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STAFF APPRAISAL REPORT

CENTRAL AFRICAN REPUBLIC

TRANSPORT SECTOR PROJECT

March 29, 1990

Occidental and Central Africa Department
Infrastructure Operations Division

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CURRENCY EQUIVALENTS

Currency Unit	=	CFA Franc (CFAF)
US$1.00	=	CFAF 300
CFAF 1 million	=	US$3,333

FISCAL YEAR

January 01 - December 31

SYSTEM OF WEIGHTS AND MEASURES (METRIC)

1 meter (m)	=	3.28 feet (ft)
1 kilometer (km)	=	0.62 mile (mi)
1 square kilometer (sq km)	=	0.39 square mile (sq mi)
1 metric ton (t)	=	2,204 pounds (lbs)

ABBREVIATIONS AND ACRONYMS

Item	English/French
ACCF	Agence Centrafricaine de Communication Fluviale
ADECAF	Agence de Développement de la Zone Caféière
ANDE	Agence Nationale de Développement de l'Elevage
ASECNA	Agence pour la Sécurité de la Navigation Aérienne en Afrique et à Madagascar
ATC	Agence Transcongolaise de Communication
BARC	Bureau d'Affrètement Routier Centrafricain
CCCE	Caisse Centrale de Coopération Economique
DPW	Department of Public Works
EMP	Economic Management Project
ENERCA	Central African Electric Company
FAC	Fonds d'Aide et de Coopération
G.T.C.	Groupement des Transporteurs Centrafricains
GTZ	Gesellshaft für Technische Zusammenarbeit
JICA	Japan International Cooperation Agency
KfW	Kredit Anstallt für Wiederaufbau
MDR	Ministère de Développement Rural
MTAC	Ministère des Transports et de l'Aviation Civile
MTPAT	Ministère des Travaux Publics et de l'Aménagement du Territoire
OPPER	Opération Promotion Petits Entrepreneurs Routiers
PETROCA	Central African Petroleum Company
PPAR	Project Performance Audit Report
RMMCG	Road Maintenance Management and Coordination Group
SAGA	Société Française de Transport
SCEVN	Service Commun d'Entretien des Voies Navigables
SOCADA	Société Centrafricaine de Développement Agricole
SOCATRAF	Société Centrafricaine des Transports Fluviaux
UDEAC	Union Douanière et Economique de l'Afrique Centrale
UERBG	Unité d'Entretien Routier Bossembélé-Garoua-Boulai (RN3)

CENTRAL AFRICAN REPUBLIC
TRANSPORT SECTOR PROJECT
STAFF APPRAISAL REPORT

Table of Contents

This report was prepared by Mr. John Schwartz (Task Manager, Senior Project Officer) on the basis of findings of a preparation mission in December 1988; a preappraisal mission in April/May 1989; and an appraisal mission in October/November 1989, consisting of Messrs. John Schwartz (Mission Leader), Richard Senou (Financial Analyst), Christian Araud (Consultant Economist), Jacques Bret (Consultant Engineer), and André Garaud (Consultant Engineer). Secretarial work and typing were done by Mr. Jacques Halluin and Miss Marcelle Houle.

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Table of contents (continued)

CENTRAL AFRICAN REPUBLIC

TRANSPORT SECTOR PROJECT

CREDIT AND PROJECT SUMMARY

Borrower: Government of the Central African Republic (CAR)

Beneficiaries: Ministry of Public Works and Territorial Development (MTPAT); Ministry of Transport and Civil Aviation (MTAC); and Société Centrafricaine de Développement Agricole (SOCADA).

Credit Amount: SDR 46.6 million (US$62.0 million)

Terms: Standard IDA terms, with 40 years' maturity

Project Description: The Transport Sector Project (TSP) will finance the transport sector component of CAR's 1991-93 public investment program and will be accompanied by a substantial number of policy measures to improve sector performance. These measures include deregulation of transport and institutional reforms of MTPAT, MTAC, BARC (Bureau d'Affrètement Routier Centrafricain -- Road Freight Bureau), CCAC (Conseil des Chargeurs Centrafricain -- Shipping Council) and ASECNA-CAR; river transport tariff reform; improved transport sector investment planning; privatization of road maintenance and improved domestic resource mobilization for road maintenance financing; a road safety program, and improved public procurement procedures. The TSP includes the following components:

Road Sector Component

(a) rehabilitation and maintenance of the priority national and regional road network of about 4,000 km of which 420 km are paved; rehabilitation and maintenance of 720 km of rural roads; and ferry and bridge repair;

(b) reconstruction to paved standards of part of National Road NR3; including road works on National Road NR1 necessitated by the creation of a lake at the M'Bali hydro-electric dam facilities under construction (Energy Project US$18 M 1978-CA);

(c) provision of equipment, vehicles and spare parts for routine road maintenance and ferry services;

(d) development of the national construction industry to encourage private sector participation in road maintenance, including technical assistance to private contractors;

(e) rehabilitation of office facilities and improvement of the bus and freight station in Bangui;

(f) strengthening of the National Public Works Laboratory; technical assistance and logistical support to MTPAT in programming, supervision and monitoring of road works; training of MTPAT staff, including seminars and scholarships;

(g) detailed engineering and supervision of the rehabilitation and regravelling works; detailed engineering of the bridge over the M'baere River and swamp crossing at Bambio; and

(h) implementation of a road safety program.

River Transport Component

(a) pre-feasibility and feasibility studies regarding the construction of a river flow regulating dam on the Oubangui River; and

(b) study to review and rationalize SOCATRAF's river transport tariff.

Civil Aviation Component

(a) improvement of airport security, studies regarding the reorganization of ASECNA's services in CAR and audit of ASECNA's accounts; and

(b) spot improvement of the runway at Berberati airport, and feasibility study to examine the possibility of adapting Berberati airport for regional air traffic.

Technical Assistance, Training, and Special Studies

Provision of technical assistance and training of MTPAT, MTAC, and Planning Cell (IPCTP) staff, including seminars and scholarships, to improve managerial and technical capability, and to prepare the next phase of the transport sector investment program; strengthening of MTPAT's supervision capacity, and assistance and training in procurement; carrying out of special studies to improve CAR's procurement system, to promote its local construction industry, to develop a master plan for rural roads rehabilitation and maintenance, and to establish a computerized program to monitor overall project implementation and expenditure.

Project Benefits: The TSP is an integrated package of transport sector policy measures and sector investments comprising priority road network, river and air transport improvements. Non-quantifiable benefits would be liberalization of the transport industry; increased cost efficiency of road maintenance through privatization; more efficient use of local resources for road maintenance through improved planning and monitoring of the road maintenance programs; stronger national economic management by systematic transport sector planning; reduced transport costs through improved control of axle load limits, rationalizing SOCATRAF's river transport tariff system, and streamlining CAR's transport institutions (BARC, CACC, ASECNA); substantial reorganization and institutional reform of the management and

operation of MTPAT and MTAC; launching a road safety program; and an improved public procurement system. Quantifiable benefits would be reduced vehicle operating costs and reduced costs of transport services.

Project Risks: Institutional weaknesses in project management constitute the main project risk. Satisfactory execution of the national and regional road rehabilitation and maintenance program depends on the ability of the Road Maintenance Management and Coordination Group (RMMCG) at MTPAT to organize and implement, and the Road Fund to finance, these programs efficiently. Similarly, the efficiency of the rural road rehabilitation and maintenance program using brigades of the local cotton agency (SOCADA) depends on SOCADA's ability to restore its implementation capacity to satisfactory levels, and on MTPAT's capacity to establish an efficient rural roads coordination and programming unit. The possibility of these risks resulting in cost increases has been taken into account by a careful calculation of unit prices of the road works, provision of appropriate contingencies, and support to the procurement system. On the manpower side, provisions have been made, among others with technical assistance and training programs, for strengthening MTPAT's and MTAC's implementation and supervision capacity, the Road Fund's funding mechanism and efficiency, and MTPAT and MTAC's institutional organization.

Project Cost Estimates

Category	CFAF Millions			US$ Million			% Foreign Exchange	Total % of Base Cost
	Local	Foreign	Total	Local	Foreign	Total		
RN1 Reconstr. M'Bali Dam	859.8	1,444.2	2,304.0	2.9	4.8	7.7	4.0%	6.3%
Paving RN3	967.0	2,229.0	3,196.0	3.2	7.4	10.7	6.1%	8.8%
Paved Rds.Rehab	2,004.8	3,367.2	5,372.0	6.7	11.2	17.9	9.3%	14.8%
Graveled Rds.	5,940.0	7,590.8	13,530.8	19.8	25.3	45.1	20.9%	37.2%
Rural Roads	715.8	1,044.9	1,760.7	2.4	3.5	5.9	2.9%	4.8%
Crit. Points	363.0	537.0	900.0	1.2	1.8	3.0	1.5%	2.5%
Privatization	289.5	1,186.5	1,476.0	1.0	4.0	4.9	3.3%	4.1%
Civil Aviation	71.6	170.4	242.0	0.2	0.6	0.8	0.5%	0.7%
Inst. Support	873.2	4,540.4	5,413.6	2.9	15.1	18.0	12.5%	14.9%
Studies	250.4	874.1	1,124.5	0.8	2.9	3.7	2.4%	3.1%
Pilot Actions	144.2	395.8	540.0	0.5	1.3	1.8	1.1%	1.5%
PPF	70.6	397.4	468.0	0.2	1.3	1.6	1.1%	1.3%
Total Base Cost	12,549.9	23,777.7	36,327.6	41.8	79.3	121.1	65.5%	100.0%
Physical Contingencies	1,037.8	1,676.8	2,714.6	3.5	5.6	9.0	4.0%	7.5%
Price Contingencies	738.0	1,831.2	2,569.2	2.5	6.1	8.6	4.4%	7.1%
Total Project Cost	14,325.7	27,285.7	41,611.4	47.8	91.0	138.7	65.6%	114.5%
Taxes	3,736.7		3,736.7	12.5		12.5		
Total Project Cost (Net of Taxes)	10,589.0		37,874.7	35.3		126.2		

Financing Plan

Cofinanciers	US$ Million Local	Foreign	Total
Government /a	29.1	4.3	33.4
IDA	7.8	54.2	62.0
Japan (JICA)	5.1	10.0	15.1
France (FAC; CCCE)	1.9	14.8	16.7
Germany (KfW; GTZ)	2.3	4.6	6.9
EEC	0.6	1.2	1.8
UNDP	1.0	1.8	2.8
Total	47.8	90.9	138.7

/a Including US$12.5 M equivalent for taxes.

Estimated Disbursements from IDA Credit

(US$ Million)

Category	IDA Fiscal Years FY91	FY92	FY93	FY94	FY95	FY96	FY97
Annual	8.3 /a	8.5	13.7	13.0	10.5	6.20	1.8
Cumulative	8.3	16.8	30.5	43.5	54.0	60.2	62.0

/a Includes US$1.5 M PPF refinancing, and US$6.3 M for the RN1 M'Bali reconstruction works.

Rates of Return: Paved road rehabilitation: 18%
Gravel/earth road rehabilitation and maintenance: 32%
Rural roads rehabilitation and maintenance: 20%

Estimated Project Completion: June 1996

Maps:

IBRD No. 18095R1	Transportation and Population Density
IBRD No. 21981R	1989 Highway Maintenance Program
IBRD No. 22298	TSP Priority Road Network Maintenance Program

AF1IN
March 29, 1990

CENTRAL AFRICAN REPUBLIC

TRANSPORT SECTOR PROJECT

Documents in the Project File

	Document Title	Project File Code and/or Bank Document No.
I.	**Sector Background**	
1-1	Etude de l'industrie des transports routiers - BCEOM (February, 1983)	
1-2	Etude d'amélioration de la navigation sur la rivière Oubangui - SOGREAH (Septembre 1986)	
1-3	Etude sur l'aménagement et l'amélioration des couloirs de transport Bangui-Outre-Mer - UNICONSULT (December, 1987)	
1-4	L'Enclavement de la République Centrafricaine et l'exploitation de la voie transcamérounaise Raoul Schabille (August, 1989)	
1-5	Strategie des Transports - Plan d'Action, Alain Bernard (November, 1989)	
1-5	Transport Sector Strategy Note - AF1IN (December 27, 1989)	8315-CAR
1-6	Une Stratégie au Transport pour le Développement - Documentation for the Transport Sector - Donor Consultation Meeting Bangui, March 1990	

	Document Title	Project File Code and/or Bank Document No.
II.	Project Preparation and Background Studies	
2-1	Création d'une Cellule Interministérielle de Planification et de Coordination des Projets de Transport - BCEOM - Rapport de Mission (August 1988)	
2-2	Préparation du 3ème Projet d'Assistance Technique et du Projet Sectoriel de Transport BCEOM Rapport de Mission pour l'assistance technique à la formation (August 1988)	
2-3	Rapport de l'Etude Géotechnique associée à l'étude technique et économique des pistes rurales en République Centrafricaine Laboratoire du Batiment et des Travaux Publics, Bangui (27 avril 1989)	
2-4	Rapport de présentation du programme triennal d'investissement 1989 - 1991 CAR - Planning Secretariat (Avril, 1989)	
2-5	Organisation et Plan d'Effectifs du Ministère des Transports et de l'Aviation Civile - SEMA GROUP (June, 1989)	
2-6	Organisation et Plan d'Effectifs du Ministère des Travaux Publics et de l'Aménagement du Territoire - SEMA GROUP (June, 1989)	
2-7	Rapport d'audit sur les comptes annuels au 31 décembre, 1988 - Cameroun Audit Conseil (July, 1989)	

	Document Title	Project File Code and/or Bank Document No.
2-8	Flux de transport de la République Centrafricaine - Interministerial Planning Cell for Transport and Public Works (September, 1989)	
2-9	Projet Sectoriel des Transports Secteur Infrastructures Routières BCEOM (October, 1989)	AIS D34601
2-10	Projet Sectoriel des Transports Secteur des Transports BCEOM (October, 1989)	
2-11	Projet Sectoriel des Transports Etude technique et économique des pistes rurales - BCEOM (October, 1989)	AIS D34603
2-12	Etude de faisabilité sociale et écologique de la zône d'influence de la route future Boda-Bambio-Yamando SECA/AGRER (November, 1989)	
2-13	Déviation de la route nationale 1 (RN1) entre Bangui et Bosssembélé Etude de faisabilité - DIWI WALTER (December 1989)	

CENTRAL AFRICAN REPUBLIC

TRANSPORT SECTOR PROJECT

I. INTRODUCTION

A. Background

1.01 Since 1982, the Government of the Central African Republic (CAR) has undertaken a considerable effort to rebuild its economy. With support from multilateral and bilateral aid agencies, the Government set out to implement a broad based rehabilitation strategy, which focussed on promoting agricultural production and exports, and on reducing fiscal imbalances. During 1982-86, these efforts resulted in considerable increases in average yield of cotton and food crop production, though coffee production remained stagnant. However, except for exports of raw diamonds, which grew by about 6-10%, total exports (including coffee, cotton and wood) declined by about 0.6% per annum in real terms, because of the 1983/84 drought and have continued to decline since then due to a sluggish international economy. Merchandise exports declined from CFAF 58.7 billion in 1985 to CFAF 39 billion in 1988, while the debt service ratio increased from 15.1% in 1986 (after debt relief) to 23 and 29% in 1987/88, respectively. In order to reverse these deteriorating trends, the Government has launched a medium-term structural adjustment program since 1986, supported by two SAL operations.

1.02 In support of the ongoing efforts under the structural adjustment program to improve agricultural production and exports, and to reduce the cost of domestic and international trade, the Government has requested IDA to help develop and finance a transport sector project that would strengthen CAR's transport system, both domestically and internationally, and rationalize the sector's policy framework. Past IDA financing in the transport sector has concentrated on reconstruction and maintenance of the main national and regional road network and training of local staff, but part of this effort was interrupted by a period of political difficulties, and some of the results were lost. During the Fourth Highway project (US$18.0 M Credit of 1982), which was completed in 1987, the road network was substantially rehabilitated, but more needs to be done to shore up CAR's international transport links, strengthen its road maintenance capacity, improve the rural road network, and build a durable institutional capability to successfully plan, finance, execute and manage transport sector investment and expenditure. The proposed Transport Sector Project (TSP) aims at achieving these broader sector objectives, which may require a decade of concerted donor effort to accomplish fully, and at complementing the macro-economic objectives being pursued under the structural adjustment program.

B. Geographic and Economic Context

1.03 CAR covers an area of about 620.000 km^2. It is landlocked by the Sahel countries Chad and Sudan in the north, by Zaïre and Congo in the south, and Cameroon in the west (see map: IBRD No. 180950R1), and depending on the transport route (para. 2.01) is about 1,650 to 1,850 km away from the sea. In the southwest, CAR is covered by a regional equatorial rain forest, stretching over north Congo and east Cameroon. Most of the country lies on a high rolling plateau, which presents no particular geographical obstacles to transport. While the north and northeastern parts are relatively dry, the south and southwest experience heavy rain fall during the wet season posing heavy demands on road

maintenance. CAR's relatively sparse population (about 2.7 million) is concentrated in the east and southwest, where the most fertile areas are located and levels of economic activity are highest. The eastern part of the country is virtually uninhabited, making it difficult for the Government to economically justify road infrastructure investments, although political circumstances may dictate maintaining continued access to the region.

1.04 About 60% of the population lives in rural areas, mostly immediately along the roads. Bangui, the capital, holds 49% of the urban population (with about 600,000 inhabitants). Other important regional towns (Bambari in the east, Bouar in the west, and Berberati in the southwest) have smaller populations ranging between 20,000 and 40,000 inhabitants. The tropical forest area is inhabited by pygmies. Per capita income is about US$330 (1987), ranking CAR among the least developed countries. Agriculture (cotton, coffee, forestry) represents about 42% of GDP and 56% of commodity exports, services 40%, mining (diamonds, gold, some manufacturing) 15%, and construction 3%. About 80% of the population lives from agriculture sharing plots half and half for subsistence farming and cash crop production.

1.05 Due to CAR's deteriorating terms of trade and the decline in its major agricultural exports, growth of GDP is expected to remain modest over the next few years. The broad objective is to achieve an average real growth of 4% per annum by 1991. Per capita income is unlikely to increase much during this period, and a substantial foreign capital inflow will be necessary to help CAR strengthen the foundation for improved per capita income. A substantial portion of CAR's budget is supported by external financing (about 50% of total expenditures -- current and capital expenditures -- and 99% of the overall deficit, in 1987). As a result, debt service has increased (26% of total domestic revenue in 1986) and outstanding debt has grown to US$400 M (41.5% of GDP). Therefore, CAR will have to be very selective in making future investments. Moreover, since external financing is used to support a substantial amount of current expenditure, less foreign resources are available for capital investments in the productive sectors. These circumstances dictate an investment strategy focussing on projects with the highest economic return and affordable to CAR. In keeping with this reality, the TSP has been developed to achieve improved productivity and efficiency of the transport sector in line with CAR's macro-economic parameters set in the context of the structural adjustment process, as well as to implement the necessary institutional reforms to permit the Government to sustain the project's achievements over time.

II. TRANSPORT SECTOR ISSUES

A. The Transport System

2.01 Transport Routes. CAR's international surface transport is divided over the river route via the Oubangui to Brazzaville (Congo) and from there by rail to Pointe Noire (1,850 km), and the road route to Douala, Cameroon (1,650). Close to 75% of CAR's trade takes the river route (with about 10% of wood shipments by river being evacuated over the Sangha, a tributary to the Oubangui river in eastern CAR); about 23% travels by road and only 2% by air. Due to the sluggish economy, total import/export traffic declined from about 312,000 tons in 1984 to about 251,500 tons in 1987 (Annex 2-1). This declining trend, which is likely to persist in the near future, indicates that future increases in trade

volumes could be absorbed by the present infrastructure, and that CAR's emphasis should, therefore, be on maintaining existing investments.

2.02 Bulk goods (fuel, cement, wood) generally take the cheaper river route, while the Cameroon route is more attractive for higher value commodities (vehicles, beverages, foodstuffs) and smaller shipments. Fuel and cement imports are shipped from Kinshasa by river. Of CAR's export products, wood is mostly exported by river, as well as smaller quantities of coffee and cotton. On the Cameroon route, about 10% of imported goods are shipped by rail from Douala to Ngaoundéré in Cameroon and from there by road to Bangui, while most exported goods are shipped directly by road to Douala. The main disadvantages of the river route, albeit cheaper, are (a) the long shipping time (about 30 days, as opposed to 5-8 days by road to Douala and often longer for heavy goods such as wood) causing higher financial and insurance charges; (b) damages resulting from transshipment at Brazzaville (river to rail), port handling at Pointe Noire, and pilferage along the route; and (c) increasingly low water levels of the Oubangi River. River transport is interrupted during the dry season (February-June), when CAR's main agricultural products, coffee and agriculture, are harvested and exported. Cotton, coffee, and even wood are increasingly exported by road because of the lower tariffs currently charged for road transport to Douala port, while flower is again imported by road because of more rapid service at a cost that is easily absorbed by local market forces. Thus, the two routes are competing and complementary at the same time, while quantities and composition of freight over both routes change with the fluctuations in the cost of transport. However, due to consistent dryness in eastern CAR, declining water levels will continue to affect the navigability of the river. The low-water mark of the river has declined by 64 cm in ten years, and is expected to decline by another 40 cm in the future, making CAR more and more dependent on the Cameroon route for access to the sea.

