DFM project, as stated in the DFM project paper logical framework, is increased decentralized capacity to finance, manage, and maintain rural infrastructure. DFM, therefore, appears to be well qualified to help the mission answer part of the above-stated question. The research question that the DFM team will focus on is, what mechanisms can be used at a local, decentralized level to provide sustainable financial support for rural road maintenance? This question needs to be analyzed in the context of determining the correct protocol for initiating a policy dialogue with the central government of Zaire in order to receive GOZ endorsement and support in exploring the possible mechanisms which can be used at a local, decentralized level to provide sustainable financial and/or non-monetary support for rural roads maintenance.

III. MISSION CONTACTS

The DFM team will be responsible to the head of the PDO division of USAID Kinshasa and the primary contacts will be Bob Braden, Chief Mission Engineer and Don Brown, ARD Division Chief.

IV. STATEMENT OF WORK

The DFM team will:

A. Conduct, before arriving in Zaire, a comprehensive review of the literature on roads projects in Zaire. This will include examination of USAID project papers and evaluations for the mission's past and present roads projects. Particularly detailed attention will be given to the literature on project 660-105 currently under implementation in the Shaba region, and 660-098, implemented in the Bandundu region and currently undergoing redesign to include activities through 1994. A limited, general review of the history of Zaire in the context of road construction during the colonial period and deterioration of the network following independence is also required.

B. Conduct, before arriving in Zaire, a comprehensive review of the literature related to local and regional level taxation structures in Zaire and similar countries. Specific review of past examples will include the railhead tax system established under the North Shaba project (PNS). The literature reviewed will be included in the a bibliography that will be furnished to the mission before the DFM team leaves Kinshasa.

C. Develop, before arriving in Zaire, an in-depth understanding of the Zairian economy.

D. Using the review of the literature outlined above and the additional literature available in Zaire as a foundation, determine an agenda for initiating a preliminary policy dialogue with the GOZ and develop a general overview of the potential for formal local level taxation in the Shaba and Bandundu regions. This overview will contain an analysis of the kinds of fiscal and non-monetary system(s) that might be appropriate, a discussion of the constraints to the implementation of such a system or systems, and a description of the political, economic, and social conditions precedent to the successful implementation of the system(s).

E. In carrying out the item 4 above, contact appropriate representatives of the GOZ, USAID, the Unites States Diplomatic Corps, other bilateral and multilateral donors, and the private sector in Kinshasa and the Shaba region.

1. The donor community contacts will include but not be limited to the IBRD, the Belgian cooperation, the Japanese cooperation, UNDP, and the German cooperation.

2. The GOZ, contacts will include but not be limited to representatives of the two roads bureaus, Office des Routes and SNRDA, the Departments of Plan, Agriculture, Finance, Budget, National Economy, Rural Development, and Territorial Administration and Decentralization.

3. The USAID/USEMB community contacts will include but not be limited to the PDO, PRM and ARD Division Chiefs, PDO transportation sub-division officers and engineers, mission research and evaluation officers, the ARD agricultural economist, project officers for the 098 and the 105 projects, contractors working on these projects, the heads of the U.S. Embassy Economic and Political sections.

4. Private sector contacts will include construction companies and traders who use and/or maintain roads in Shaba.

F. PDO will provide a Zairian host to facilitate GOZ contacts, travel, local language translation, etc. Oral progress reports will be delivered to PDO and ARD staff members on a weekly basis.

V. OUTPUTS

Before leaving Zaire, the DFM team will prepare a draft report addressing the following points:

- an overview of the road sub-sector in Zaire;
- an assessment of the local finance system and its implications for decentralized maintenance including a review of the Shaba railhead tax effort and other local initiatives in self-financing;
- an analysis of institutional factors in the provision and production of decentralized road maintenance services.

The report will analyze appropriate actions for USAID/Zaire and the DFM project in addressing the issue of sustained funding of rural roads maintenance over the long term, or make clear recommendations that pursuit of this goal is unrealistic or untimely.

A detailed bibliography of materials consulted both in the U.S. and in Zaire will accompany the final report.

Five printed copies of a draft version of the report will be presented in Zaire before the team's departure. One word-processing copy will also be provided on 5 1/4-inch 360KB MS-DOS floppy diskettes in a standard word-processing program acceptable to USAID.

The final report will be prepared in the U.S. following receipt of Mission comments and review by DFM core staff. Ten copies of this version will be forwarded to the Mission within thirty (30) days of the team's departure from Zaire. If the Mission deems appropriate, ten copies of a French language version of the report will also be provided by DFM and forwarded to the Mission within sixty (60) days following the team's departure.

APPENDIX B

LIST OF PERSONS CONTACTED

USAID

Denis Chandler	Mission Director
Joseph Goodwin	Deputy Mission Director
Bob Braden	Chief Engineer, PDO
Tom Driscoll	Transport Officer, PDO
Glen Rogers	Research Officer, Program Office
Douglas Daniels	ARD
Bruce Spake	Area Development Officer, Shaba
David Williams	Area Development Office, Lubumbashi

U.S. State Department

James Yellin	Consul General, U.S. Consulate Lubumbashi
Peter Ballerin	Economic Officer, U.S. Consulate, Lubumbashi

Central Ministries

Cit. Kayokela	Conseiller Financier, Departement de l'Economie National
Cit. Mbuyi Tuambilangana	Chef de Division, Secretariat des Fonds de Contrepartie, Departement du Plan
Cit. Duru Moussa Saf	Directeur du Secretariat des Fonds de Contrepartie, Departement du Plan
Cit. Sabutu Soku	Secretaire d'Etat aux Travaux Publique et l'Amenagement du Territoire
Cit. Tansia Molende Monkoy	Directeur Division Production Departement du Plan
Cit. Ntagala	Directeur Division Infrastructure Departement du Plan
Cit. Kiangala	Direction de Comptabilité Département du Finance