2.03 International road transport is shared between about seven larger CAR transporters (owing about 10 to 18 trucks) and Cameroonian transporters. The latter are generally operating larger fleets and have the upper hand in road transport to and from CAR (about 80% of total traffic). Domestic transport is mostly informal, less lucrative, and handled by transporters owing only a few trucks. Because of the limited supply of viable domestic transport, several merchants and state agencies (SOCADA, PETROCA) operate their own trucking fleet.

2.04 A bilateral agreement between the Republic of Cameroon and the Central African Republic governs international road transport between Douala and Bangui. This agreement, which was originally concluded in 1969 ("convention de Berberati") was revised in August 1989 and stipulates that CAR and Cameroonian transporters share transport on 60-40% tonnage basis, respectively, between Douala and Bangui. However, while previously transport was chiefly by road, Cameroon has obtained that heavy goods (including wood and wood products, fertilizer, engines and non containerized construction materials) are to be transported to and from Douala by Cameroon railways in order to augment the use of its ailing railway services. This may result in costly delays for CAR's wood exports because Cameroon railway wagons and terminals are under equipped to handle heavy transports and transhipment efficiently, which would force wood exporters to choose the less costly but also slow river route. At present, railway transport of these goods is not yet enforced and CAR may seek an exception to this rule in accordance with the agreement's provisions for recourse.

2.05 Air transport has become mainly international, since CAR has liquidated its domestic airline under the state enterprise reform measures of the structural adjustment program. During 1982-1988, annual international passenger traffic numbered around 50,000 persons and annual freight transport 5,000 tons. Domestic commercial air transport is insignificant and limited to a few regional towns serviced once or twice per week by two private charter companies. In addition to Bangui Airport, which has been adapted to receive jumbo airliners, about 30 small airports and air strips are scattered throughout the country, of which 13 are serviced by permanent staff.

2.06 Sector Institutions. The Ministries of Transport and Aviation (MTAC) and of Public Works and Territorial Development (MTPAT) have joint responsibilities for the transport sector. MTAC is responsible for transport policy making, tariff setting, surface and air transport regulations, and meteorology. MTPAT is entrusted with the technical execution of works and urban affairs, which, in addition to maintenance of urban roads, also includes cadastral matters. MTPAT has a staff of about 1,100, 75% of which is employed in the Road Maintenance Department of the Directorate of Public Works (DPW). MTAC has a much smaller staff of about 80, half of whom are employed in the Civil Aviation and Meteorology Directorate. MTAC also supervises several specialized agencies, such as SOCATRAF (river transport), BARC (road transport), ASECNA-CAR (airport management and air transport services) and CCAC (maritime transport), which are described below.

2.07 Both Ministries and their subsidiary agencies are seriously constrained by lack of competent technical staff, and operate with limited implementation capacity. There is no appropriate statistical data base in support of transport policy making which hampers decision making. Functional lines of internal communication are inefficient, with MTAC exerting little control over its subsidiary agencies. MTPAT's staff is burdened with too many undefined tasks, making it difficult to focus on the specific requirements of road maintenance planning and execution. As part of the SAL II measures, an administrative reform program has been prepared financed by UNDP with IDA acting as executing agency which has recommended institutional changes and personnel reduction for major ministries, including MTAC and MTPAT. Additional institutional reviews have been carried out during the TSP feasibility studies, and agreements with regard to personnel reductions and adjustments in the organization charts of both Ministries are to be reached during negotiations.

2.08 Despite several years of training and technical assistance, productivity has remained low and additional training and technical assistance will remain necessary for some time to come. However, such programs should be more clearly tied to regularly supervised productivity improvement targets, work environment improvements to make trained staff useful, and built-in requirements for a declining need in expatriate personnel. In order to strengthen the capacity of both Ministries in preparation of the implementation of the TSP, an interim training program is being financed under the Economic Management Project (Credit 1971-CA), focussing on improved personnel management, reviving the MTPAT training center, improving equipment maintenance with a view to possible privatization of equipment repair, and strengthening sectoral investment planning and computerized information systems.

2.09 Transport Agencies. Transport is regulated by several specialized agencies, all responsible to the Ministry of Transport and Civil Aviation (MTAC). River transport is handled by SOCATRAF (Société Centrafricaine des Transports

Fluviaux), a mixed economy company created in 1980, and owned 51% by the Government and 49% by SAGA, a French forwarding agent, which manages the company. It operates a fleet consisting of 47 pusher tugs, and 102 barges, which have been gradually repaired with foreign assistance, and a river port at Bangui, with 300,000 tons capacity. The present decline in transport demand has caused a surplus capacity of about 25% in SOCATRAF's fleet and in the short term no new investments appear necessary. However, due to the aging of the fleet, and an expected increase in transport requirements in the early nineties, replacement investments would soon be necessary to maintain capacity. Port facilities are adequate for the time being and capable of handling current container traffic, which has steadily increased but is still modest at about 2,500 units per year. River transport between Bangui and Brazzaville is shared by bilateral agreement between CAR and Congo, with SOCATRAF carrying 80% and ATC (Agence Transcongolaise de Communication) 20%. SOCATRAF has the sole transporting rights for merchandise from and to Zaïre. SOCATRAF functions efficiently and breaks even on its operations, thanks in part to concessionary financing (Germany, France) of equipment renewal and repair, and technical assistance provided by France to maintain and operate the fleet.

2.10 Road transport is regulated by BARC (Bureau d'Affrètement routier Centrafricain), also a mixed economy agency. Private shareholders consist of a transport syndicate (GTC -- Groupement des Transporteurs Centrafricains), holding 20% of BARC's equity, several forwarding agents (40%) and the National Employers Federation (7%). The Government holds 33%. BARC does not operate trucks, but allocates road transport contracts between shippers and truckers, and manages the road transport station ("gare routière") in Bangui, where all transport is handled. It assigns shipments arbitrarily ("tour de rôle") to transporters with the objective of giving all transporters a fair share of the business. To enable smaller truckers to participate, it provides financial assistance in purchasing and operating their vehicles. In addition, it collects a Government tax (TCA -- taxe sur le chiffre d'affaires -- 16.5%) over the value of domestic transport contracts, which it transfers to the Treasury on behalf of the transporter (para. 2.34). Because of its monopolistic position, it is allowed to charge a 10% penalty commission over contracts to which it is no party and can enforce this rule because valid travel documents ("lettre de voiture") can only be obtained through its offices. However, due to BARC's inefficiency, and to avoid the risk of their goods being assigned to financially insolvent or poorly equipped truckers, shippers and transporters have turned away from using BARC as a mediating agency and about 80% of all transport contracts are now concluded privately. Barc's accounts are in balance thanks to the revenues from the 10% commission, which support, among others, the financial assistance to small transporters. BARC's monopoly position unnecessarily increases the transport cost. As part of the measures of the Second Structural Adjustment Credit, the Government decreed, as a condition of negotiations of the proposed IDA Credit for the TSP, the abolishment of BARC's monopoly and the elimination of the penalty commission.

2.11 Bangui's airport is serviced and maintained by ASECNA (Agence pour la Sécurité de la Navigation Aérienne en Afrique et Madagascar, with headquarters based in Dakar), of which CAR is a member. ASECNA is responsible for managing CAR's air space and technical installations and related services, and in accordance with its Articles of Agreement also handles national services such as the commercial management of Bangui's airport and several secondary air fields in the interior, and the management of the coordinated meteorological network. Its budgetary revenues are derived from airport fees, and a State subsidy, which

in 1988 amounted to CFAF 91.6 million (US$300,000). ASECNA's CAR budget is in deficit, because of delayed payments by CAR, and also because of lesser revenues following declining air traffic. ASECNA's operational costs in terms of personnel are higher than necessary because of over staffing. Part of its meteorological equipment needs replacement. The Government desires to rationalize ASECNA's performance in CAR and intends to carry out an audit of ASECNA's accounts and operations which should provide recommendations for improvements (para. 3.06).

2.12 CCAC (Conseil Centrafricain des Chargeurs), which was created in 1979, regulates maritime transport of CAR imports and exports and, in accordance with its statutes, is responsible for obtaining most favorable sea transport tariffs for CAR shippers. Like BARC for road transport, CCAC maintains the monopoly for allocating maritime transport contracts. In 1986, CCAC also assumed the maritime transport rights of LCA ("Lignes Centrafricaines"), which, in a business arrangement with a German-Cypriote shipping company, briefly operated sea transports with Europe before it was dissolved by the new Government in 1984. CCAC operations are funded from a 0.50% general import tax of which half is allocated to CCAC. It obtains additional revenues from the sale of "transport rights" of CAR merchandise to foreign shipping companies and forwarding agents. In doing so, it is faced with a conflict of interest in making efforts to sell such transport rights at the highest possible price, while CAR shippers seek the lowest possible rate. It has continued negotiating transport arrangements with shipping companies and forwarding agents that would limit competition and increase transport rates. MTAC has not approved CCAC's proposals, as they are in conflict with the liberalization policies adopted by the Government. MTAC established a Task Force to review CCAC's operations and has decided, as part of its sector policy measures, to turn CCAC into a service organization supporting the interests of CAR shippers rather than those of foreign shipping companies, and to improve CCAC's professional competence through appropriate training and technical assistance.

2.13 Transport Costs. Transport costs are high because of CAR's long distance to the sea; multiple transshipment on the river route; relatively high costs of fuel in CAR for road transport because of the fuel tax, part of which finances road maintenance through the Road Fund (para. 2.29); high vehicle operating costs, especially due to the low maintenance levels in neighboring countries; dearness of spare parts resulting from high customs tariffs; and monopolistic rates charged by international shipping companies. Surface transport rates charged by forwarding agents for imported products are generally twice as high than for exported products because charges for the empty back haul of trucks or containers are included. Road transport tariffs amount to about CFAF 50-60/ton-km for imported goods (CFAF 82,500-99,000/ton) and CFAF 20-35/ton-km (CFAF 23,000/ton-56,000/ton) for exported goods, due to competition for shipments. The transport rates for imported goods do not meet much resistance, because importers face relatively little competition and can recover the cost.

2.14 For river transport, some 19 different tariffs apply, with preferential rates for cement and fuel imports on the one hand, and coffee and cotton exports on the other. Tariffs range from CFAF 10/ton-km to CFAF 17/ton-km for the river portion (Bangui-Brazzaville), and CFAF 13.61/ton-km to CFAF 30.63/ton-km for the whole distance to Pointe Noire (amounting to CFAF 25,000-56,000 per ton in total). River transport tariffs lack transparency and should be simplified to permit shippers to determine more clearly their relation to the cost of transport (para. 3.04).

2.15 In addition to the tariff for river transport, a tax is levied to recover the operating cost of SCEVN (Service Commun d'Entretien des Voies Navigables), which is shared between CAR and Congo, and maintains the river route over the Oubangui between Bangui and Brazzaville, especially by removing rocks to facilitate passage. This tax, which is in fact a user fee, varies from CFAF 700/ton (promotional tax for coffee, arabic gum) to CFAF 2,820 m^3 for fuel.

2.16 The cost of air transport from Europe, mainly France, to CAR is relatively high because fares include round trip cost due to lack of return cargo and limited competition between airlines.

2.17 Transport Obstacles. With SPPF financing, a study is being undertaken to establish a program for customs and tariff harmonization and improvement of international transport movements in the UDEAC countries (Union Douanière et Economique de l'Afrique Centrale; member countries: Cameroon, Central African Republic, Chad, Congo, Equatorial Guinea, and Gabon). The study is being carried out with financing from the European Communities, and in consultation with the UDEAC Secretariat residing in Bangui. On the basis of existing studies, the present situation and future evolution of these countries' transport sectors and related constraints have been analyzed. In a subsequent phase, measures will be prepared to resolve the constraints identified, especially with regard to regulations, simplification of customs procedures, cost recovery and tariff setting, and least cost operational and infrastructure improvements. Results of the first phase have been completed and indicate the need for further work to prepare concrete proposals for improved custom procedures, transit regulations and vehicle regulations. During donor coordination on CAR's transport sector development, much support was expressed for improving customs procedures and transport regulations on CAR's main international transport routes to Douala and Pointe Noire as parallel actions to the implementation of the TSP, which has a more national focus.

2.18 Investment Planning. Transport sector investment planning is the responsibility of an Interministerial Planning Cell for Transport and Public Works (IPCTP), established at MTAC in October 1988 under the shared responsibility of MTAC and MTPAT. This Cell operates in close collaboration with the Secretariat of Planning, which has the prime responsibility for planning and formulating the national investment budget. A beginning with systematic investment planning in CAR has only been launched since 1987, with the formulation of a five-year investment plan prepared with assistance of the UNDP, an effort which was expanded under the structural adjustment program. Subsequently, transport sector investment planning was launched in preparation of the TSP, in order to arrive at an appropriate ranking of sector investments in accordance with economic justification, priorities, and estimates of recurrent cost requirements. Although a beginning has been made, national and sectoral investment planning are still in an early stage and will require sustained technical assistance for some time before becoming reliable tools of economic management. IPCTP will also be strengthened to analyze statistical data prepared by services of MTAC.

B. The Road Sub-sector

2.19 Road Network and Traffic Density. The CAR road network consists of about 23,700 km, of which 9,300 (or about 45%) are classified national and regional roads and the remaining 14,400 km are rural roads and tracks. About

440 km of the main national roads (including about 20 km of national roads passing through Bangui) are paved. Since 1982, after severe deterioration, the Government has substantially improved about 3,700 km of the classified road network, of which 1,300 km were rehabilitated under the Fourth Highway Project (US$18.0 M Credit of 1982, paras. 2.40-2.42).

2.20 The national and regional road network carries 80% of total traffic, 50% of which is concentrated on the paved roads. Traffic density is highest near Bangui and weakens rapidly beyond 100 km from the city. While on paved roads daily traffic ranges between about 120 to 500 vpd (vehicles per day), and in Bangui reaches some 3,400 vpd on the main urban roads, average daily traffic on national roads in the interior is lower at about 20 to 60 vpd, except near some larger provincial towns, where it is estimated at between 50-100 vpd. Traffic on regional roads varies between 15 and 50 vpd, and is much lower in more remote areas. Some rural roads carry about 20 vpd and many less than 10 vpd. Due to CAR's sluggish economy of the last five years, traffic has generally stagnated or declined, and is projected to increase only slightly with the forecasted slow improvement in economic activity resulting from the adjustment program (para. 1.05). Although statistics are incomplete, the number of vehicles is estimated about 11,600, which has been relatively constant during the period 1985-89. Of this number, about 80% are light vehicles (of which 40% are pick-up trucks), and the remainder are larger trucks and tractor-trailers. An overview of the road network and traffic density is given in Annex 2-2.

2.21 Rural Roads. About 60% of the 14,400 km rural road network is generally in a poor state of repair. Some 9,000 km of rural roads are under the responsibility of agricultural agencies such as SOCADA, responsible for cotton production; ADECAF, responsible for coffee production; ANDE, which implements a livestock project (PNDE) financed by IDA and the European Communities; SCAT, responsible for tobacco production; and a few others, including forestry companies. However, limited budget funds prevent most of the agencies from adhering to a regular maintenance program. About 3,500 km were under the responsibility of the Ministry of Rural Development (MDR), but since its maintenance brigades did not receive budget funds, these roads have not been maintained for many years and have since become generally impracticable. Consequently, provision of inputs, collection, and marketing of cash crops and food crops, even in regions where some road maintenance takes place, has become difficult and costly due to the high vehicle operating cost.

2.22 Rural road rehabilitation and maintenance is an important priority for CAR's agricultural sector, which contributes close to half of GDP. Hence, both special agricultural agencies and rural maintenance brigades require substantial material, technical and institutional strengthening in support of CAR's agricultural development objectives. In an effort to increase efficiency, the Government has launched programs to restructure agricultural institutions including a reorganization of MDR, whose task of maintaining the rural roads under its responsibility have been transferred to MTPAT. However, MTPAT's experience with rural road rehabilitation and maintenance is limited, making it necessary to achieve sustained improvements in this area through combined efforts of MDR, the specialized agricultural development agencies (which, in accordance with recent plans, would be reorganized into rural development zones), and MTPAT. Since the residual group of rural roads previously under MDR has not been adequately maintained, MTPAT would concentrate more specifically on maintaining primary rural roads linked to the regional and national road networks, with financing under the transport sector component of the investment plan, leaving

the responsibility for maintenance of secondary and tertiary rural roads to the agricultural development agencies, with financing under the agricultural development component of the plan.

2.23 Urban Roads. Urban roads in CAR are generally classified in primary roads, which are extensions of the national road network, secondary roads, which link up to the main roads, and a tertiary network serving the interior of the towns. Bangui has an urban road system of about 70 km, with little over 50 km paved, of which some 20 km is in the secondary category; Bambari's urban roads extend over 20 km, Bouar's network is about 22,5 km, both with about half consisting of national roads, followed by Berberati with 15,6 km, mostly national roads. None of these larger three secondary towns have paved roads. National roads in these towns are generally used by heavy through traffic, which creates substantial discomfort during the dry season because of dust, causes damage to the road surface during the wet season and also constitutes a major safety hazard. Lacking the necessary funds and equipment, the municipalities require assistance in maintaining their city roads in a satisfactory, passable state.

2.24 Road Maintenance. Despite efforts under previous highway projects financed with IDA assistance, MTPAT has not been able to develop an appropriate maintenance strategy. This deficiency is mainly due to long time lags between donor-financed highway projects, interruptions in technical assistance and training programs, and frequent turnover of local staff. Of the 9,300 km of classified roads, about 5,400 km (close to 60%) have thus far been programmed to be maintained annually, about 4,600 km with mechanical means and 1,000 km manually. Of the mechanical road maintenance program (resurfacing of paved roads and regraveling of earth roads), MTPAT's share is about 3,200 km per year or about 34% of the total road network. The remaining 1,400 km, which is about 15% of the total network and 30% of the mechanical maintenance program, is maintained by brigades operated by French and German technical assistance (see map: IBRD No. 21981).

2.25 As a result of its inadequate maintenance strategy, MTPAT has maintained generally much less than the annual maintenance program agreed between its Department of Public Works and the Road Fund (discussed in para. 2.29). Consequently, following the substantial investments made during the rehabilitation program of 1982-1986, the road network has begun to deteriorate again. In addition, since part of the road network is not being maintained at all, especially in sparser populated areas, these roads are gradually being lost to the country posing problems of continued geographical access. At present, MTPAT operates four mechanized maintenance brigades, of which one is applied solely to the paved roads; the remaining three are carrying out resurfacing of gravel roads. In addition, MTPAT operates smaller brigades for patching work and bridge repair. Their composition is determined each year in light of the road maintenance work programmed by MTPAT. Manual maintenance is carried out by MTPAT's 16 subdivisions and 11 small local contractors, who were trained under a pilot operation financed by the Fourth Highway Project. To succeed in its maintenance program, MTPAT will have to diminish its responsibilities for force account methods in favor of the private sector, among others by a broader use of small contractors, which would be an essential element of its new road maintenance strategy (para. 3.08).

2.26 Grouped in OPPER (Opération Promotion des Petits Entrepreneurs Routiers), and managed by foreign technical assistance, the small local contractors carried out manual maintenance on close to 1,000 km in 1988,

generally at lesser expense and more efficiently than MTPAT's maintenance crews. Having progressively grown more into an association of private entrepreneurs, the contractors have organized themselves into a private cooperative with statutes independent from MTPAT. OPPER will continue to carry out manual maintenance for MTPAT, and seeks to gradually enter into mechanical maintenance as well, using equipment that would be made available by MTPAT through a pooling arrangement. In addition, to keep their businesses from failing due to a possible lack of work, the small contractors are also branching out into other public works, such as building and drainage works in urban areas.

2.27 Equipment. MTPAT holds a considerable amount of equipment (about 300 units with a replacement value of US$28 M at 1989 prices), that has mostly been provided on a grant basis by Japan. However, due to lack of technical ability and inadequate handling, only about one third of this equipment is operative. The usable equipment has a remaining economic life of at most three more years, which, if MTPAT continued to carry out road maintenance by force account, would dictate equipment renewal in two stages (1991 and 1994) to meet maintenance targets, requiring substantial financial commitments. The principal reasons underlying the weak performance of MTPAT's equipment department are (a) insufficiently qualified mechanical engineers and technicians; (b) inadequate spare parts and funding, which are provided through the Road Fund, causing equipment to be idle unnecessarily for sustained periods; and (c) inappropriate programming of equipment use. Part of the deficiencies are due to the fact that MTPAT uses spare part funds for light vehicles not associated with road maintenance, thus reducing Road Fund resources for maintenance equipment. Light vehicle repair and spare parts for other than maintenance purposes should normally be financed by the ministerial budget, and not the Road Fund. Given MTPAT's weak performance in maintenance and equipment operation, commitments for the purchase of new equipment would be difficult to justify. To avoid future capital losses, MTPAT will establish commercial management of equipment maintenance as part of its new maintenance strategy.

2.28 MTPAT also operates 62 ferries, of which 22 are motorized. All motorized ferries have recently been repaired with German financing and are in a satisfactory state of repair. About 27 of the non-motorized ferries will be renovated with additional financing provided by the Federal Republic of Germany.

2.29 Road Maintenance Financing. Road maintenance is financed by a Road Fund, established in 1981 as a legally and financially autonomous body. The Road Fund's staff is small with about 30 employees, of which 12 higher level staff, headed by an expatriate administrator. The Road Fund is overseen by a Management Committee chaired by the Minister of Public Works and members from other Government departments, including the Ministry of Finance, and the local chamber of commerce. Total 1988 and 1989 revenues of the Road Fund amounted to CFAF 1.7/1.8 billion (about US$5.3/5.5 M). These revenues are derived from a CFAF 50/1 user fee built in the fuel tax (Annex 2-3) which is directly transferred by PETROCA, the national petroleum agency, into the Road Fund account established at a commercial bank. A more detailed description of the Road Fund is provided in Chapter VI.

2.30 Although the Road Fund user fee has been gradually increased by the Government, resources have not kept pace with rising maintenance requirements, thereby adding to the insufficient maintenance capacity of MTPAT. Future Road Fund requirements to support the routine maintenance program proposed under the project have been estimated at about CFAF 2.7 billion per annum (US$8.4 M,

depreciation of equipment and installations not included), which exceeds present revenues by 25%. Moreover, while the Road Fund has been adequately managed with technical assistance, funds were used for non-maintenance related expenditure due to shortages in the Ministerial budget. As a result, the Road Fund was called on to finance part of expenditures for fuel, salaries and other items that should normally have been charged to MTPAT's or the national budget. Thus, funds for maintenance work were reduced and overall output was adversely affected. An in-depth audit of the 1988 Road Fund accounts has been carried out with terms of reference approved by IDA to determine the application of funds and to provide recommendations for improvements to be implemented during the project (paras. 6.04-6.05).

2.31 Other deficiencies of Road Fund financing stem from delays in PETROCA transfers (about three to four months), lack of coordination between the Road Fund and the maintenance department on the actual implementation of the maintenance program, and administrative weaknesses in keeping track of actual expenditure. In addition, equipment supplies and maintenance operations financed by bilateral donors are not within the purview of the Road Fund, making control over the use of these resources and overall planning for future expenditure more difficult.

2.32 The main weakness of the Road Fund has, therefore, not been the mobilization of revenues from road user charges, but inappropriate use of these revenues. In order to cope more efficiently with future maintenance requirements and to safeguard past investment, Road Fund management requires strengthening; budgeting, funding, and maintenance planning and implementation need to be better integrated, and additional resources ought to be mobilized as maintenance requirements increase. However, continued external financing of road maintenance will remain required as long as national resources are constrained, and only as a matter of last resort should incremental contributions be sought from the national budget.

2.33 The Public Works and Buildings Laboratory (LBTP). LBTP is an autonomous directorate of MTPAT responsible for geotechnical studies and engineering, research on local construction materials and soil studies, and tests on existing structures. It has a staff of about 30 people, of which 13 are professionals, and is managed under contract by the French Public Works and Building Research Center (CEBTP), which is at the origin of many public works laboratories in former French Africa. Activities of LBTP are naturally influenced by the volume of construction activity in CAR, and were highest during the Fourth Highway Project (1984-1987). Since then, its volume of work has declined, and LBTP's resulting operational deficit is covered by its reserve funds. The Laboratory provides good potential for strengthening local capacity and expertise to intervene in foreign financed construction projects, and this potential should be utilized to the fullest extent during future investment projects. The TSP will provide assistance for this purpose.

2.34 Cost Recovery of Road Traffic. In addition to the Road Fund user fee, several other taxes, sales taxes on spare parts, which are relatively high (tires in CAR are 30% more expensive than in neighboring Cameroon), and import duties constitute the framework for cost recovery of road rehabilitation and maintenance. Fuel prices (CFAF 350 for gasoline and CFAF 280 for diesel) are considerably higher than in neighboring countries (CFAF 280 and 180, respectively, in Cameroon; CFAF 295 and 195, respectively, in Congo; CFAF 290 and 270 equivalent, respectively, in Chad), leading to substantial contraband traffic

on CAR's western border. Domestic road transport, which generally carries lower value commodities, is charged with a 16.5% tax over the value of the transport contract -- with the exception for cotton and coffee, which carry a reduced rate of 2.4% -- while international road transport, which carries generally higher value commodities, is taxed at the rate of 5%.

2.35 There is no special road user fee applied to heavy vehicles. This benefits especially foreign transport vehicles, which escape paying the Road Fund user fee because they often carry large quantities of lower priced fuel in auxiliary tanks from neighboring countries. Measures have recently been taken, that at the border Customs charges payment of duties, or confiscates any amount of fuel in excess of what is needed to reach Bangui. Confiscated fuel is transferred to PETROCA. However, the actual success rate of these measures is difficult to assess. Introduction of tolling charges on the international transport road from Bangui to the Cameroon border may not be practicable under the present efforts to harmonize transport policy among the UDEAC countries. Axle load in CAR is controlled at the sole weighing station near Bangui. Payment of fines has not been enforced for some time, which has encouraged heavy overloading causing substantial damage to the road network. MTAC is responsible for applying axle load control, and has hesitated to fine foreign truckers for fear of counter measures in neighboring countries. MTAC has advised neighboring countries that as of January 1990 overloading is again penalized. Concomitantly, taxing of heavy trucks should be enforced to recover the cost of road repair and to supplement Road Fund revenues. Possibilities for the establishment of such a tax system is being reviewed by the study on transport obstacles in UDEAC countries, which is to make recommendations for harmonizing axle load requirements and for instituting appropriate recovery mechanisms of road maintenance expenditure.

2.36 Road Safety. CAR experiences a high accident level due to lack of enforcement of traffic rules, under equipped and insufficiently trained police, absence of road signs and inoperative traffic lights in urban areas. MTAC, which is responsible for traffic regulation, is faced with an increasing accident-related cost to the economy, which has been estimated at least CFAF 1 billion per year in terms of insurance damages. As a result of the poor statistical base, it is difficult to estimate the additional production losses, and hospitalization expenses, but comparing data with other African countries, the cost is likely to be much higher. Consequently, MTAC has taken steps to prepare a road safety program (para. 4.26), that would be carried out under the project.

2.37 Procurement. Responsibilities for procurement are vested in a national procurement committee, established at the Presidency, which reviews the evaluation and recommendations made by the technical committees at ministerial level, and decides on contract awards. Although the objective was to streamline procurement procedures under a centralized organization in order to achieve uniformity and objectivity, the new procedures have led to long processing delays that prove costly to the economy. In October 1989, an IDA mission carried out an assessment of CAR's procurement system. The main conclusions were that ICB and LCB procedures are slow and inefficient, that the enabling legislation requires updating and rationalization, and that measures are to be taken to accelerate control procedures which require excessive processing time. The Government is aware of these weaknesses and is in the process of redrafting regulations. However, assistance is necessary to help improve existing arrangements, in particular with respect to policy making, institutional

capability and rules and procedures. This would include drafting of codes as well as model documents. Provision has been made under TSP to provide such assistance.

2.38 Environmental Aspects. The Government has constructed, with external financing, part of an international road from Yamando through Bambio to Boda through the CAR portion of the regional equatorial rain forest (see Map IBRD 21981). On completion, this road would shorten the distance between Bangui and Douala by about 140 km, and reduce travel time by half between Bangui and southwestern CAR (Berberati), which is an important regional center. In addition, it would reduce the transport cost to Douala port for wood products, which is one of CAR's major export items. The Government has completed an Environmental Impact Study to obtain recommendations for necessary actions to limit potential damage to the forest resulting from the road construction.

2.39 The Study's recommendations focus in particular on (a) erosion prevention, and the need for maintenance and drainage; (b) protection of the forest from man-made fires to establish plots for cultivation; (c) containment of hunting of protected wild life; (d) creation of a greater participation between the State and private forestry companies in order to protect the forest and to develop integrated projects including the forestry population; (e) study of the ecological aspects and required protective measures regarding possible continuation of the road from Bambio to Boda, including the crossing of the 3 km-long Mbaéré River swamp which regulates much of CAR's river basin; and (f) realignment of the proposed tracé of the Bambio-Boda road along existing villages to prevent migration away from the village to the new road, and to avoid portions of primary forest. Part of these measures will be implemented under the proposed Natural Resources Management Project which was appraised in August 1989. In the interim, the Government has taken measures to prevent village farming and cultivation along the portion of the road that has already been constructed. The Study recommends that CAR build on these ongoing efforts to protect the forest.

C. Bank Group Involvement in the Transport Sector

2.40 Since 1969, the Bank Group has mainly been involved in assisting development of the highway sector, with four IDA Credits (Credits 146-CA of 1969, 199-CA of 1970, 847-CA of 1978, and 1258-CA of 1982 for the Fourth Highway Project, which was the last IDA-financed operation in the transport sector) totaling US$46.5 M (including US$4.5 M for a supplemental Credit for Highways III, in 1980). These credits focussed on road reconstruction, rehabilitation and maintenance, and technical assistance and training to the then Ministry of Public Works (MPW).

2.41 The success ratings of these projects were mixed. During the period of the Bokassa regime (1976-1980), the road network deteriorated considerably, and had to be substantially rehabilitated during the Fourth Highway Project. Much of the previously trained staff had left, leaving a serious gap in implementation capacity. While the physical part of the Fourth Highway Project was relatively well executed, transfer of technical knowledge remained insufficient because of a poorly motivated civil service and insufficient training ability of expatriate assistants. Continued weaknesses have been MPW's limited capacity to implement these projects and to establish an adequately funded reliable maintenance organization, lack of qualified staff, and slow results in institution building despite a substantial amount of technical assistance.

2.42 Lessons learned include that given CAR's limited implementation capacity and the long span it would take to educate and train a public works force capable of maintaining the country's sizable road network, road maintenance in CAR should increasingly be carried out by contract; and in selecting technical assistance, greater weight should be given to the training ability of expatriate consultants. These lessons have been taken into account in the preparation of the Transport Sector Project.

2.43 The above four operations have been critically reviewed in a Project Performance Audit Report which will be issued shortly and which points especially to the weaknesses mentioned above. The PPAR confirms the analysis made on the road sector in the CAR Transport Sector Strategy Note (December 27, 1989, available in the Project File), which served as the basis for the formulation of the TSP and was discussed with the Government during appraisal in the fall of 1989. The issues raised in the Strategy Note and the PPAR with respect to CAR's road rehabilitation and maintenance capacity are proposed to be resolved by (a) improving donor coordination to finance high priority projects based on continued economic and physical planning in order to achieve a sustainable road rehabilitation and maintenance program, including rural roads and other transport sector investments, over a ten-year period (para. 4.01); (b) shifting the focus on improving road maintenance by force account to carrying out these works by private enterprise, including promotion of a national construction industry, and by limiting MPW's involvement to programming, control and supervision (paras. 4.09/4.10); (c) strengthening Government staff in these managerial tasks rather than in carrying out works themselves (para. 4.23); (d) establishing an appropriate personnel management system to improve staff morale and to encourage junior staff (para. 4.23); (e) training local staff in project preparation, application of appropriate technologies, investment planning and supervision in order to gradually lessen CAR's dependence on expatriate technical assistance (paras. 4.16/17, 4.19, 4.23/24, 4.31, 4.33); (f) maintaining a computerized system of actual costs of project implementation to ensure up-to-date cost data by project implementation (para. 4.39); and (g) improving management and utilization of road maintenance funding (paras. 6.05-6.07).

2.44 Rationale for Continued Bank Group Involvement. Experience with past projects and, in particular, the structural adjustment program that was put in place in 1986, revealed that a broader approach of transport sector development was needed to tackle the sector's institutional aspects, its development strategy and planning, and donor coordination in order to focus on priority investments. The Government and the Bank concurred on the need to prepare a transport sector project that would encompass these objectives. Other donors, also active in the sector, joined in developing a coherent sector strategy which was agreed during a donor consultation meeting in March 1990 and will be the cornerstone of transport sector development throughout the nineties. The Bank Group's role will be to continue to help promote and maintain this strategy during this period and to ensure that it remains consistent with the overall structural adjustment and expenditure policies set for the CAR economy.

III. TRANSPORT SECTOR POLICY MEASURES

3.01 In order to address the issues described in Chapter II, in particular to rationalize transport sector performance and to reduce the cost of transport to the economy, the Government has adopted a coherent set of transport sector policy measures. These measures, which have been laid down in a declaration of

sector policy (Annex 3-4) endorsed by the President of the Central African Republic, constitute an integrated package of the TSP and are related to transport liberalization; adjustment of transport sector institutions and specialized agencies; adherence to careful sector investment planning; establishment of an adequate road maintenance strategy, including a transfer from current force account methods to using private enterprise and a stronger management of the Road Fund; a greater transparency of the river transport tariff system; implementation of a road safety program, and more efficient procurement procedures. A timetable for the implementation of these measures is contained in Annex 3-5.

3.02 Liberalization of the Transport Industry. As a first measure to liberalize the transport industry, the role of BARC (para. 2.10) will be substantially revised. This revision is based on the recommendations of a Task Force on Road Transport, established by MTAC as part of the Government's commitments under SAL II. The agreed recommendations are fully consistent with the measures agreed under SAL II and include among others (a) abolishment of BARC's monopoly by having it compete for supplying transport services together with other transporters and forwarding agencies and by abolishing the 10% penalty commission; (b) representation of the interests of CAR transporters in Douala and surveyance of the adequate application of the bilateral agreement between CAR and Cameroon regarding the sharing of transport between CAR and Cameroonian truckers (para. 2.04); and (c) continuation of the collection of taxes (TCA -- para. 2.34) on behalf of the Treasury and statistics of transport data for MTAC policy making. The measures agreed to under SAL II (removal of BARC's monopoly and the 10% penalty commission) have been completed as part of the conditionality for negotiations of the IDA credit for the TSP. After two years of operations under its revised statutes, the merits of BARC continuing as a separate organization will be reviewed.

3.03 In addition, the Government will implement the agreed recommendations of its Task Force which has reviewed the role of the Central African Maritime Shipping Council (CCAC) (para. 2.12). These recommendations include, that CCAC will reduce its operational costs; abolish all directives and decrees providing CCAC with the sole allocation of shipping rights; and abolish the sale of transport rights of CAR merchandise to a sole forwarding agent against commission. Instead CCAC, with a reduced staff and budget, will solely operate as a service organization to help shippers locate most favorable maritime transport. To this end, CCAC will acquire the technical capability to enable it to carry out its service function through an appropriate training program of its staff with UNCTAD assistance. In addition, CCAC will be regularly audited, with the first audit taking place before mid-1990. After two years, CCAC's performance in its revised capacity will be reviewed in order to make further corrections if necessary, including a decision on the merits of CCAC continuing as a separate agency.

3.04 Transport Controls and Tariffs. Road and river transport in CAR are subject to many controls which hamper traffic and unnecessarily increase transport costs. Ad hoc commissions in 1988 and 1989 examined the problems of transport controls and made recommendations for their removal. The Government has issued decrees to implement these recommendations. Transparency of the river transport tariffs is complex, and consists of many different elements making it difficult to determine their relation to the actual cost of transport. During the TSP, a study will be made with a view to establishing a simplified and

systematic tariff system, so as to ensure clarity to shippers and rational pricing.

3.05 Institutional Reforms. MTPAT and MTAC will be reorganized in accordance with new organization charts to be agreed during negotiations and which should reflect the staff reduction agreed under the Structural Adjustment Program ("Plan d'effectifs"). With regard to MTPAT, its reorganization concerns especially the Department of Public Works (DPW) to achieve improved efficiency of the road maintenance task. The equipment workshop of the Equipment Directorate will be turned into a self-sustained commercial operation. Additional reforms will be the creation of a new Department of Human Resources responsible for personnel management and training (including MTPAT's Training Center). Similarly, MTAC will create a Division of Human Resources to improve efficiency of personnel management and training, and regroup several departments to permit a more efficient preparation of transport sector policy making, supervision of specialized agencies, and control of traffic and transport regulations.

3.06 ASECNA. In consultation with ASECNA, which has its headquarters in Dakar, the Government will carry out a study of the optimal local staffing requirements of ASECNA's services in CAR with the objective of reducing its current payroll. In addition, an audit of its accounts will be carried out to verify, in particular, the use of funds, the status and recovery potential of receivables, and, generally, to improve ways to economize on expenditures. Also, a market study will be carried out to explore the potential for additional revenues that could be generated from its meteorological services in CAR. These studies would be completed for review before mid-1991.

3.07 Investment Planning. Sector planning will be further strengthened by assisting the Interministerial Planning Cell for Transport and Public Works (IPCTP) in the preparation of the annual investment budget. Selection of projects will be based on the highest economic return (in any event not less than 10%), and affordability to CAR in terms of recurrent cost expenditure. Donor transport sector project proposals will as a rule be reviewed as to whether they fit within the agreed parameters of the investment plan, and meet the above economic and affordability criteria. The proposed transport sector investment budget will be reviewed annually with the Planning Secretariat and IDA and with donors in local coordination meetings, in light of the economic parameters agreed under the structural adjustment program and the availability of foreign and local resources.

3.08 Road Maintenance Strategy. The new maintenance strategy to be adopted by the Government will comprise adherence to an annual maintenance program of an agreed priority network of about 4,000 km of national and regional roads (Annex 3-6). Moreover, programming and decision making will be strengthened by integrating the Road Fund, Road Maintenance and Equipment Directorates, and the MTPAT subdivisions in the preparation and implementation of the annual road maintenance program. Road maintenance and equipment repair will be privatized using foreign and local contractors, including the Cooperative OPPER, with the objective that MTPAT will operate only two maintenance brigades for emergency operations and elimination of critical points. The equipment workshop will be organizationally separated from MTPAT and placed under commercial management.

3.09 Road Maintenance Resource Mobilization and Management. Road Fund management will be strengthened to ensure that Road Fund expenditure will be applied to road maintenance only and in accordance with the implementation schedule of the agreed maintenance program. Financing of fuel consumption, salaries, maintenance and repair of vehicles and other expenditures not associated with road maintenance will be gradually transferred to the national (ministerial) budget during the period 1990-93. Road Fund resources will be increased to CFAF 2.7 billion per year by 1993 in constant terms starting January 1990 to finance the agreed road maintenance program in its entirety. The 1988 Road Fund Audit recommendations (paras. 6.04-6.05) will be fully implemented during the TSP, including integration into the Road Fund accounts of all maintenance programs and equipment supplies funded by donors and heretofore not monitored by the Road Fund, in order to permit permanent overall expenditure and performance review. The Road Fund Statutes will be amended to reflect the above modifications.

3.10 Social Costs of the Transport Sector. Several actions will be taken to address social costs associated with transport sector development in CAR, such as implementation of a Road Safety Program to curb the increasing accident rate in CAR, including provision of appropriate controls, signalization, traffic education, and medical services and support. Moreover, the Government will implement the agreed recommendations of the Environmental Impact Study to mitigate the ecological consequences of the road construction through CAR's tropical rain forest.

3.11 Procurement. Following the assessment of the Government's procurement system in October 1989, the Government will carry out the resulting recommendations for reorganizing its procurement procedures, including a training program for procurement staff, in order to accelerate procedures for contract awards.

IV. THE PROJECT

A. Transport Sector Program and Objectives

4.01 The project, which was prepared and appraised during November 1988-November 1989 with financing from PPF 453 and the French Trust Fund, is designed to finance the transport sector component comprising the road, river and civil aviation subsectors of the Government's rolling Public Investment Plan for the period 1991-93. In addition, following consultations between the Government and donors in March 1990 in the context of the UNDP-sponsored round table conferences and sectoral consultation meetings, a mechanism has been put in place to prepare and to help finance through the TSP, successive future transport sector investment programs over a period of ten years placed in a framework of appropriate sector policy measures, and based on (a) sector priorities; (b) the macro-economic parameters of sector investment agreed under the structural adjustment program; and (c) the Government's capacity to finance the resulting recurrent costs. This mechanism will permit multilateral and bilateral donors, through improved and systematic annual donor coordination, to participate in the investment plan financing in accordance with their own lending procedures and programming. This would enable the Government to ensure sustained financing of a coherent and economically justified sector investment program. Such a mechanism would avoid the interruption of necessary investments that occurred during 1985-89 following completion of the Fourth Highway Project.