Cit. Minsinza	Directeur Service des Etudes et Planification, Departement de l'Agriculture
Cit. Tshibanda	Directeur, Planification Regionale Departement du Plan

Office des Routes

Cit. Gamela	Président Directeur Général Office des Routes
Cit. Wangu	Directeur Général Adjoint Office des Routes
Cit. Mudimbi	Office des Routes
Cit. K.P. Londala Malela	Ex Administrateur - Office des Routes

SNRDA

Cit. Mubaki	Directeur National Service National de Routes de Desserte Agricole
Cit. Djabulu	Directeur Technique, SNRDA

Region of Shaba

Cit. Moulondo Mafundji	Vice Governor, Shaba Region
Cit. Mulunga Kabwese Seya	Commissaire Sous Regional du Haut Lamami
Cit. Mastaki	Commissaire Urbain, Lubumbashi
Cit. Kalele-Ka-Bila	Principal Advisor to Commissaire Vice Doyen de la Faculte des Sciences Economiques, Universite de Lubumbashi
Cit. Mualaba	Professor of Economics University of Lubumbashi
Cit. Katomba	Demographer, CID
Cit. Mbonko	Department of International Relations University of Lubumbashi
Cit. Nsitu Vuvu Malonda	Directeur Regional, Office des Routes

Cit. Kabongo Mwembia	Chef de Division Technique Coordonnateur du Cantonnage Manuel Office des Routes
Cit. Musans Rumbu	Chef de Division Regionale du Budget
Cit. Magemba Mukoko	Directeur Regional des Contributions
Cit. Lukoki Ndoluvurlu	Chef de Division Regionale des Finances
Cit. Tsmbu	Coordonnateur Regional, SNRDA
Cit. Mukeba	SNCZ
Cit. Pemba	Division Centrale des Recettes, SNCZ
Cit. Swaka	Division Regionale, Departement de l'Economie National
Cit. Mukeba Kalala	Chef de Division de l'Administration du Territoire
Cit. Bamba-di-Lelo	Commissaire de Zone, Kabongo
Cit. Mashako Mamba Sebi	Commissaire de Zone, Kongolo
Cit. Dilenge K. Kabongo	Traditional Chief, Collectivité of Kabongo
Cit. Ohenga Woto Choma	Zone Engineer, Kabongo
Cit. Ngoie n'Kulu	Zone Engineer, Kongolo

Region of Bandundu

Cit. Prof. Samba Kaputo	Governor
Cit. Tashibuabua-Kapy'a	Principal Advisor to the Governor
Cit. Lulanda Chimbind	Conseiller Financier Regional
Cit. Majambu Musenga	Directeur Regional, Office des Routes
Cit. Kitunda Kina Kidiatu	Coordonnateur Regional du Cantonnage Manuel (OR)
Cit. Kinsala	Conseiller Financier Regional (OR)
Cit. Madrakile Takonde	Coordonnateur Regional, SNRDA
Cit. Badibanga Mulebwe	Chef de Division de l'Economie National
Cit. Kisenge Ley-Lula	Receveur, Collectivité Kilunga
Cit. Thamba	Chef Unité de Production 250, OR Kikwit
Cit. Mafuta Kilebe	Chef de Brigade 204, Bulungu
Cit. Kanyungu Kalala Mbie	Commissaire de Zone, Bulungu

Cit. Mulomba Kamanda	Commissaire de Zone, Idiofa
Cit. Mama FuFu Tosimiaka Ngongyombe	Commissaire de Zone Assistant Idiofa

Technical Assistance

Herman Boonen	Conseiller Division Routes Agricoles Direction Entretien, Direction Generale, OR
Didier Tauzin	USAID Technical Assistant Direction Generale, OR
Jacques Dezeure	Conseiller Direction Entretien Direction Generale, OR
M. Depalmas	Conseiller Financier Direction Generale, OR
André Rubio	Expert Projet Appui à la Planification Departement du Plan
Jean Pierre Muret	Consultant Project Appui à la Planification
Jean Luc Alliez	Conseiller, Departement du Plan
M. Guen	Consultant, Programme d'Appui pour les Institutions en Gestion et Finance
M. Minh	Chief of Party, 105 Project, Kime

Donors

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Father Thomas Tarimo	Catholic Mission, Kabongo, Shaba
Father Joseph d'Hont	Catholic Mission, Budi, Shaba
Jean Velkenhuyzen	Accountant ESTAGRICO Kongolo, Shaba
Monseigneur Mwamba	Vicar, Kongolo Catholic Diocese

Abbe Paulushi Gaphugi	Directeur Developpement Progres Populaire
Abbe Pierre Mbuyu	Procureur, Kongolo Catholic Diocese

Private Sector *

Cit. Toko	Merchant, SNRDA Contractor, Bandundu
Cit. Ngwalumuna	President ANEZA, Bandundu
Cit. Mubiala Koraba	Directeur Commercial, Ets. Fernandes
Cit. Kipanga Gasmama	District Director, PLZ Lusanga
Cit. Munungа-Kasongo K.	President, Ets. Madail, Kikwit
Cit. Gnape	Manager, Ets. Sanga Sam, Idiofa
Cit. Pakhe Kapula Mbor'anda	Commissaire du Peuple, Bulungu

* Numerous private-sector operators preferred that they not be identified in the report.