4.02 The proposed TSP, which would be implemented over a period of five years, equals the size of the 1991-93 transport sector component of the Public Investment Plan (PIP), agreed within the structural adjustment program, which amounts to about CFAF 40 billion (US$132.0 M), or about 30% of the annual investment budget. This sectoral proportion was agreed under the structural adjustment program. The proposed additional investment of about US$6.5 M equivalent concerns reconstruction work on the Bangui-Bossembélé road (RN1) which is necessitated by the creation of a hydro-electric dam lake near this road under the Energy Project (para. 4.05). Consequently, no major additional investments are envisaged beyond the TSP in order to (a) remain within the sector's investment limits; (b) contain resulting recurrent charges to be financed by the national budget; and (c) encourage donors to help finance only priority investments with the highest possible economic rate of return. The contents of the PIP for the transport sector have been agreed with the Government and were confirmed with the donor community during the above-mentioned donor consultation meeting. Because the most urgent needs for the 1991-93 period consist of rehabilitation and maintenance of the priority road network, about three quarters of the investment program (see para. 4.36) is devoted to the road subsector. Future transport sector programs are likely to devote greater attention to investments in improvement of the navigability of the Oubangui River and replacement of SOCATRAF's fleet of barges and tugs. The investment program is accompanied by a coherent set of policy measures, described in Chapter III, which have been adopted by the Government and fully endorsed by the donors as an integrated part of the TSP.

B. Project Description

4.03 Specifically, the TSP has the following components:

Road Sector Component

(a) rehabilitation and maintenance of the priority national and regional road network of about 4,000 km of which about 420 km are paved, including portions of national roads passing through secondary cities; rehabilitation or/and maintenance of 720 km of rural roads; and ferry and bridge repair;

(b) reconstruction of part of National Road NR3, and deviation/reconstruction works on RN1 needed as a result of the M'Bali hydro-electric dam construction (US$18.0 M IDA Credit 1978-CA for the Energy Projec.);

(c) provision of equipment, vehicles and spare parts for routine road maintenance, and ferry services;

(d) rehabilitation of office facilities and improvement of the bus and freight station in Bangui;

(e) development of the national construction industry to encourage private sector participation in road maintenance, including technical assistance to private contractors;

(f) strengthening of the National Public Works Laboratory; technical assistance and logistical support to MTPAT in programming, supervision

and monitoring of road works; training of MTPAT staff, including seminars and scholarships;

(g) detailed engineering and supervision of the rehabilitation and regraveling works; detailed engineering of the Mbaere river and swamp crossing at Bambio; and

(h) implementation of a road safety program.

River Transport Component

(a) pre-feasibility and feasibility studies regarding the construction of a river flow regulating dam on the Oubangui River; and

(b) study to review SOCATRAF's river transport tariff.

Civil Aviation Component

(a) improvement of airport security; studies regarding the reorganization of ASECNA's services in CAR and audit of ASECNA's accounts; and

(b) spot improvement of the runway at Berberati airport and feasibility study to examine the possibility of adapting Berberati airport for regional air traffic.

Technical Assistance, Training, and Special Studies

provision of project implementation assistance and training of MTPAT, MTAC, and Planning Cell staff, including seminars and scholarships, to improve managerial and technical capability, and to prepare the next phase of the transport sector investment program; strengthening of MTPAT's supervision capacity, and assistance and training in procurement; carrying out of special studies to improve CAR's procurement system, to promote its local construction industry, and to develop a master plan for rural roads rehabilitation and maintenance, and to establish a computerized program to monitor overall project implementation and expenditure.

C. Road Sector Component

Road Rehabilitation and Maintenance Program (Map IBRD No. 22298)

The rehabilitation and maintenance program of the national and regional road network has been subdivided into separate lots, discussed below.

4.04 Reconstruction of Part of the National Road NR3 (RN3) -- Lot 1. The section of the RN3 between Bossembélé and Yaloké (about 70 km), which is part of the main international link of CAR between Bangui and the port of Douala in Cameroon, and is of crucial importance to CAR's economy, will be upgraded to paved standards. This section is currently a modern gravel road with a traffic of about 143 vpd, about 20% of which are heavy trucks travelling to and from Douala and to Chad. Reconstruction to paved standards will include double-surface treatment, while retaining the characteristics of the existing alignment.

4.05 Reconstruction of Part of the National Road NR1 (RN1) -- Lot 2. As a result of the Energy Project (US$18.0 M Credit of May 1989), which helps finance the construction of a dam on the M'Bali River to increase CAR's hydroelectric power supply, the RN1 would on several locations be below the highest water level of the dam lake. To ensure continued passability, a deviation of about 7.5 km of the road will need to be constructed between Bangui and Bossembélé, while the portion of the existing alignment that passes through four thalwegs of the future dam lake area needs to be elevated by about 8 meters over a distance of 12 km. At these four locations, large metal culverts will be installed with a surface of 30 m^2 and 50 m^2, respectively, to permit the passage of water during the wet season. Construction works are scheduled to start in October 1990 in order to complete the main earthworks and installation of culverts before the beginning of the next wet season in July 1991. After settlement of the reconstructed sections, the laterite surface will be paved during the 1991-92 dry season. To allow international transport traffic to continue during the works, a temporary deviation will be built along the road sections under construction.

4.06 Rehabilitation and Periodic Maintenance of the Existing Paved Roads -- Lot 3. The paved roads to be rehabilitated under the project are part of three main road axes, the remainder of which are built to modern gravel standards: (a) Bangui-Bossembélé (148 km, 300 vehicles per day -- vpd) -- RN1; (b) Bangui-Damara (63 km, 400 vpd); (c) Damara-Sibut (111 km, 140 vpd) -- RN2, which is the main road to CAR's second largest town, Bambari; and (d) Bangui-M'baiki (98 km, 130 vpd) -- RN6, an important center of forestry development and wood processing. Shoulders will be cleared over a distance of about 420 km, followed by patching of damaged road sections over about 25 km; shoulder rehabilitation over 125 km; double surface treatment over 242 km; and reconstruction of the first 35 km of the Bangui-Damara road, which are seriously deteriorated, including installation of a large culvert to replace a broken bridge. In addition, manual maintenance activities such as clearing ditches, and repair of structures will be intensified over the entire paved network to reduce future road deterioration.

4.07 Rehabilitation, Periodic and Routine Maintenance Strategy on the Priority Gravel/Earth Road Network -- Lots 4-7. To rehabilitate and maintain the existing priority gravel/earth road network of about 2,970 km (2,470 km of national roads -- RN -- and 500 km of regional roads -- RR -- Annex 3-6), a new strategy has been developed consisting of a set of coherent operations over time based on a "Decision Table" (Annex 4-7). During the TSP, about 1,030 km will be rehabilitated and graveled. This program will be repeated every six to ten years during following planning periods in accordance with traffic levels, soil and climatological conditions. After rehabilitation and regraveling, grading accompanied by spot graveling will be carried out over about 850 km. Routine mechanized maintenance will be carried out every six or twelve months. The timing and frequency of the above operations will be determined in accordance with traffic volume and also climatological circumstances, since the northern and southern part (roughly above and below the 6th parallel, see Map IBRD No. 22298) of CAR have a different frequency of rainfall. During the next plan period, the road network (630 km) which is being completed in the Ouham-Pende Regional Development Program (cotton producing area) will be added to this program.

4.08 The above rehabilitation and maintenance program of the earth road network has been subdivided into areas of approximately the same road volume

which can each be implemented and financed individually by separate donors. They consist of:

(a) the East Zone (761 km -- Lot 4). This zone comprises the sections Sibut-Grimari (RN2, 120 km, 80 vpd); Grimari-Bambari (RN2, 78 km, 60 vpd); Bambari-Alindao (RN2, 118 km, 46 vpd); Bambari-Bria (RN5, 211 km, 21 vpd); Alindao-Kembe (RN2, 112 km, 31 vpd) and Kembe-Bangassou (RN2, 122 km, 21 vpd);

(b) the Central Zone (558 km -- Lot 5). This zone comprises the road section. Sibut-Kagabandoro (RN8, 152 km, 89 vpd); Kagabandoro-Ouandogo (RR10, 60 km, 55 vpd); Ouandogo-Batangafo (RR10, 48 km, 25 vpd); Kagabandoro-Mbrés (RN8, 83 km, 35 vpd) and Damara-Bouca (RN4, 215 km, 30 vpd);

(c) the North-West Zone (931 km -- Lot 6). This zone comprises the road sections Bossembélé-Bossangoa (RN1, 148 km, 55 vpd); Bossangoa-Bédaoyo (RN1, 195 km, 37 vpd); Bossembélé-Bossemtélé (RN3, 143 km, 143 vpd); Bossemtélé-Bouar (RN3, 149 km, 79 vpd); Bouar-Garoua Boulai (RN3, 154 km, 63 vpd) and Bouar-Bocaranga (RR4, 142 km, 43 vpd);

(d) the South-West Zone (722 km -- Lot 7). This zone comprises the road sections Baoro-Carnot (RN11, 95 km, 45 vpd); Carnot-Berberati (old RN6, 94 km, 99 vpd); Yamando-Bambio (RR26, 85 km, 20 vpd); Berberati-Nola (RN10, 136 km, 64 vpd); Nola-Salo (RN10, 55 km, 35 vpd); Berberati-Gamboula (RN6, 91 km, 70 vpd); M'baiki-Boda (new RN6, 85 km, 49 vpd) and M'baiki-Mogoumba (RR1, 81 km, 53 vpd);

(e) bridges and culverts on the priority road network; and

(f) Ouham-Pende (North-West cotton growing area) regional road network (630 km) being rehabilitated and maintained under the Ouham-Pende regional development program.

The rehabilitation and maintenance programs will be designed for implementation over three-year periods to attract private contractors to participate, in accordance with specifications based on the "Decision Table."

4.09 Privatization of the Rehabilitation and Maintenance Program. While road rehabilitation and periodic maintenance have thus far been carried out through foreign contractors, permanent maintenance has been the task of MTPAT's departmental forces. However, despite training and technical assistance during implementation of the Fourth Highway Project, MTPAT has had difficulties in maintaining its portion of the priority road network (about 2,000 km) with its own brigades. Therefore, during the TSP, mechanized maintenance will essentially be contracted out, while MTPAT will put more emphasis on strengthening its ability to plan, program and manage, control and monitor implementation of rehabilitation and maintenance works. Consequently, its four mechanized brigades will be reduced to two which will be assigned to the repair of critical road sections and emergency requirements that cannot be covered by contract. Ferry operation and maintenance will also remain the responsibility of MTPAT operators. The results of the privatization program will be reviewed with MTPAT and the donors by the end of 1992 to review its performance, and to determine its continuation and expansion during the next investment phase.

4.10 Development of a Domestic Construction Industry. Manual maintenance will be carried out by village "cantonnage" and small contractors associated in the OPPER cooperative (para. 2.26), which were trained under the Fourth Highway Project and succeeding technical assistance programs, and have been operating successfully since then. These tasks will principally consist of patching, brush clearing, drainage repairs, and simple maintenance of structures. A special effort will be made to encourage medium-size domestic contractors currently engaged in the building industry to expand their business into mechanized road maintenance. This would be achieved through (a) launching training works on some sections of the road network (Sibut-Kagabandoro and M'baiki-Mongoumba); (b) establishing an equipment renting unit (see para. 4.11 below) at the MTPAT Equipment Workshop, which will manage the equipment that will become available due to the reduction in force account. This equipment would be made available to local contractors under hire/purchase agreements, whereby MTPAT would deduct from the contractors' invoices the equipment amortization and interest charged; (c) encouraging subcontracting to foreign contractors; and (d) providing technical assistance to assist private contractors in the management and operation of their enterprises (preparation of cost estimates, bids, billing, accounting, programming) and works on site. In addition, the contractors would be invited to participate in training seminars at the Public Works Training Center. Some five domestic contractors have been identified, who expressed keen interest in branching out to mechanized maintenance works. Before implementing this initiative, a study will be carried out with remaining PPF funds to define in greater detail the modalities of developing a national construction industry. This study would in particular determine the requirements for appropriate financial and technical training, as well as the creation of the necessary financial and legal environment to permit such an industry to flourish. These requirements would be regularly reassessed as the program progresses to permit adaptation where necessary.

4.11 Exploitation of the MTPAT Equipment Workshop. With financial and technical assistance from the Government of Japan, MTPAT has obtained a modern equipment workshop completed in 1989 and valued at about US$12 M. The workshop contains sophisticated machinery for the repair of equipment that has been donated by the Government of Japan over the last decade to assist MTPAT in the carrying out of maintenance works. With the new strategy for road maintenance to be applied by CAR during the TSP, most of MTPAT's equipment, that will be managed by the workshop's equipment unit, will be gradually sold to domestic contractors, while a limited stock will be selected to constitute MTPAT's two remaining brigades. The workshop would also be used for equipment repairs needed by private contractors, forestry companies and the river transport company SOCATRAF, as these are often forced to import expensive new parts or equipment for lack of an adequate local repair facility.

4.12 Despite efforts to train national staff in the technical operation of the workshop's machinery, competent staffing is likely to remain insufficient to adequately utilize the workshop's potential. In addition, inefficient use and operation of the machinery could lead to costly breakdowns and operational losses, which would have to be financed from the recurrent budget, in particular from the limited resources of the Road Fund. To ensure that the workshop will be utilized efficiently, the Government has decided -- and the donating Government of Japan agreed -- that it be commercially managed.

4.13 Initial surveys revealed substantial interest of private enterprises operating in CAR and in neighboring countries in such an arrangement. A study

will be carried out to determine the appropriate financial, legal and technical parameters for operating the workshop under commercial management which is planned to be installed as of January 1991. In addition, as of January 1990, three mechanical experts have been assigned to the workshop under the Interim Transport Sector Technical Assistance and Training Component of the Economic Management Project (para. 2.08), to initiate operation of a limited number of machines in order to gain the necessary operating experience needed to support a decision on the appropriate formula of commercial management.

4.14 Rural Roads. As a result of the feasibility studies regarding the rural roads sub-component, about 1,700 km of rural roads were identified which constitute essential links between the rural development zones and the national and regional road network. Because it would be difficult to implement the rehabilitation and maintenance of these roads by contract, in view of the limited size of works involved, these works would be carried out by existing specialized agricultural agencies. During the TSP, a beginning will be made to carry out such works through SOCADA, the cotton producing agency. The rural roads program would especially benefit the cotton development effort of ongoing agricultural programs. SOCADA's capacity was evaluated to permit a work program of about 240 km per year, that is 720 km during the plan period of 1991-93. Works would include earthwork, clearing, upgrading and improvement of access ramps to bridges; improvement of the wearing course; and construction or repair of small structures and culverts. Payment will be based on work performed in accordance with agreed performance criteria. In addition, village teams ("cantonnage") and the OPPER cooperative will be integrated in the maintenance program. Generally, existing equipment will be used, renovated, and repaired where necessary to improve SOCADA's implementation capacity. Alternatively, available equipment will be rented from the Equipment Workshop.

4.15 The rural roads rehabilitation and maintenance program will be determined in accordance with a master plan for rural roads ("Schéma directeur") to be established during the TSP on the basis of a rural roads feasibility study carried out during project preparation. This program should permit investment and maintenance expenditures to be carried out on the basis of economic and engineering criteria and regional agricultural productivity. At the end of the trial period during the 1991-93 plan, the performance of this initial rehabilitation and maintenance program will be evaluated to determine the potential for an enlarged rural road rehabilitation and maintenance program during the following phase of the transport sector investment program (1994-96), using brigades of other specialized agencies. Additionally, in close consultation with MDR and the Specialized Agricultural Agencies, studies will be launched to prepare a rural environment improvement program, which would also include further improvement of rural infrastructure, for implementation during the following plan period of 1994-96.

4.16 Pilot Actions. During the TSP, a number of actions will be launched to develop appropriate technologies for road infrastructure operations, and a data bank will be created of feasibility and engineering studies and results of how works are actually performed. The purpose of these actions (Annex 4-8) is to establish a framework to permit national staff (of MTPAT, MDR, and local technical institutions) to obtain and develop practical knowledge of how to rehabilitate and maintain road infrastructure within the particular climatological, geotechnical, and soil conditions of CAR. Thus far, little transfer of such practical knowledge has been attempted nor have study results and learn processes been properly recorded, stored and kept accessible to local staff.

As a result, knowledge and experience often retained by consulting firms and passing technical assistance financed by donors have been lost to the country.

4.17 The pilot actions include (a) establishment of a national capability in preparation, management and control of road infrastructure works; (b) development of appropriate technologies in maintenance of paved and gravel/earth road surfaces and shoulders; and (c) development of local materials (including locally available wood for the construction and repair of small structures) and techniques adapted to the local soil and climatic conditions to maintain the road network better and at lesser cost. These pilot actions will be launched and followed up through seminars (held at the MTPAT training center), during which specific working groups will be established for different subjects (maintenance of paved roads; improvement of the durability of roads; utilization of local woods and materials; organization and active use of village workers -- cantonnage -- in road maintenance). The groups will consist of responsible ministerial staff, technical assistants, small and middle size local enterprises, the public works laboratory, and consultants supervising works. Practical test results will be presented by each group for discussion in follow up seminars and will be recorded in technical papers, which will subsequently be used to draft critical sections in specifications, bid and contract documents. This procedure will permit the national services to retain lessons learned and to maintain its road network with greater confidence and ability, and lesser dependence on expatriate technical assistance.

4.18 Public Works Laboratory (LBTP). Continuing under the supervising role of MTPAT, LBTP will assume a broader role in participating more actively in the geo-technical aspects of studies, control of road works and maintenance, construction of buildings, research, and geo-technical training at the Public Works Training Center. LBTP's staff will be strengthened through assistance provided by France. LBTP will charge for its services on a commercial basis. It will be managed by a director, appointed by MTPAT.

4.19 Implementation Support of the New Rehabilitation and Maintenance Strategy. Annual road rehabilitation and maintenance programming will be carried out under the leadership of a Road Maintenance Management and Coordination Group (RMMCG). This group was formally established at MTPAT in February 1990 and consists of the Director General of Public Works, Director of Road Maintenance, Director of Equipment, and the Road Fund Administrator. RMMCG will meet at least monthly to oversee progress and would be joined at the annual planning process and intermittently (at least quarterly) by representatives from IPCTP, the Secretariat of Planning, and the Ministry of Finance, to maintain a linkage with the national investment and budget expenditure process.

4.20 Initial planning of the road works for each calendar year will be executed in close coordination with the subdivisions. For force account work, each of the two remaining mechanized maintenance brigades will be assigned an annual program of elimination of critical interruptions of the road network or bridge repair. Sub-divisions receiving private contractors and MTPAT brigades will be responsible for supervision and will be provided with logistical support. Clear reporting mechanisms will be established requiring subdivisions to state the timing of the technical progress of work, number of km done, and bridges repaired. The reporting mechanism will serve as a feedback on whether the road rehabilitation and maintenance system functions adequately or needs adjustment. These data will be established by the Monitoring Division of the Directorate of Public Works with assistance from the Public Works Laboratory (LBTP). The

Monitoring Division will also carry out regular traffic counts on the road network under MTPAT's responsibility in accordance with appropriate technologies to be established, perfected and supervised by the technical assistance team. Results will be submitted to and continuously analyzed by RMMCG to enable it to direct logistic supplies, and accelerate or adjust the work program as necessary. RMMCG will prepare quarterly reports on the progress of work, which will be sent for review to the donors associated with the program.

4.21 Before launching the rehabilitation and road maintenance planning for the following year, generally during September-November, a detailed analysis will be made of the road maintenance record of the ending year, to review performance and adherence to the maintenance schedule, and to review the effectiveness of channeling Road Fund revenues in support of the maintenance program. The lessons drawn from this exercise will be at the basis for the planning of next year's program. Before November 30 of each year, MTPAT will consult with IDA on the road rehabilitation and maintenance program established for the following year in accordance with progress achieved during the previous year, requirements for the following season, contractor performance and equipment availability, and available Road Fund revenues.

4.22 To program, manage and coordinate the rural roads program, a rural roads coordination cell will be attached to the office of the Director General of Public Works. This Cell will consist of two rural road engineers, assisted by an expatriate engineer/economist, to establish coherent standards for rehabilitation and maintenance works, program these works and coordinate implementation with MDR and SOCADA. The annual maintenance program will be determined at the end of each preceding year, based on performance and estimated capacity and experience of SOCADA.

4.23 Institutional Strengthening of MTPAT. A strong technical assistance program will be put in place to help the Government implement the road component of the TSP, in order to avoid the institutional weaknesses that adversely affected the execution of previous highway projects (para. 2.41). A list of the technical assistance positions is provided in Annex 4-9. At MTPAT, the Department of Public Works (DPW), and the Equipment Directorate will be strengthened in managing, controlling and supervising work by contract, managing equipment maintenance and utilization, and creating a limited, but more efficient, departmental force for maintenance work. In addition, the Ministry's personnel management will be modernized to establish a more flexible and dynamic personnel policy so as to encourage and retain younger engineers and economists in career development. During the interim training project (para. 2.08), an analysis is being made of the capacity of MTPAT personnel, including subdivisional staff, based on the work already carried out during the feasibility studies. Moreover, the interim project is providing assistance in the implementation of decisions regarding reduction in staff and improving skill mix. The agreed new organization chart of MTPAT (Annex 4-10), including a new Human Resources Department, and the modified DPW, will be introduced before credit effectiveness. The appointments of the Director of Road Maintenance and of the Director of Human Resources, with qualifications and experience acceptable to IDA, will be a condition of credit effectiveness.

4.24 Specifically, four technical assistants at MTPAT will assist in each of the following critical functions: planning and programming, studies and procurement, supervision of works, and monitoring of project implementation. In addition, a chief training officer who would be a human resources expert,

will assist the Public Works training center in the preparation and organization of training courses and seminars in planning, management, and supervision of works, general subjects related to the transport sector, and the use of appropriate technologies. To prepare and deliver such courses and seminars, short-term consultancies will be used, including expertise locally available. The chief training officer will also help in completing the task of establishing and maintaining an adequate personnel management policy, for which the Director of Human Resources will be responsible. A chief mechanical engineer and two mechanics will be provided to the Equipment Workshop, especially during the initial years of the proposed commercial operation of the workshop, in order to reduce the charges and risks likely to be incurred by an expatriate management group. Scholarships will be provided on a selective basis to acquire capabilities that can not be obtained through the MTPAT training center.

4.25 Supervision Capacity at MTPAT. In addition to consultants' services required for detailed engineering and control of road construction, rehabilitation and periodic maintenance works, and the technical assistance at MTPAT, the project provides for short-term missions to assist and train MTPAT staff in overall project supervision. This assistance will be provided by a consultant firm selected by the Government. These actions should gradually help reduce MTPAT's dependence on expatriate technical assistance for managing project implementation.

4.26 Road Safety Program. As an additional pilot action of a different nature, CAR will implement a Road Safety program, prepared by MTAC, that comprises a broad range of activities, including strengthening and training police forces in controlling traffic rules; provision and installation of equipment for traffic regulation, signalization and safety; application of technical vehicle controls; provision of improved medical and ambulance support services; establishment of appropriate statistics for accident recording and analysis; creation of a traffic safety education program and testing; and a drivers school. The project would help finance the investments required for signalization, the creation of rescue brigades, and traffic education and related technical assistance.

D. River Transport Component

4.27 Improvement of the River Flow of the Oubangui. As a follow-up to ongoing pre-feasibility studies financed by the European Economic Communities (EEC), the project provides funds for the preparation of a feasibility study for the construction of a possible dam over the Oubangui, about 60 km above Bangui, to regulate its flow in order to extend the river's navigability during the dry season. The Government will ensure that the aforementioned study will be accompanied by an environmental assessment and will include in the terms of reference of the study the examination of potential issues with riparian states (Congo, Zaïre). Technical assistance to the river transport agency SOCATRAF, financed by France, will be continued for equipment maintenance and river transport and to the river maintenance brigade SCEVN, including replacement of the equipment of one of its four rock removing brigades. The appropriateness and adequacy of this technical assistance to SCEVN, which is also financed by France, is being evaluated by the French Ministry of Cooperation with IDA assistance in order to better determine the scope and tasks of the assistance proposed to be financed during the TSP.

E. Civil Aviation Component

4.28 Improvement of Airport Security and Facilities. The security of Bangui airport has been affected several times in the recent past. In addition to several security measures having been taken recently, the airport's security will be further improved during the TSP by constructing a protecting fence to surround the immediate airport grounds. Moreover, small improvements will be made in the airport's facilities for a smoother handling of passenger traffic. Finally, spot improvements will be applied to the paved runway of Berberati airport, which has deteriorated to a level that poses a hazard to the fairly frequent local traffic of private commercial aircraft. These works will be carried out by local contractors. In addition, a feasibility study will be carried out with respect to the possible improvement of Berberati airport to service regional air traffic.

4.29 Meteorological Services. To improve meteorological services in CAR in support of international and local private air transport, about 10 small stations operating with solar energy will be installed to provide meteorological information. This information will also be channeled to agricultural institutions for dissemination to farmers by radio.

4.30 Institutional Strengthening of MTAC. At MTAC, the establishment of a Human Resources Division will be essential to develop a sound personnel management system, and to strengthen MTAC staff in technical matters of surface, air and river transport, and meteorology. The appointment of the Division Chief, in charge of the Human Resources Division, will be a condition of effectiveness. The agreed modifications in MTAC's organization chart (Annex 4-11) will be implemented before credit effectiveness. Implementation of the organizational changes in MTAC's subsidiary agencies (BARC, CACC, and ASECNA) will be completed in accordance with the Action Plan provided in Annex 3-5.

F. Other Items

4.31 Planning Cell. The technical assistance program to the Planning Cell, which has been launched under the interim technical assistance and training program of the Economic Management Project (para. 2.08), will be continued during the TSP. About 24 man-months will be provided for training in transport sector planning and computer ability. In addition, in view of the coordinating role of the Planning Cell with respect to implementation of transport sector investments, 50 man-months of expatriate assistance will be provided to assist and train government staff in the execution of the TSP.

4.32 Office Improvement. To improve the Road Fund's computerized accounting facilities, the Road Fund will move into offices, to be rehabilitated under the project, which will be partially vacated by the Equipment Directorate which in turn will move into the newly build Equipment Work Shop financed by Japan. To permit LBTP to carry out its functions more efficiently, the project provides for the supply of additional research equipment and the rehabilitation and extension of its offices, using in part adjacent offices to be vacated by the Road Fund. Finally, the Road Freight Station ("gare routière") in Bangui, which is managed by BARC, will be improved. This freight station is of importance in facilitating international road traffic between the Central African Republic, Chad, and Cameroon.

4.33 Evaluation of Technical Assistance. Detailed terms of reference are being prepared for each technical assistance position, with strong emphasis on the capability of transferring knowledge to national staff. Both the technical assistance and training programs financed under the project will be subject to half-yearly critical analysis on the progress made. The consulting firms and technical assistance specialists will be evaluated on increased efficiency of nationals and larger volume of work performed. Before continuing under the project with the technical assistance started under the interim technical assistance and training component of the EMP, the interim results will be evaluated so that corrections or adjustments can be made. It is expected that, at the end of the project period, clear improvement will be achieved in the Government's supervision capacity, so as to reduce its dependence on long-term expatriate assistance.

4.34 Studies. The program of studies can be summarized as follows. During the project, detailed engineering will be carried out for rehabilitation of the paved, gravel and rural roads. In addition, studies will be carried out regarding the crossing over the Mbaéré river and swamp area at Bambio taking into account the recommendations of the Environmental Impact Study. Assistance will be provided in strengthening procurement regulations and rules, and training government staff in appropriate application. A study of SOCATRAF's transport tariff will be carried out with a view to improve transparency and establish a closer relation with actual transport costs. This study will liaise with similar studies being carried out under the Congo Parastatal Enterprise Reform Project, which includes a review of ATC (Agence Transcongolaise de Communication), the Congolese transport company. Diagnostic studies will be carried out with respect to the merits of BARC and CCAC continuing as separate agencies, and if so with what personnel strength and objectives. Feasibility studies will be continued with regard to the construction of a possible river flow regulating dam on the Oubangui. With regard to civil aviation, an audit will be carried out of the ASECNA-CAR accounts and proposals will be prepared with respect to the rationalization of its internal organization. Moreover, the project provides for studies to promote the national construction industry, to develop a master plan for rural roads rehabilitation and maintenance, and a rural environment improvement operation, and to prepare the implementation of the next phase of the transport sector investment program.

G. Project Costs and Financing

4.35 Total cost of the project in January 1990 prices (including taxes and duties, amounting to US$12.5 M), amounts to US$138.7 M, with a foreign exchange component of US$91.0 M. Cost estimates are based on recent data for civil works and detailed unit prices, and include 10% for physical contingencies. These contingencies are considered acceptable, given the type of civil works to be performed. Reconstruction, periodic and routine road maintenance expenditures are based on prices prevailing in neighboring countries and also in ongoing maintenance projects in CAR financed by the Road Fund and by bilateral donors.

4.36 The estimated costs per man-month of technical assistance, excluding contingencies, allowances, foreign and local travel and local subsistence allowance, is estimated at US$11,500 equivalent; including these allowances, the cost per man-month is about US$16,000 equivalent. The estimate for one man-year scholarship for training staff is about US$10,000 including travel. The cost of buildings is based on prevailing prices in CAR.

4.37 Price contingencies for the foreign exchange components have been estimated at 4.9 per annum during 1990-96, and for local costs at 3.0% during 1990, 3.5% during 1991-92, and 4.0% during 1992-96. The cost of the project is summarized in the table which follows (details are given in Annex 4-12):

Project Cost Estimates

Category	CFAF Millions Local	CFAF Millions Foreign	CFAF Millions Total	US$ Million Local	US$ Million Foreign	US$ Million Total	% Foreign Exchange	Total % of Base Cost
RN1 Reconstr. M'Bali Dam	859.8	1,444.2	2,304.0	2.9	4.8	7.7	4.0%	6.3%
Paving RN3	987.0	2,229.0	3,196.0	3.2	7.4	10.7	6.1%	8.8%
Paved Rds.Rehab	2,004.8	3,367.2	5,372.0	6.7	11.2	17.9	9.3%	14.8%
Graveled Rds.	5,940.0	7,590.8	13,530.8	19.8	25.3	45.1	20.9%	37.2%
Rural Roads	715.8	1,044.9	1,760.7	2.4	3.5	5.9	2.9%	4.8%
Crit. Points	363.0	537.0	900.0	1.2	1.8	3.0	1.5%	2.5%
Privatizatior.	289.5	1,186.5	1,476.0	1.0	4.0	4.9	3.3%	4.1%
Civil Aviation	71.6	170.4	242.0	0.2	0.6	0.8	0.5%	0.7%
Inst. Support	873.2	4,540.4	5,413.6	2.9	15.1	18.0	12.5%	14.9%
Studies	250.4	874.1	1,124.5	0.8	2.9	3.7	2.4%	3.1%
Pilot Actions	144.2	395.8	540.0	0.5	1.3	1.8	1.1%	1.5%
PPF	70.6	397.4	468.0	0.2	1.3	1.6	1.1%	1.3%
Total Base Cost	12,549.9	23,777.7	36,327.6	41.8	79.3	121.1	65.5%	100.0%
Physical Contingencies	1,037.8	1,676.8	2,714.6	3.5	5.6	9.0	4.0%	7.5%
Price Contingencies	738.0	1,831.2	2,569.2	2.5	6.1	8.6	4.4%	7.1%
Total Project Cost	14,325.7	27,285.7	41,611.4	47.8	91.0	138.7	65.6%	114.5%
Taxes	3,736.7		3,736.7	12.5		12.5		
Total Project Cost (Net of Taxes)	10,589.0		37,874.7	35.3		126.2		

4.38 Total external financing of the project amounts to US$105.3 M or 83% of total project cost net of taxes. In addition to taxes, the Government will contribute US$20.9 M equivalent (about 17% of total costs, net of taxes) through the Road Fund (para. 6.06). IDA financing in the amount of US$62.0 M equivalent, represents 49% of total cost net of taxes. Other financing, all on concessional or grant terms, is provided by France (US$16.7 M equivalent for technical assistance to a substantial number of transport sector institutions and agencies (FAC), and for rural roads (CCCE)); Germany (US$6.9 M equivalent for the Ouham-Pende regional roads rehabilitation project in northwest CAR -- KfW -- and for assistance to road maintenance and a ferry renovation and development program -- GTZ); Japan (US$15.1 M equivalent --JICA --, for the reconstruction to paved standards of the Bossembélé-Yaloké road); European Communities (US$1.8 M equivalent for the feasibility studies regarding the possible water flow regulating dam over the Oubangui River) and the UNDP (US$2.8 M equivalent for the repair and reconstruction of bridges).

H. Responsibilities and Monitoring of Project Implementation

4.39 MTPAT will be responsible for implementation of the road component, which will be carried out by DPW and monitored by the Monitoring Unit of the Directorate of Studies, Procurement and Control. MTAC will be responsible for

the components concerning airport security, river transport, road safety, and transport sector studies. MTPAT and MTAC have joined responsibilities for ensuring the adequate functioning of IPCTP. An implementation schedule is given in Annex 4-13. Although the investments for the rehabilitation and maintenance program of the TSP are part of the 1991-93 investment plan, their implementation is likely to stretch over three to five years depending on when these programs are launched, especially those financed by other donors. However, since these programs have been designed as individual operations to be carried out over a three-year period, it is expected that all will be implemented within the six-and-a-half year estimated disbursement time for the TSP. During the TSP, a computerized program will be developed and maintained by the Project Coordinator at IPCTP to ensure continued updating of the actual cost during project implementation so as to ensure accurate cost analysis for annual planning and to provide complete cost data by project completion. In addition, an integrated computer system will be installed, linking the computer stations of the Road Fund, the Equipment Workshop and the project coordination center at IPCTP to facilitate overall planning and supervision of the TSP program. By the end of 1992, a mid-term review will be carried out to take stock of progress achieved with the implementation of remaining policy measures and overall project execution.

I. Procurement

4.40 Amounts and procurement methods are estimated as follows:

Amounts and Methods of Procurement /a
(US$ million equivalent)

Item	ICB	LCB	Other	Cofinancing /b	Total
1. Civil Works	59.2	5.9	6.5	29.7	101.3
	(38.1)	(5.1)	(3.2) /c	(--)	(46.4)
2. Training Works	--	--	2.0	--	2.0
	(--)	(--)	(2.0) /d	(--)	(2.0)
3. Equipment, Vehicles, and Materials	4.0	1.3	--	2.0	7.3
	(3.7)	(1.2)	(--)	(--)	(4.9)
4. Incremental Operating Costs	--	--	0.7	--	0.7
	(--)	(--)	(0.4)	(--)	(0.4)
5. Technical Assistance and Training	--	--	4.9	12.0	16.9
	(--)	(--)	(4.8)	(--)	(4.8)
6. Consulting Services /e	--	--	3.5	7.0	10.5
	(--)	(--)	(3.5)	(--)	(3.5)
Total	63.2	7.2	17.6	50.7	138.7
	(41.8)	(6.3)	(13.9)	(--)	(62.0)

/a Amounts in parentheses indicate IDA financing.

/b Cofinancing: parallel financing by donors would be in accordance with their own procedures.

/c Force account expenditure

/d Training works for development of domestic construction industry (para. 4.10).

/e Includes US$1.5 M PPF financing.

4.41 Unless otherwise indicated, procurement arrangements for the project are as follows: (a) Civil works contracts for the rehabilitation of paved and non-paved roads, and equipment financed by IDA will be awarded on the basis of international competitive bidding in accordance with Bank Group guidelines. Procurement of contracts in excess of US$100,000 will be subject to prior approval by IDA. This would cover 90% of the total value of such contracts; (b) requirements for road maintenance (fuel, lubricants, spare parts, tires, materials, and tools costing less than US$50,000 per contract and aggregating to US$1.2 M, and contracts with local small contractors grouped in the OPPER Cooperative costing less than US$150,000) financed through the Road Fund, as well as the construction of buildings costing less than US$150,000, aggregating to US$5.1 M, will be procured following LCB procedures; (c) force account works (para. 4.09) will mainly include repair of critical sections and maintenance of more remotely located roads that are unlikely to attract international bids; (d) contracts for training works up to an aggregate of about US$2.0 M equivalent to be carried out by domestic contractors (para. 4.10) would be let on a competitive basis among such contractors, as these concern more remotely located road sections, which require relatively modest works that are unattractive for ICB. The October 1989 procurement assessment (para. 2.37) confirmed that LCB procedures are technically acceptable, but some require clarifications and rationalization. Procurement procedures also need improvement. The project provides for specific short-term consultancies to assist the Government in avoiding delays in procurement. In any event, LCB procedures to be followed will include local advertisement with public bid opening, and award to the lowest evaluated bidder. Criteria for bid evaluation will be clearly specified in the bid documents and foreign bidders will not be excluded from participating. ICB procurement for goods and civil works will include the standard provision for domestic price preference; (e) consultants financed by IDA will be selected in accordance with Bank Group Guidelines for Consultants, and with terms of reference approved by IDA; and (f) items financed by cofinanciers will be procured in accordance with cofinanciers' guidelines.

J. Disbursements

4.42 The proposed IDA Credit of SDR 46.6 million will be disbursed as follows.

Allocation and Disbursement of IDA Credit

Category	IDA Credit Disbursement Amount of Credit Allocated (SDR Million)	% of Expenditures to be Financed /a
1. Civil Works	32.0	95
2. Equipment, Vehicles, and Materials	3.0	95
3. Incremental Operating Costs	0.3	100
4. Consultant Services	3.0	100
5. Training	2.3	100
6. PPF Refinancing	1.1	Amount Due
7. Unallocated	4.9	
Total	46.6	

/a Of amounts net of taxes

4.43 Disbursements for consumables for road maintenance (with contracts up to US$20,000), and for operational support to supervision, technical assistance, training, and seminars will be based on certified statements of expenditure (SOE). SOE statements will be kept available for review by IDA representatives

during supervision. To facilitate project implementation, a special account will be opened at a local commercial bank on terms and conditions acceptable to IDA, with an initial deposit of US$0.5 M equivalent for expenditures to be disbursed from the Credit after Credit effectiveness and upon receipt of a withdrawal request. IDA would replenish this account on receipt of satisfactory evidence of disbursements for eligible expenditures. Should any disbursements be made from the account that are not acceptable to IDA, the Government would deposit the corresponding amount into the account. Retroactive financing in an amount of US$3.0 M is envisaged to cover the initial portion of reconstruction works on the RN1, near the M'Bali River (para. 4.05) and related consulting services for supervision. Disbursements for civil works expenditures under Category 1(b) -- civil works other than those related to NR1 deviation works -- are contingent on settlement in a manner satisfactory to IDA of arrears due by PETROCA to the Road Fund (para. 6.05). The detailed disbursement schedule over a period of 6.5 years for the project is given in Annex 4-14. Due to the advance procurement needed to complete the RN1 deviation works during 1990-91 for which an amount of about US$5.3 M equivalent will have to be disbursed, the overall disbursement profile for the TSP is somewhat distorted, as shown in Graph 1 in Annex 4-14. In addition, disbursements in FY91 reflect the refinancing of PPF 453 (US$1.5 M). When separating the disbursements related to the RN1 deviation works from the TSP proper (Graph 2), the profile only differs slightly from the standard Africa Region disbursement profile of seven years. This is justified because bids for detailed engineering of the road rehabilitation component, for which terms of reference are under preparation, will be launched before the start of the TSP investment program in January 1991 so as to permit rapid project start-up.

K. Accounting, Auditing and Reporting

4.44 Accounts on road maintenance expenditure are kept by the Road Fund, of which a separate analysis is presented in Chapter VI. Road Fund accounts, the accounts of the Equipment Workshop and the Public Works Laboratory will be audited annually. Because of the initial phase of the commercial management of the workshop under the TSP, this audit will be financed by the IDA Credit under terms of reference acceptable to IDA. Project accounts and Statements of Expenditure on the Special Account (SA), will also be audited annually. The audit reports will be sent to IDA within four months after the close of each calendar year. The audit report of the project accounts would include specific verification of the legitimacy of all expenditures out of the SA and an opinion on the reliability of the SOE procedures and utilization of goods and services financed under the project.

4.45 IPCTP will distribute to IDA and co-donors a quarterly report on overall project implementation, including the quarterly report prepared by the RMMCG on implementation of the road component (para. 4.20).

L. Impact on Environment and Employment

4.46 Environment. With respect to the rehabilitation and maintenance of the existing road network, measures will be taken to protect the environment which will be considered an important component in the design and execution of infrastructure operations. These objectives will be achieved by including such measures in terms of reference for detailed engineering and specifications. The environmental protection measures will take into account that the geographic areas of the priority road network differ greatly in terms of geomorphology,

hydrology and climatic conditions which constitute the basis for the road rehabilitation and maintenance "decision table" (para. 4.07) that will be the framework for the planning and execution of works. For the existing road network, measures will consist of preserving shoulders, surface drainage systems, road bases and surfaces, and will include (a) protecting the slopes of embankments and cuts containing erodible soil, grass seeding or sodding or planting small trees and shrubs; (b) designing main ditches and turnouts so that the water will be properly channeled and the ditch section protected against erosion; and (c) improving critical parts of road surfaces vulnerable to erosion. In addition to environmental protection, erosion control measures would have the advantage of reducing maintenance work, especially on surface drainage systems, small structures and surfaces, while safety is improved by suitable shoulder greenery, which will improve depth perception by providing vertical points of reference. Other measures will consist of clearing ditches to evacuate stagnating water, and limiting brush fires along the roads by removal of vegetation.

4.47 As for the Yamando-Bambio road (para. 2.38), adequate Government measures are already being taken and will be extended to prevent farmers from establishing plots and villages along the road in prohibited forest areas. The Government has committed itself to carrying out the recommendations of the Environmental Impact Study. Several of these recommendations will be complied with under the TSP (erosion protection, fire protection, studies of a revised alignment of the continuation of the road to protect the forest and to prevent migration from existing villages, and optimal solutions for the crossing of the Mbaéré River and swamp area to avoid environmental damage to the forest's river basin). Others (prevention of village settlements, wild life protection, and improved cooperation between State and forestry companies), will be addressed under the Natural Resources Management Project, which is scheduled to be presented to the Board in the near future.

4.48 Employment. The TSP will create substantial employment for local workers, as foreign and local enterprises will need local labor to carry out the road rehabilitation and maintenance works. In contracts with foreign enterprises, use of local contractors will be encouraged, while promotion of a national construction industry would enhance the local ability to take on maintenance and eventually rehabilitation works. Development of a local construction industry is also likely to provide employment to Government workers and staff previously engaged in force account works and released under the public sector reorganization program being executed under SAL.

V. ECONOMIC EVALUATION

5.01 Project Benefits. The TSP is an integrated package of transport sector policy measures and sector investments in the priority road network, and river and air transport improvements. Non-quantifiable but important benefits of the project will be derived from the policy measures, which aim at liberalizing the transport industry; increasing cost efficiency of road maintenance through privatization; improving the economic application of limited Road Fund resources through improved planning and monitoring of the road maintenance programs; strengthening the national economic management system by solidifying transport sector planning; reducing the cost of transport for the economy through establishing a more transparent river transport tariff system and streamlining

CAR's transport institutions (BARC, CACC, ASECNA); introducing substantial reorganizations and institutional reforms in the management and operation of MTPAT and MTAC; establishing a road safety program; and improving the efficiency of CAR's public procurement system. Quantifiable benefits consist in reduced vehicle operating costs and elimination of charges on transport services resulting from monopolistic state regulations.

Methodology and Economic Rates of Return (ERR)

5.02 National and Regional Road Component. Specific benefits of the project are derived from savings in vehicle operating costs (voc) from the estimated traffic when comparing these costs with the "without project" case where the present level of service remains unchanged over the economic life of the investment. Basic voc were obtained by applying the HDM III model (a) to various typical levels (ranging from very good to good, average, bad and very bad) of service of the priority road network (paved, modern or ordinary gravel, or earth road); and (b) vehicle types, in order to permit the calculation of the operating benefits for each type of vehicle. The benefit consists of the difference between the present level of service of a road and the one corresponding to the proposed rehabilitation or improvement standards. With regard to vehicle types, the general composition of traffic in CAR consists of three types of vehicles: (a) private light vehicles and small trucks, equally represented in this category (i.e., 50-50); (b) trucks with two axles and heavy trucks with three axles (represented in the proportion of 67% and 33%, respectively, in this category); and (c) trailer-truck combinations. Homogeneous road sections (i.e, sections of the priority road network with similar traffic volume, and levels of service as described above) were then defined (using adjusted traffic counts, vehicle composition, and levels of service of the road identified during the feasibility studies).

5.03 The above exercise resulted in the following distribution of homogeneous traffic sections: for bituminized roads, 253 vpd on average over 419 km; for modern and ordinary gravel roads (2,874 km), the composition of traffic varied from 143 vpd over 136 km, to 73 vpd over 1,170 km, 35 vpd over 1,054 km and 16 vpd over 514 km; for earth roads (5,993 km), the composition of traffic varied from 53 vpd over 81 km and 31 vpd over 581 km, the remainder carrying a traffic less than 15 vpd.

5.04 Taking into account a modest growth in the economy as a result of structural adjustment policies and improving market conditions for CAR's export products (in particular coffee and cotton), traffic on the priority road network (4,000 km) is estimated to increase by about 2%. Using this growth rate, the above data (traffic composition on homogeneous road sections and future traffic estimates) were applied to the proposed level of service for these road sections (i.e., different standards of road rehabilitation and maintenance). Savings in vehicle operating costs were then calculated and compared with the costs of the proposed road rehabilitation and road maintenance program. The difference between the benefits and the costs resulted in an economic rate of return of 18% for the paved road rehabilitation component, and 32% for the gravel/earth road rehabilitation and maintenance component.

5.05 Sensitivity Analysis of the Paved and Gravel/Earth Road Component. Reconstruction to paved standards of the Bossembélé-Yaloké road is relatively sensitive to cost increases. When constructed at relatively simple standards as planned (double-surface treatment while maintaining the present road

alignment) the ERR would be about 11%. However, if costs increase by 20% and benefits decrease by 20%, the ERR would decline rapidly to about 7%. With a 10% cost increase and decrease in benefits, the ERR would amount to 9%. While a decrease in benefits, which would mainly stem from a fall in traffic volume, is less likely on this important international road link, a cost increase might be possible because the cost of the construction to paved standards has been estimated without the benefit of detailed engineering which is scheduled for early 1991. If traffic remained constant at the present level, the ERR for the rehabilitation of the paved network would be about 16%. If costs were to increase by 10% or 20% the ERR would decline to 12.5% and 8.9%, respectively. The occurrence of the latter case is rather unlikely because the unit prices of the rehabilitation costs have been carefully estimated, while adequate provision has been made for physical and price contingencies. Application of the same sensitivity analysis to the rehabilitation of the gravel and earth roads results in ERR variations of 29.7%, 24% and 19%, respectively, which is fully satisfactory.

5.06 Rural Roads Component. The composition of the rural roads rehabilitation and maintenance component was arrived at by establishing an inventory of primary rural roads (roads which are directly linked with the national and regional road network) whose rehabilitation would result in an ERR of above 20%. This analysis produced a list of about 1,700 km of rural roads, primarily in the cotton growing area, of which 555 km yields a return of more than 30%, and the remainder between 20% and 30%. Under the TSP, 720 km will be rehabilitated, taking into account the capacity of the executing specialized agricultural agency (SOCODA). Benefits were calculated by estimating vehicle operating cost savings, and by including 40% of the estimated increase in value added to agricultural production resulting from improved access to farms and markets.

5.07 Risks. No unusual risks are foreseen in the physical implementation of the paved, gravel and rural road rehabilitation and maintenance components, as they will be executed by contract and supervised by experienced consultants. However, in view of the sensitivity of the ERR for the reconstruction investment of the Bossembélé-Yaloké road, careful feasibility and detailed engineering studies are required to ensure that modest standards are applied. Satisfactory execution of the national and regional road rehabilitation and maintenance program carried out by private contractors, including OPPER, and village workers ("cantonnage") depends on the ability of the Road Maintenance Management and Coordination Group (RMMGC) and the Road Fund to organize and implement these programs efficiently and to adhere to timely procurement procedures applied by the co-donors. Similarly, the efficiency of the rural road rehabilitation and maintenance program using the brigades of the local cotton agency is linked to SOCADA's ability to restore its capacity to its previously satisfactory levels. The possibility of these risks resulting in cost increases has been taken into account by a careful review of unit prices of the road works and providing for appropriate contingencies. The estimated international price inflation is fairly stable for the period 1992-96 at about 4.5% per annum. Implementation of the road component is based on a three-year work program starting in 1991 and should be completed in 1994. However, possible slippage in part of the rehabilitation and maintenance program to 1995 has been accounted for in the costing of the project. The main risk of the project would be institutional weaknesses in the implementation of the TSP. To alleviate this risk, provisions have been made on the manpower side to strengthen MTPAT's and MTAC's institutional organization, including the supervision capacity, and the Road Fund's financial performance. Project implementation will be supported by task specific technical assistance

and appropriate training programs. The remaining components, strengthening of airport management and maintenance of river transport, do not include investments subject to risks.

VI. FINANCIAL EVALUATION OF THE ROAD FUND

6.01 The CAR Road Fund has gradually developed from a "special account" in the sixties and seventies, maintained at the Ministry of Finance and funded through the general budget, to a legally and financially autonomous public institution established in 1981. The rationale for this decision was that the "special account" mechanism of the national budget had not adequately functioned in providing timely the necessary funds to sustain maintenance works regularly. The Road Fund is placed under the authority of a Management Committee, chaired by the Minister of Public Works and Territorial Development and including the Minister of Finance. This Committee approves the budget, the balance sheet, and the directions for usage of funds recommended by the Road Fund Administrator.

6.02 The Road Fund's main revenue, the direct transfer by PETROCA of the user fee contained in the fuel tax, has increased in nominal terms from CFAF 1.0 billion in 1982 to CFAF 1.7 billion in 1988, and is estimated at CFAF 1.8 billion for 1989. These increases were principally due to increases in the user fee from CFAF 24/l in 1982 to CFAF 50/l in 1988. However, as a result of CAR's sluggish economy, fuel consumption has declined by over 25% from a peak of 47,854 m^3 in 1985 to 34,942 m^3 in 1988. This consistent decline contributed to the increase in the user fee from CFAF 48 to CFAF 50 in 1988, in order to cover the minimum needs of the road maintenance program. The increase was financed and will continue to be financed over the period 1990-93 through a gradually increasing transfer of a portion of the "stabilization tax" revenue of the fuel tax (Annex 2-3). Additional revenues are derived from ferry charges, income from the sale of used equipment by MTPAT, and fines paid at Bangui's weighing station, which amount to only 2% of total revenues. The Road Fund also receives grants in the form of donor supplies of equipment, and spare parts. The main elements of the Road fund's 1987/88 Income Statement are provided in Annex 6-15.

6.03 The Income Statement for FY87-88 shows that about 17% of Road Fund revenues were used to finance road maintenance staff and also MTPAT staff (about 50%), who should normally be paid by the Ministerial budget; 16% was used to finance local costs incurred on account of externally financed supplies, and contracts for works including maintenance, new construction and/or rehabilitation; 22% went to procurement of fuel and lubricants; 2% was spent on OPPER contracts and 8% for counterpart financing.

6.04 A detailed audit of the Road Fund's 1987/88 was carried out in 1989 to provide clearer insight in the Road Fund's accountability and use of funds, and to make recommendations for improvements in its operations. The auditors long form report highlights problems of internal control, such as differences between PETROCA and the Customs with respect to quantities of fuel consumed, resulting in undervaluation of Road Fund revenues by CFAF 283 million (about US$943,000); inefficient billing and revenue collection procedures at PETROCA leading to three to four months delays in transferring the Road Fund user fee to the Road Fund account; poor inventory management at the Equipment Directorate making it difficult for the Road Fund to value the inventory; lack of collecting revenues from the sale of used equipment (CFAF 7 million); and unpaid contributions in

counterpart funds from the Treasury to the Road Fund in support of some donor financed road rehabilitation projects. In addition, it reveals the use of Road Fund revenues amounting to about CFAF 183 million (US$610,000 or 8.5% of total 1988 Road Fund revenues) to road works that were not included in the agreed road maintenance program.

6.05 The Audit's main recommendations are: (a) establishment of an ad hoc committee to reconcile the discrepancies between Petroca and the Customs on quantities of fuel consumed and transfer of the due amount to the Road Fund Account; (b) integration of the Equipment Directorate's Accounts with the Road Fund accounting system; (c) establishment of an efficient billing and revenue collection system; and (d) establishment of adequate measures of internal control to ensure that Road Fund resources will be solely applied to road maintenance related expenditure. These and other recommendations have been incorporated in the policy measures described in Chapter III (para. 3.09).

6.06 Road Fund Needs during the TSP. To finance the annual maintenance program of the national and regional road network (4,000 km), the Road Fund will require CFAF 2.7 billion (including taxes) per annum in constant terms, or about CFAF 0.9 billion more than budgeted for FY89 (CFAF 1.8 billion). The rural road maintenance program (including periodic maintenance) will require CFAF 402 million in 1990 increasing to about CFAF 600 million in 1993 (taxes included), bringing total road maintenance requirements to CFAF 3.1 billion (US$10.3 M) per annum by 1995. To cover these requirements, Road Fund revenues will be increased by gradually increasing part of the stabilization tax to the Road Fund account. To neutralize this effect on the national budget, to which the stabilization tax is normally transferred, an existing vehicle tax will be increased, both for light and heavy vehicles. Taking into account the present vehicle park, such an increase would provide additional revenues of about CFAF 1.0 billion by 1995, which would about equal the additional funds transferred from the stabilization tax to the Road Fund. Meanwhile, additional funds required would need to be provided by donor financing, as is provided under the TSP. In addition, as of 1990, the national budget will progressively assume responsibility for paying MTPAT salaries, administrative expenses and costs for fuel and maintenance of light vehicles that are not related to road maintenance, estimated at about CFAF 144 million (US$480,000), so that by 1993 this amount will be fully available to the Road Fund. Half yearly reviews will be carried out to verify the appropriate use of funds in accordance with the agreed road maintenance program. The Road Fund would be audited annually by an independent auditing firm.

6.07 Road Fund Management. Key staff of the Road Fund, comprising the Administrator, the Controller, and Accounting Officer/Supervisor of the computerized accounting system, would need to be in place before credit effectiveness. A recruitment program and appropriate terms of reference of the above key staff, as well as a list of required support staff to operate the computerized accounting system, is being prepared by the Road Fund.

6.08 Justification of the Road Fund. Maintaining the Road Fund as a separate financing mechanism from the national budget with revenues flowing from an earmarked user charge is considered justified as an interim measure to ensure timely transfer of the necessary funds for road maintenance, until an adequate budget system within the national budget could be put in place capable of assuming this critical task. During the TSP, the appropriate functioning of the Road Fund as a separate financing mechanism would be regularly assessed. By

project completion (i.e., in about six years from project inception), the need to maintain the Road Fund would be reassessed in light of improvements achieved in the budgetary system, in particular with respect to its capacity to make necessary funds timely available for road maintenance.

VII. AGREEMENTS REACHED AND RECOMMENDATION

7.01 Before Negotiations, the following agreements were reached: (a) the Government passed a decree abolishing BARC's monopoly and 10% commission on transport contracts to which BARC is not party (para. 3.02); (b) MTPAT established the Road Maintenance Management and Coordination Group (RMMCG); and (c) an Interministerial Committee was established grouping the Ministry of Economy and Finance, the Ministry of Energy, and the Ministry of Public Works, the Director of Customs and the Director of PETROCA, to verify regularly the collection and transfer of revenues from the Road Fund user charge.

7.02 During Negotiations, additional agreements were reached on the following items:

(a) contents of the Government's transport sector policy statement and action plan (paras. 3.01-3.11 and Annexes 3-4 and 3-5);

(b) preparation by IPCTP of the annual investment budget before October 31 of each year, for review by the Planning Secretariat and IDA (para. 3.07);

(c) MTPAT's new road maintenance strategy (paras. 3.08; 4.07-4.19);

(d) size of the priority road network for road maintenance (para. 3.08 and Annex 3-6);

(e) establishment of commercial management at the Equipment Workshop (paras. 4.11-4.13);

(f) implementation of MTPAT's and MTAC's new structure and staffing plans (paras. 4.22-23; 4.29);

(g) annual consultation with IDA before November 30 regarding the annual transport sector expenditure program, the routine maintenance, periodic maintenance and road rehabilitation programs (para. 4.21);

(h) execution of environmental protection measures (paras. 2.38-39 and 4.46-47);

(i) cost of the project (paras. 4.35-38);

(j) MTPAT's and MTAC's training and technical assistance program (paras. 4.23-24 and 4.30, 4.31);

(k) inclusion of the examination of potential riparian issues (para. 4.27 and environmental assessment in the terms of reference for feasibility study of construction of water flow regulating dam on the Oubangui River;

(l) establishment of an equipment management unit on terms and conditions acceptable to IDA (paras. 4.11-12);

(m) improvement of the Road Fund's accounting system as recommended by the 1988 Audit (para. 6.05);

(n) increase in existing vehicle taxes to mobilize additional funds for road maintenance expenditure (para. 6.06); and

(o) streamlining of measures for bidding and contract awards and selection of consultants; training requirements of procurement staff (para. 4.42).

7.03 Conditions of Effectiveness are:

(a) appointment of the Director of Road Maintenance, the Director of Human Resources (MTPAT) and the Division Chief of Human Resources (MTAC), with qualifications and experience satisfactory to IDA (paras. 4.23 and 4.30);

(b) implementation of the agreed reorganization plans of MTPAT and MTAC (paras. 4.23 and 4.30); and

(c) appointment of the Road Fund Administrator, Controller, and the Accounting Officer/Supervisor with qualifications and experience satisfactory to IDA (para. 6.07).

7.04 The following is a condition of disbursement: disbursement for payments for civil works under the TSP -- except those civil works related to the deviation works of National Road NR1 at the M'Bali dam site -- will be made only after settlement of the difference of Road Fund Revenues with PETROCA/customs and transfer of the agreed amount into the Road Fund Account (paras. 4.43 and 6.05).

Recommendation

7.05 Subject to the above terms and conditions, the proposed transport sector project is technically and economically sound, and is suitable for a credit of SDR 46.6 million on standard IDA terms.

AF1IN
March 29, 1990

CENTRAL AFRICAN REPUBLIC

TRANSPORT SECTOR PROJECT

EXPORTS
(Volume)

[----------Estimates----------]

Items	1984	1985	1986	1987	1988	1989	1990	1991	1992
Diamond ('000 karat) Raw	326.4	342.7	353.2	409.0	370.0	383.0	399.0	411.0	423.2
Diamond ('000 karat) Cut	4.1	4.2	1.2	1.8	2.1	2.4	2.7	3.2	3.6
Coffee ('000 tons)	12.9	18.7	10.2	11.2	13.0	15.0	16.0	17.0	17.0
Wood									
Logs ('000 m3)	87.9	64.8	62.7	40.9	45.0	50.0	55.0	55.0	55.0
Plywood ('000 m3)	32.1	31.9	29.9	24.8	29.5	33.0	34.5	35.5	35.5
Other	5.4	4.5	2.7	1.6	2.4	3.0	4.0	4.5	4.5
Total wood ('000 m3)	125.4	101.2	95.3	67.3	76.9	86.0	93.5	95.0	95.0
Cotton ('000 tons)	12.6	12.9	13.1	8.5	6.3	8.3	10.0	10.0	10.3
	0.5	0.5	0.6	0.6	0.4	0.4	0.4	0.5	0.5
	2.4	1.7	1.7	0.9	0.9	1.0	1.2	1.5	1.7

Source: Ministry of Finance

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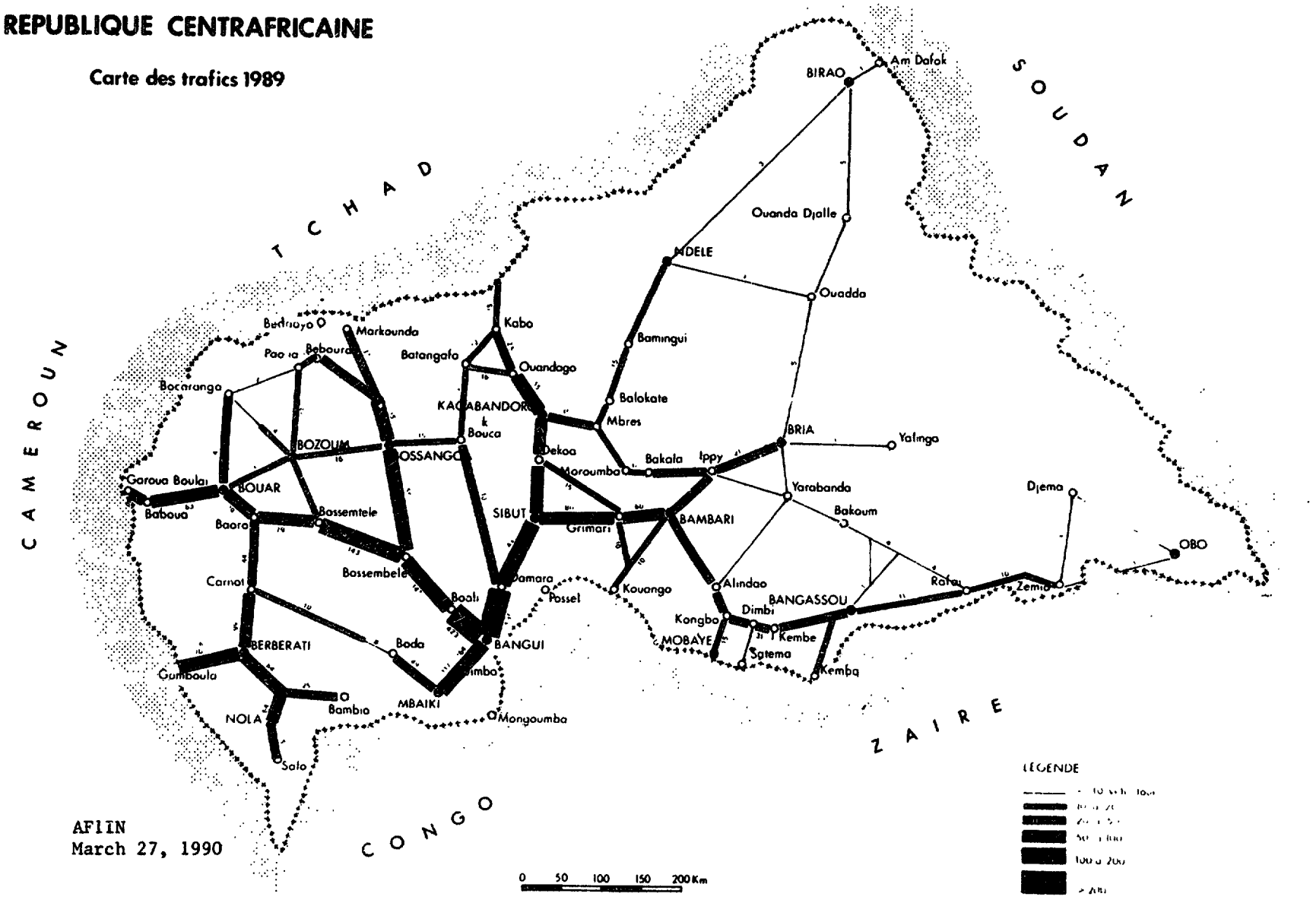
CENTRAL AFRICAN REPUBLIC

TRANSPORT SECTOR PROJECT

Traffic Volume 1989



CENTRAL AFRICAN REPUBLIC

TRANSPORT SECTOR PROJECT

PRICE STRUCTURE OF PETROLEUM PRODUCTS

Item CFA/100 Liters	Premium gasoline d = 0.75 /a	Kerosine d = 0.80 /a	Diesel d = 0.85 /a
1. C.I.F. Matadi	5,171.00	5,897.00	5,753.00
2. Transit Zaire	1,256.00	1,256.00	1,256.00
3. River transport	1,850.62	1,974.00	2,097.38
4. SCEVN tax	240.75	256.80	272.85
5. River insurance	7.22	7.95	7.95
COST IN BANGUI EXCL. TAXES	8,525.59	9,391.75	9,387.18
6. DUTIES, TAXES, FEES			
6.1 Entry tax	500.00	100.00	
6.2 Supplementary tax	8,200.00		6,300.00
6.3 Treasury tax	17.40	0.20	12.60
6.4 Road user fee	5,000.00		5,000.00
6.5 Conseil des Chargeurs + RIDT	25.85	29.49	28.77
6.6 Settlement of Centra-Hydro debt	500.00	500.00	500.00
6.7 Repayment to banks	100.00	100.00	
6.8 Stabilization (variable)	2,472.92	2,465.78	2,036.03
Subtotal Duties and Taxes	16,816.17	3,195.47	13,877.40
STABILIZED PRICE IN BANGUI INCLUDING ALL TAXES	23,341.76	12,587.22	23,254.58
7. STORAGE	244.00	244.00	244.00
8. Miscellaneous costs			
8.1 System maintenance	370.00	370.00	185.00
8.2 Transport equipment maintenance	230.00	230.00	230.00
8.3 Amortization	202.00	202.00	202.00
8.4 Overhead	2,195.00	1,485.00	1,485.00
8.5 Finance charge	1,708.70	1,706.40	1,650.70
8.6 Profits	581.54	464.38	448.72
8.7 Spillage	167.00	51.00	30.00
Subtotal Gross Margin	5,454.24	4,508.78	4,231.42
9. EQUALIZATION	3,100.00	(4,100.00)	(500.00)
SELLING PRICE EX STORAGE BANGUI	34,140.00	13,240.00	27,240.00
10. CITY DELIVERY	160.00	160.00	160.00
11. RETAILER'S MARGIN	700.00	600.00	600.00
PRICE AT PUMP IN BANGUI	35,000.00	14,000.00	28,000.00
PRICE PER LITER	350.00	140.00	280.00

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March 26, 1990

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CENTRAL AFRICAN REPUBLIC

TRANSPORT SECTOR PROJECT

GENERAL POLICY DECLARATION

(Translation from the French Original Transmitted by the Government of the Central African Republic)

Introduction

The transportation sector plays a primary role in the economy of the Central African Republic. Because the country is landlocked and its transportation system outward and transit oriented, the sector is one of the Government's priority concerns.

Any mode of transportation in the Republic is generally expensive and slow, owing to the state of the infrastructure use, the fact that the country is landlocked, the constraints that affect the productivity of domestic providers of transport services, and institutional shortcomings. These difficulties, which restrict the support the sector affords an economy based on rural development, are exacerbated by adverse conditions in the international environment that work against the developing countries.

Mindful of these problems, the Government is committed to a firm policy of revitalization of the transportation sector, designed to enable it to contribute more effectively to integrated, self-sustaining development.

1. Development Plan

In order to pave the way for economic recovery and a return to growth, the Government, since 1982, has been following a stringent policy of economic structural adjustment that consists in redefining its own role, providing greater incentives for the private productive sector, reorganizing the parastatal sector, and reforming the administrative apparatus.

This policy has received active support from the international agencies, particularly the World Bank. Two successive structural adjustment programs have been undertaken, the second concluding at the end of 1990.

2. Recent Measures in the Transportation Sector

Against the background of its adjustment policy introduced in 1982, the Government simultaneously launched a vast priority road network rehabilitation program known as the Fourth Highway Project. Besides opening up the country both internally and to the outside, this included a start toward the privatization of road maintenance via OPPER, a program to promote small road-building enterprises.

Measures focused on the other modes of transportation have formed the substance of the rest of the Government's policy in the sector since the early 1980s: rehabilitation of the river fleet, privatization of river transportation

management, modernization of waterways maintenance services, and conversion to jumbo-jet standards and upgrading of runways at Bangui Mpoko airport.

Some more recent measures have been: initial deregulation of road transportation, highway and aviation security and safety actions, development of applied meteorology activities, and studies for reorganization of two ministries -- the Ministry of Transportation and Civil Aviation (MTAC) and the Ministry of Public Works and Regional Development (MTPAT).

3. Transportation Strategy 1990-1995

In parallel with these recent measures, the Government engaged in a far-reaching review process which has led to formulation of a comprehensive strategy for the transportation sector covering all modes and related issues: infrastructure, plant and equipment, organization, regulatory matters, facilitation, rate schedules, taxation and institutions.

In view of:

(1) the heavy burden transportation places on the economy, not only because the country is landlocked but also because of still substandard operating performance in both the transport industry itself and infrastructure maintenance, and

(2) the limited percentage of the domestic investment budget that can be allocated to the sector, so that choices are necessarily very stringent,

the Government proposes to incorporate this strategy and the series of actions it will involve with pursuit of the major objectives now outlined below.

(A) Institutional strengthening and promotion of the private sector, through the following measures:

(i) the technical ministries concerned are to be reorganized in accordance with their newly redefined missions;

(ii) sector planning capabilities are to be strengthened;

(iii) the Road Fund is to be reorganized in the interests of its better management;

(iv) the specialized sector agencies BARC and CCAC (Bureau d'affrètement routier centrafricain, Conseil centrafricain des chargeurs) are to be reorganized so they can provide better services for road haulage contractors and shipping agents and bring costs down;

(v) increasing use is to be made of private contractors for the execution of road maintenance works;

(vi) logistical resources and vocational training are to be provided for official entities;

(vii) the procedures used in awarding government contracts are to move faster so as to preclude losses to the domestic economy resulting from delays in the pre-award and implementation stages.

(B) Designation of a priority network of transportation infrastructure that will ensure the opening of the country to the exterior and make major economic centers accessible. This network will consist of:

(i) the system of navigable waterways having the Oubangui River as its main international axis; maintenance operations will be continuous and ways and means of keeping the river navigable throughout the year will be studied so that advantage can be taken of its competitive potential;

(ii) a priority network of 4,000 km of the national and regional highways that carry the heaviest traffic; the concentration of resources on maintenance of this network leaves little room for building new roads or moving up to higher standards, not justifiable at present because of the stagnation in volume of traffic;

(iii) Bangui Mpoko international airport, where safety and security facilities are to be reinforced; smaller airports in other parts of the country will receive necessary minimum maintenance.

(C) Deregulation of the transportation sector, and facilitation

The regulations currently in force will be extensively amended and simplified, so as to:

(i) eliminate monopoly situations, as well as the obstacles facing individuals wishing to set up business as transport operators;

(ii) reduce the controls exercised by the various official entities;

(iii) continue tariff liberalization so as to achieve more transparent rate schedules that reflect real economic costs better;

(iv) make the conditions for competition among the various transport modes more equitable, especially as regards recovery of infrastructure costs.

In addition, the Government will seek ways of emphasizing cooperation with transit countries.

(D) Greater recognition of the social costs of transportation, particularly in the fields of:

(i) road safety, where a program is to be put under way;

(ii) the environment, where conservation measures will be taken.

These various measures are summarized in the Action Plan which is now outlined below and then explained more fully in Annexes 1 through 9, which form an integral part of this Policy Statement.

4. Action Plan

4.1 Institutional reinforcement

- As proposed in their Staffing Plans (Plans d'effectifs), MTAC and MTPAT will be reorganized by the end of February 1990; staff cutbacks will be made and steps taken to increase efficiency.

- The role of the interministerial planning unit (sector investment planning) will be strengthened, through continuation of the technical and logistical assistance arrangements set up as part of the Economic Management Support Project.

- The network of MTAC branches will be extended progressively; costs will be kept down by associating them, initially, with the decentralized units of MTPAT.

- MTPAT structure will be modified progressively so that the agency can devote more attention to programming, procurement and supervision and monitoring of works in progress. Coordination among its divisions responsible for road maintenance will be improved. A new division will be set up to take charge of the programming, coordination and supervision of rural road works.

- As of February 1990, the Bangui Mpoko equipment maintenance shop will be operated by MTPAT according to private-sector principles of financial administration. In addition, a study will be conducted in 1990 with a view to placing it on a commercial type of management system as of January 1991.

- Before the end of 1990, the Construction and Public Works Laboratory will convert to an industrial/commercial basis.

- The Statutes of the Road Fund will be amended to allow for creation of an internal management audit unit, redefinition of the function of the Management Committee, and takeover (against the allocation of specifically earmarked resources) of responsibility for the rural roads previously financed by MTPAT. The Fund will be subject to annual audit.

External resources intended for road maintenance will be channeled through or monitored by the Road Fund. Its own resources will be increased regularly from road tax revenues, so as to reach a minimum of CFAF 2.7 billion in 1993. Furthermore, MTPAT operating costs, now financed by the Fund, will be covered progressively from the general budget so as to free up resources for road maintenance, a changeover that is to be completed in 1993.

- An audit of the Republic's aeronautical and meteorological activities is to be conducted by the end of 1991, the resulting recommendations being put into effect within the following six months.

4.2 Transportation infrastructure

- The Government undertakes to commit itself only to transportation infrastructure investments which promise an economic rate of return that meets the ERR criteria generally applied to capital spending projects.

- Road maintenance operations will focus on a priority network of about 4,000 km of roads carrying a traffic volume of at least 20 vehicles/day, while rehabilitation operations will focus on roads carrying a volume of at least 50 vehicles/day. Maintenance tasks will gradually be transferred to the private sector through the fostering of subcontracting arrangements and development of SMEs and local private firms.

Checking for overloaded heavy vehicles at the weighbridge located at the north exit point from Bangui will be systematic, as has been the case since January 1, 1990.

- Waterway maintenance and improvement works (dredging, rock removal, marking/buoying) will continue regularly on the Oubangui (the stretch below Bangui), the Lobaye and the Sangha. Methods of improving the navigability of the Oubangui with a dam to raise low water levels will be studied at the same time.

- Airfields outside Bangui will receive necessary minimum maintenance, and special attention will be given to safety and maintenance at Bangui Mpoko international airport.

4.3 Transportation operations

Liberalization will be emphasized:

- a decree will put an end to the monopoly on road haulage contracting held by BARC and to its associated commissions, prior to mid-February 1990;

- a decree reorganizing road transportation (free enterprise, simplification of formalities) will be issued, again prior to mid-February 1990;

- BARC's Statutes will therefore be reviewed, and both its staffing and other costs reduced in the interests of its financial soundness and ability to carry out its new mandate;

- the recommendations handed down in July 1989 by the commission that examined the role of Conseil centrafricain des chargeurs (CCAC) will be implemented by the end of 1990, in particular redefinition (through regulatory channels) of its mission, so that competition has freer play and the agency provides shipping agents with real services;

- the tariffs currently governing road passenger transportation will be studied and made more flexible (changeover to the approval or ratification system) by the end of 1990;

- a study on river freight transportation costs and tariffs will be conducted in 1991, and the resulting recommendations implemented before May 1992, the end purpose being to ensure that service rate schedules are rationalized, simplified and made flexible.

Obstacles to efficient provision of transportation services will be lessened through:

- implementation, by the end of May 1990, of the recommendations from the commission on reduction of road transport controls, as had already been done with river controls;

- negotiation, with Cameroon, of measures to facilitate and liberalize international transportation and transit activities;

- promotion, within the Central African Customs and Economic Union (UDEAC), of a system of intra-Community transit regulations;

Transportation safety will be improved through:

- implementation of a road safety program and, from 1990, annual allocation of resources to road safety;

- continuation of the Bangui Mpoko airport security program.

NB: Annexes 1-10 of this policy declaration are in the Project File and are available on request.

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March 27, 1990

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Diskette: TSP ANNEXES CAR:jmh

CENTRAL AFRICAN REPUBLIC

TRANSPORT SECTOR PROJECT

PROGRAM OF POLICY MEASURES AND ACTIONS

SECTOR POLICY AREAS/ISSUES OBJECTIVES	ACTIONS ALREADY TAKEN AND UNDER PREPARATION	ACTIONS TO BE TAKEN	MONITORABLE ACTIONS AND FOLLOW-UP
A. LIBERALIZATION OF THE TRANSPORT INDUSTRY			
- Monopoly position of BARC in awarding transport contracts and enforcement of a 10% commission on transport contracts to which BARC is no party. - Access to profession of transporter is restricted by cumbersome requirements.	- Government Committee on the Reflection on the role of BARC has presented a report to Government with main recommendations to liberalize the transport industry and to abolish the 10% commission (Conditions of SAL II). - The above Committee has recommended simplification of requirements for registration as transporter. - Government issued on February 13, 1990 decree to implement liberalization of transport industry, abolishment of BARC's monopoly and removal of 10% commission.	- Revision of statutes of BARC to reflect modification of its role (Condition of Effectiveness). - Alleviation of requirements regulating registration as transporter.	- Implementation of other recommendations including: - reduction in staff of BARC; - BARC to fulfill the role of a service organization and not a regulatory mechanism - Continuation of collection of road transport statistics but this task and collection of "Taxe sur chiffre d'affaires" (TCA) should not lead to new powers of regularization - Decision on merits to maintain BARC as separate institution (December 1991), following execution of Diagnostic Study.
B. REDUCTION AND IMPROVED APPLICATION OF TRANSPORT CONTROLS			
- River and Road Transport is hampered by too many controls, increasing cost. - International Transport between Douala and Bangui should be facilitated by less cumbersome custom procedures. - Overloading is not adequately controlled and fines are not collected.	- Ad-hoc Commissions of MTAC in 1988 and 1989 have examined the problem of transport controls and made recommendations for their removal or alleviation of procedures. - UDEAC Study on Regional Transport Obstacles being implemented. - MTAC has reintroduced controls on overloading with penalty provisions as of January 1990.	- Review of introduction of less burdensome customs controls for ordinary transport and tamper proof seals for container transport (September 1990).	- Introduction of axle load tax - Annual review during TSP before Dec. 31 of each year on implementation results. - Intermittent reviews of effectiveness of axle load control. - Measures to be linked with ongoing UDEAC studies/ measures, including axle load tax. - Review of recovery rate of axle load tax (at least half yearly)

SECTOR POLICY AREAS/ISSUES OBJECTIVES	ACTIONS ALREADY TAKEN AND UNDER PREPARATION	ACTIONS TO BE TAKEN	MONITORABLE ACTIONS AND FOLLOW-UP
C. TARIFF POLICY AND HARMONIZATION OF MEASURES TO ENCOURAGE COMPETITION			
Transport tariffs require further liberalization and simplification to lower cost of transportation and to encourage competition.	Road Transport Tariffs on international road to Cameroon have been abolished and replaced by indicative tariffs generally practiced by the transport industry.	- Continuation of policy of tariff liberalization. - Study of road transport costs and actual taxes charged to travellers to change from a fixed tariff system to a liberal price system, approved by the Government before end 1990. - Carrying out of a study on new tariff for river transport aiming at cost based tariffs including seasonal adjustments during dry season and a margin for commercial negotiation. Proposals from SOCATRAF before end 1991.	- River Transport tariff studies to be linked with ongoing tariff study of ATC (Congo). - Review of tariffs for road transport of goods and travellers (taxis, minibuses) (December 1990) - Measures for transport liberalization to be linked with ongoing UDEAC studies.
D. ROAD MAINTENANCE STRATEGY			
MTPAT has not yet established a satisfactory road maintenance strategy. MTPAT needs to strengthen its capacity to manage road maintenance by force account rather than carrying out maintenance by contract, also because it is to assume responsibility for maintenance of the part of the rural road network. Use of force account needs to be limited, and the Workshop of the Equipment Directorate needs to be reorganized on a commercial basis.	Government has adopted a new road maintenance strategy including: (1) an annual priority maintenance program of about 4,000 km of national and regional roads; (2) implementation of maintenance by contract and limited force account; (3) Reorganization of DPW focussing on maintenance management under the Direction of a Road Maintenance Management and Coordination Group (RMMG), including Road Fund, Directorates of Road Maintenance and Equipment. (4) Launching of a study to establish commercial management at the Equipment Workshop.	- Decision on study results on reorganizing the workshop of the Equipment Department into a commercial organization of MTPAT to be presented by December, 1990. - Commercial Management of Equipment Workshop to start as of January 1991. - Preparation of a rural roads master plan and rural infrastructure studies.	- Annual review of maintenance performance of preceding year before November; Preparation of next year's maintenance program before December 1. Programs to be reviewed with IDA annually before finalization. - Implementation of Commercial Management of Equipment Workshop (January 1991). - Implementation of rural roads program in accordance with rural roads master plan and rural infrastructure studies.

SECTOR POLICY AREAS/ISSUES OBJECTIVES	ACTIONS ALREADY TAKEN AND UNDER PREPARATION	ACTIONS TO BE TAKEN	MONITORABLE ACTIONS AND FOLLOW-UP
	(5) Rural Roads rehabilitation and maintenance of 720 km during 1990-93, with extension thereafter to 1,700 km of primary rural roads based on experience gained.		
E. ROAD FUND AND FISCAL POLICY			
-Road Fund resources are insufficient to meet road maintenance requirements. - Road Fund revenues, which are budgeted at CFAF 1.8 billion for 1989, need to increase to CFAF 2.7 billion annually in constant terms to finance maintenance of priority nat/reg/rural road network. - Road fund resources need to be applied to road maintenance only, while general expenditures for salaries, fuel, equipment and spare parts need to be financed from the Ministerial budget. - Transfer of Road Fund user charge by PETROCA are subject to delays of up to 3 months. -Fuel is fraudulently imported at the border by international transporters to avoid paying CAR's higher fuel price thus escaping Road Fund user fee. - Road Fund administration is insufficiently integrated into road maintenance implementation. - Road Fund accounts are not kept adequately and require revision and improved computerization.	During preparation of TSP, the Road Fund has been audited and proposals have been made: (1) to increase Road Fund revenues by introducing an axle load tax and by increasing an existing tax on vehicles to permit increased transfers to Road Fund Account from the stabilization tax on the fuel price; (2) to strengthen Road Fund Administration with the position of a controller to verify appropriate use of funds for maintenance purposes; (3) to integrate the accounting systems of the Road Fund and the Equipment Directorate; (4) to improve the Road Fund's accounting system, including improved computerization, and revenue collection; (5) to integrate all donor financed operations in the road sector into the Road Fund Accounts; and (6) to accelerate transfers by PETROCA of user charge revenues to the Road Fund Account. - Measures have been divised to authorize customs to confiscate	- Implementation of the recommendations to improve Road Fund operations, of which: - Appointment of key Road Fund staff (Administrator, Controller, Accounting Officer/Supervisor): before credit effectiveness. - Initiation of implementation of 1988 Road Fund Audit recommendations. - Road fund resources need to be applied to road maintenance only, while general expenditures for salaries, fuel, equipment and spare parts need to be financed from the Ministerial budget starting with additional amount of CFAF 50.2 million in 1990 to CFAF 144.5 million in 1993. - Settlement of difference in volume of fuel imported between customs and PETROCA and transfer of user fee charges due into Road Fund Account (condition of disbursement with respect to road rehabilitation and maintenance program) - Increase in vehicle tax to permit increase in Road Fund Resources from CFAF 2.2 billion in 1991 to CFAF 2.7 billion in 1993	- Review of fulfillment of Audit recommendations - Continued annual auditing of the Road Fund and intermittent supervision of its accounting system during implementation of TSP. - Quarterly reporting of Road Fund review of use of funds to be submitted to IDA and other donors. - Half yearly verification of use of funds in accordance with agreed road maintenance program. Inappropriate use of funds would cause interruption of further commitments under the IDA credit. - Half yearly review of timely collection of Road Fund revenues, including collection and transfer of revenues of heavy vehicle tax. - Half yearly review of measures limiting fraudulent imports of fuel.

SECTOR POLICY AREAS/ISSUES OBJECTIVES	ACTIONS ALREADY TAKEN AND UNDER PREPARATION	ACTIONS TO BE TAKEN	MONITORABLE ACTIONS AND FOLLOW-UP
	oversized fuel tanks attached to international transport vehicles. - Government has created interministerial committee to verify amount of road user charges collected and transferred to Road Fund Account.	- Strengthening of measures against fraudulent imports of fuel. - Modification of Road Fund Statutes to reflect revisions before December 1990.	
F. INSTITUTIONAL REORGANIZATION AND STRENGTHENING			
-MTPAT and MTAC require reorganization to fulfill their Mission more efficiently.	- Recommendations have been made during preparation of the TSP on MTPAT's and MTAC's "Plan d'effectifs" and their internal reorganization;	- Implementation of agreed reorganization plans of MTPAT and MTAC before credit effectiveness. - Appointment of MTPAT Directors of Road Maintenance, Rural Roads and Human Resources with qualifications and experiences acceptable to IDA before credit effectiveness. - Appointment of MTAC's Division Chief of Human Resources with qualification and experience acceptable to IDA before credit effectiveness. - Completion of adjustment of staffing of MTPAT and MTAC in accordance with agreed recommendation of "Plan d'effectifs" by December 31, 1990.	- Review of implementation measures during execution of Interim Technical Assistance and Training component of the Economic Management Project. - Development of a training program before December 1990 on the basis of the preparatory work during the above interim technical assistance and training component. - Reduced tasks of CCAC should not lead to new regulatory powers.
- The role of the specialized agency CCAC responsible for CAR maritime transport, needs to be modified in accordance with the reduced utilization of its services.	- A MTAC task force has prepared recommendations on the future role of CCAC for review by the Government.	- Implementation of recommendations of Task force on the modification of CCAC. Issuance of Decree modifying CCAC by December 1990.	- Review of merits of CCAC continuing as a separate agency by December 1991 on the basis of the agreed recommendations of a diagnostic study.

SECTOR POLICY AREAS/ISSUES OBJECTIVES	ACTIONS ALREADY TAKEN AND UNDER PREPARATION	ACTIONS TO BE TAKEN	MONITORABLE ACTIONS AND FOLLOW-UP
A.S.E.C.N.A cannot meet its budget requirements to manage CAR's national airports and meteorological services, due to insufficient funding from CAR and over staffing of the national service.	Terms of Reference have been prepared to carry out a study to restructure A.S.E.C.N.A's service in SAR including: a) Study of ASECNA's optimal staffing requirements with the objective of reducing ASECNA's current payroll. b) Detailed Audit of ASECNA's accounts c) Revision of ASECNA's budget d) Market study regarding possible revenues to be obtained from selling the meteorological services to users in CAR.	- Implementation of study with agreed TOR by December 1991. - Decision on study's recommendations by June 1992.	
G. INVESTMENT PLANNING AND STATISTICS			
- Transport Sector Investment Planning needs strengthening and to function more efficiently to establish and maintain priorities of sector investment. - Transport sector lacks information base due to inadequate statistical services. -Transport Sector investment needs to be limited to priority projects with an ERR of at least 10%, and taking into account Government capacity to finance recurrent cost.	- Government has established Interministerial planning cell for Transport and public works (IPCTP) in October 1988. - During Interim Technical Assistance and Training program, IPCTP will receive first part of training and TA.	- IPCTP to be expanded with a statistical capability to interpret statistics for Transport Sector planning by December 1990. -IPCTP to act as the coordinating unit for transport sector investment planning. Donor transport sector investment proposals to be channeled through and analyzed by IPCTP. -Limitation of Transport Sector Investments to priority investments with ERR of at least 10%, taking into account Government's recurrent cost financing capacity.	On the basis of the agreed criteria of priority and satisfactory ERR, IPCTP to prepare annual investment budget before October 31, for review by and discussion with the Planning Secretariat and IDA and other donors.
H. ROAD SAFETY PROGRAM			
CAR is experiencing an increasing accident rate, while it does not possess	MTAC has prepared a road safety program to improve police skills in traffic	- Initiation of Implementation of Road Safety Program following due prep-	Annual Review of results of road safety program by November 30, to

SECTOR POLICY AREAS/ISSUES OBJECTIVES	ACTIONS ALREADY TAKEN AND UNDER PREPARATION	ACTIONS TO BE TAKEN	MONITORABLE ACTIONS AND FOLLOW-UP
the means to meet this growing problem due to lack of enforcement of traffic rules, under equipped and insufficiently trained police, and insufficient traffic signs. The ensuing damage and unnecessary loss of life is causing economic and physical harm.	control, to provide better traffic signals and medical support, and to ensure appropriate technical vehicle control.	aration by December 1990. - Government decision on funding road safety program through national budget by December 1990.	adjust or modify the program as necessary.
I. ENVIRONMENTAL PROTECTION			
- Due to the construction of part of the Fourth Parallel Road from Yamando to Bambio through CAR's tropical rain forest, ecological measures are necessary to protect the forest against village migration, uncontrolled settlements and creation of cultivation plots along the road. - In addition, continuation of the road requires crossing of the ecologically important Mbaere swamp. - On the existing portion of the road, erosion has adversely affected the drainage system.	Government has conducted an Environmental Impact Study to provide recommendations for mitigating the ecological damage caused by the construction of the road. These recommendations include: . measures to improve drainage; . widening of shoulders to permit faster drying of the road following rainfall; . measures to arrest burning of felled trees along the road; . measures to protect forest from migrating farmers to start plots and to avoid an increase in hunting of protected wild animals; . improved collaboration between forestry companies and Government to protect the forest from migration and hunting practices; . launching of studies to modify alignment of the continuation of the road to protect the forest; and . detailed engineering and	- Initiation of implementation of recommendation for immediate protection (wood burning; village migration to road side) by January 1990. - Initiation of other measures by September 1990.	- Review of environmental Protection measures during project implementation. - Close coordination and implementation of other environmental projects, including Natural Resources Management Project.

SECTOR POLICY AREAS/ISSUES OBJECTIVES	ACTIONS ALREADY TAKEN AND UNDER PREPARATION	ACTIONS TO BE TAKEN	MONITORABLE ACTIONS AND FOLLOW-UP
	ecological studies to solve the delicate crossing of the Mbaéré swamp and modification of road alignment.		
J. PROCUREMENT			
- Procurement is affected by long delays in decision making that prove costly to the economy as their delays adversely affect the benefits of projects or delay their preparation.	- Government has created a National Procurement Committee to accelerate the procurement process. - An assessment of CAR's procurement system was carried out in October 1989.	- Carrying out of a study to prepare recommendations for making its procurement system and procedures more efficient, as well as to prepare a training program of staff responsible for procurement. - Initiation of agreed recommendations by January 1991.	Provision of Technical Assistance during project implementation to improve the procurement system and procedures and to train staff in their application.

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CENTRAL AFRICAN REPUBLIC
TRANSPORT SECTOR PROJECT
Priority Road Network

Identification			Length Km
National Roads Paved (exclusive of paved sections of national roads in Bangui)	N1	Bangui (PK12)--Bossembele	148
	N2	Bangui (PK12)--Damara	63
	N2	Damara-Sibut	111
	N6	Bangui-M'Baiki	98
Subtotal			420
National Roads Laterite	N1	Bossembele-Bossangoa	148
	N1	Bossangoa-Bedsoyo	195
	N2	Sibut-Bambari	198
	N2	Bambari-Alindao	118
	N2	Alindao-Bangassou	234
	N3	Bossembele-Garoua Boulai	439
	N4	Damara-Bouca	215
	N5	Sibut-Kagabondoro	152
	N5	Bambari Ippy-Bria	211
	N6	Carnot-Berberati	94
	N6	Berberati-Gamboula	91
	N8	Kagabandoro-M'Bres	83
	N10	Berberati-Nola	136
	N10	Nola-Salo	55
	N11	Baoro-Carnot	95
Subtotal			2,464
Regional Roads Laterite	R1	M'Baiki-Mogoumba	81
	R4	Bouar-Bocaranga	142
	R6	M'Baiki-Boda	85
	R10	Batangafo-Ouandago	60
	R10	Kagabandoro-Ouandago	48
	R26	Yamando-Bambio	85
Subtotal			501
Ouham Pende Regional Development Program			630
Total			4,015

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CENTRAL AFRICAN REPUBLIC
TRANSPORT SECTOR PROJECT
DECISION TABLE

Methodology for the Design of an Earth Road Maintenance Strategy

I. Background

1. The main objective of the transport sector project is to develop a dynamic road maintenance strategy which could be duplicated and repeated over the years. However, this strategy would be reassessed every year in the light of: (i) new macro-economic conditions in the country; and (ii) new possibilities in mobilizing external financing.

2. To systematize the planning of the various actions making up the Earth Road Maintenance Strategy of the Priority Network, a decision table has been established. The decision table proposes an operation schedule for (i) rehabilitation and regraveling (rehab + regrav); (ii) mechanized routine maintenance with addition of laterite (Réprofilage Avec Apport -- RAA); and (iii) mechanized routine maintenance with no addition of laterite (Réprofilage Sans Apport -- RSA).

II. Basic Criteria of the Methodology

3. Wearing of the Surface Course. In accordance with the results of a study of the level and cost of maintenance of earth roads in Central Africa, 1/ the annual wear of dirt road surface course due to the combined action of climate conditions and traffic can be derived with the following formula:

$$e = .8(1 + t)$$

where "e" is the annual wear in centimeters and "t" the daily traffic expressed in hundreds of vehicles per day (vpd).

4. Surface Course Thickness. The main objective of road maintenance being to ensure a good level of service of the road, this means maintaining a surface course thickness of between a maximum of 15cm and a minimum of 5cm, given the prevailing traffic conditions in the project areas.

5. Traffic Classes. The wear criteria and the required level of service imply the classification of the priority network earth roads in four traffic classes:

Class A: over 80 vpd
Class B: between 60 and 80 vpd
Class C: between 45 and 60 vpd
Class D: between 20 and 45 vpd

1/ P. Blet/CEBTP, September 1982, updated by the BCEOM/TRACTEBEL Group in January 1990; financed by the French Fonds d'aide et de coopération.

6. Timing of Profile Restoration Operations with Addition of Laterite (RAA) and Regraveling Operations. RAA operations are performed to reinforce the surface course whenever the thickness is down to 10cm. Naturally, the time intervals of regraveling operations depend on how much time is needed for the surface course thickness to be reduced to the 5cm minimum. Depending upon the various traffic classes, the timing of RAA and regraveling operations can be summarized as follows:

Class A: regraveling every 6 years, with RAA in year 3,
Class B: regraveling every 8 years, with RAA in year 4,
Class C: regraveling every 8 years,
Class D: regraveling every 10 years, with RAA in year 5.

To optimize regraveling operations and at the same time take charge of localized breakdowns, these operations will be combined with localized rehabilitation work over about 5% of the mileage subjected to regraveling and identified during preparation.

7. Climate Conditions. Climate conditions, especially rainfalls, are significantly different north and south of the sixth degree of latitude (one rain season in the North and two in the South). Routine maintenance of earth roads with a traffic higher than 60 vpd resulting in an annual wear higher than 1cm must be performed at different intervals:

In the North: One regrading per year without addition of laterite every year, following the rain season;

In the South: Regrading twice per year without addition of laterite every year, including one following the rain season.

Consequently, traffic classes "A" and "B" have been assigned an "s" index for the roads in the South and an "n" index for those in the North. Since the priority network has no Class "Bn" roads, Class "Bn" has been omitted in decision tables. Since traffic classes "C" and "D" consist of low traffic roads requiring no more than one RSA operation per year, no geographical classification will apply to these classes.

8. Route Distribution among the Various Classes. The earth road priority network (2,897 km) 2/ has been broken down among the various classes (Annex 2-3). The distribution can be summarized as follows:

Class As	:	431 km
Class An	:	152 km
Class Bs	:	459 km
Class C	:	575 km
Class D	:	1,280 km

2/ Does not include road section Bosembélé-Yaloké (73 km), which will be reconstructed to paved standards during TSP.

III. Decision Table for Maintenance Program Scheduling

9. Decision Table. Integrating the set of parameters discussed in the above methodology leads to the creation of a decision table allowing an overall view of the timing and frequency of the various road maintenance operations in each road category (Annex 1).

Initial priority network road condition will be established during the 1990-91 preparatory engineering studies. This initial condition will determine the entry point in each decision table cycle (e.g., a Class "As" road in average initial condition will be scheduled for a type "RAA+RSA" operation during the first year).

IV. Average Annual Operation Program

10. Since the physical condition of the priority network routes (2,897 km) varies significantly over time, the project has elected to propose an average annual operation program for all routes included in the above defined classes. The volume of the program has been derived on the basis of allocating each year a part of each road maintenance operation according to the timing and frequency of the operation.

Example:

For a Class "As" route (traffic higher than 80 vpd, south of the 6th degree of latitude), average annual maintenance operations would be as follows:

Rehab + Regrav: one operation of this type every 6 years for the entire length of the route, i.e., about 16.6% (100/6) on the average each year;

RAA: one operation of this type every 6 years for the entire length of the route, i.e., about 16.6% (100/6) on the average each year;

RSA: nine operations of this type during the 6 year cycle for the entire length of the route, i.e., 150% (900/6) of the length on the average each year.

These annual allocation rates are detailed in Appendix 1, Table b. The average length on which work will be performed in a given year for each type of operation is derived by multiplying the length of all roads belonging to a class by the rate applying to this class, and is entered in the road maintenance work program (Appendix 4).

11. Average Annual Allocation of the Various Road Maintenance Operations. Applying the average annual allocation rates (para. 2.07) to the total length of roads in the various classes (para. 2.08) results in the length to be treated each year, per type of road maintenance operation and per class (Appendix 4).

V. Conclusion

12. Annual Reassessment of the Program. The road maintenance strategy is aiming at the improvement of the entire priority network and should help in reaching a good level of service on selected itineraries, after a 10 year period. This

strategy should be: (i) sustained without relaxation; and (ii) reassessed every year on the basis of traffic counts, which could result in a change of classification for one or more itineraries and consequently a change in the timing of applicable maintenance work.

13. Priority Network Expansion. Since the level of service will be improving, it is natural to expect a corresponding traffic increase. This increase -- a synonym of economic flow growth -- should generate new resources for the Fonds Routier which in turn should result in the expansion of the part of the total network on which routine maintenance operations could eventually be financed.

REPUBLIQUE CENTRAFRICAINE

PROJET SECTORIEL DE TRANSPORT

Appendice 1

a. Table de décision des actions d'entretien sur le réseau en terre

Périodicité	PROGRAMMES D'EXECUTION				
	As	An	Bs	C	D
An 7	2 RSA	1 RSA	2 RSA	1 RSA	1 RSA
An 8	2 RSA	1 RSA	Réha+Rech	Réha+Rech	1 RSA
An 9	RAA + RSA	1 RAA	2 RSA	1 RSA	1 RSA
An 10	2 RSA	1 RSA	2 RSA	1 RSA	Réha+Rech

Légende : RSA - Reprofilage Sans Apport
RAA - Reprofilage Avec Apport
Réha + Rech - Réhabilitation et Rechargement

Rappel : As - Routes à trafic > à 80v/j et au Sud du 6ème parallèle
An - Idem As mais situées au Nord du 6ème parallèle
Bs - Routes à trafic entre 60 et 80v/j et au Sud 6ème parallèle
C - Routes à trafic entre 45 et 60v/j
D - Routes à trafic entre 20 et 45v/j

b. Clefs de répartition moyenne annuelle des linéaires

Actions d'entretien	PROGRAMMES D'EXECUTION EN % DU LINEAIRE DES ITINERAIRES				
	As	An	Bs	C	D
RSA	150.0 %	66.8 %	162.5 %	87.5 %	10.0 %
RAA	16.6 %	16.6 %	12.5 %	0.0 %	10.0 %
Réha + Rech	16.6 %	16.6 %	12.5 %	12.5 %	80.0 %

REPUBLIQUE CENTRAFRICAINE

PROJET SECTORIEL DE TRANSPORT

Appendice 2

Répartition des itinéraires en terre par lots de travaux

No Itin.	No Adm.	Section de route	larg. (m)	Long. (km)	Traf. (v/j)	Table de décision
Lot No 4 - Zone Est				761		
41	RN2	Sibut - Grimari	7	120	80	As
42	RN2	Grimari - Bambari	7	78	60	Bs
43	RN2	Bambari - Alindao	7	118	46	C
44	RN2	Alindao - Kembe	7	112	31	D
45	RN2	Kembe - Bangassou	7	122	21	D
46	RN5	Bambari - Ippy - Bria	5	211	21	D
Lot No 5 - Zone Centre				558		
51	RN4	Damara - Bouca	6	215	30	D
52	RN8	Sibut - Kagabandoro	7	152	89	An
53	RN8	Kagabandoro - M'Bres	5	83	35	D
54	RR10	Kagabandoro - Ouandago	6	48	55	C
55	RR10	Ouandago - Batangafo	5	60	25	D
Lot No 6 - Zone Nord-Ouest				856		
61	RN1	Bossembele - Bossangoa	6	148	55	C
62	RN1	Bossangoa - Bedaoyo	6	195	37	D
63	RN3	Yaloke - Bossemtele	7	68	80	As
64	RN3	Bossemtele - Bouar	7	149	80	As
65	RN3	Bouar - Garoua Boulai	7	154	63	Bs
66	RR4	Bouar - Bocaranga	5	142	43	D
Lot No 7 - Zone Sud-Ouest				722		
71	RN6	M'Baiki - Boda	5	85	49	C
72	RN6	Carnot - Berberati	7	94	99	As
73	RN6	Berberati - Gamboula	7	91	70	Bs
74	RN10	Berberati - Nola	7	136	64	Bs
75	RN10	Nola - Salo	6	55	35	D
76	RR1	M'Baiki - Mogoumba	5	81	53	C
77	RR11	Baoro - Carnot	7	95	45	C
78	RR26	Yamando - Bambio	6	85	20	D
Total				2897		

REPUBLIQUE CENTRAFRICAINE

PROJET SECTORIEL DE TRANSPORT

Appendice 3

Répartition des itinéraires en terre selon les tables de décision

No Itin.	No Adm.	Section de route	larg. (m)	Long. (km)	Traf. (v/j)	As	An	Bs	C	D
Lot No 4 - Zone Est				761						
41	RN2	Sibut - Grimari	7	120	80	120				
42	RN2	Grimari - Bambari	7	78	60			78		
43	RN2	Bambari - Alindao	7	118	46				118	
44	RN2	Alindao - Kembe	7	112	31					112
45	RN2	Kembe - Bangassou	7	122	21					122
52	RN5	Bambari - Ippy - Bria	5	211	21					211
Lot No 5 - Zone Centre				558						
51	RN4	Damara - Bouca	6	215	30					215
52	RN8	Sibut - Kagabandoro	7	152	89		152			
53	RN8	Kagabandoro - M'Bres	5	83	35					83
54	RR10	Kagabandoro - Ouandago	6	48	55				48	
55	RR10	Ouandago - Batangafo	5	60	25					60
Lot No 6 - Zone Nord-Ouest				856						
61	RN1	Bossembele - Bossangoa	6	148	55				148	
62	RN1	Bossangoa - Bedaoyo	6	195	37					195
63	RN3	Yaloke - Bossemtele	7	68	80	68				
64	RN3	Bossemtele - Bouar	7	149	80	149				
65	RN3	Bouar - Garoua Boulai	7	154	63			154		
66	RR4	Bouar - Bocaranga	5	142	43					142
Lot No 7 - Zone Sud-Ouest				722						
71	RN6	M'Baiki - Boda	5	85	49				85	
72	RN6	Carnot - Berberati	7	94	99	94				
73	RN6	Berberati - Gamboula	7	91	70			91		
74	RN10	Berberati - Nola	7	136	64			136		
75	RN10	Nola - Salo	6	55	35					55
76	RR1	M'Baiki - Mogoumba	5	81	53				81	
77	RR11	Baoro - Carnot	7	95	45				95	
78	RR26	Yamando - Bambio	6	85	20					85
Totaux				2897		431	152	459	575	1280

REPUBLIQUE CENTRAFRICAINE

PROJET SECTORIEL DE TRANSPORT

Appendice 4

Table de décision des interventions d'entretien sur le réseau en terre

Répartition annuelle des linéaires selon les différentes actions

unité : km

Actions d'entretien	PROGRAMMES ANNUELS D'EXECUTION					
	As	An	Bs	C	D	Totaux
RSA	646	102	745	503	1025	3021
RAA	72	25	58	0	128	283
Réha + Rech	72	25	58	72	128	355
Totaux	790	152	861	575	1281	3659

Légende : RSA - Reprofilage Sans Apport
RAA - Reprofilage Avec Apport
Réha + Rech - Réhabilitation et Rechargement

REPUBLIQUE CENTRAFRICAINE

PROJET SECTORIEL DE TRANSPORT

Appendice 5

Table de décision des interventions d'entretien sur le réseau en terre

Tableau des coûts unitaires (en milliers de FCFA)

Largeur Plateforme	431km en 7m	152km en 7m	459km en 7m	409km en 6/7m 166km en 5m	784km en 6/7m 493km en 5m
Actions d'entretien	As	Classes de répartition des itinéraires An (1)	Bs	C	D
RSA	440	440	440	420	410
RAA	880	880	880	840	820
Réha + Rech	5900	4700	5900	5700	5600

1. 20% des linéaires concernés sont constitués de sols latéritiques naturels

Légende : RSA - Reprofilage Sans Apport
RAA - Reprofilage Avec Apport
Réha + Rech - 5% Réhabilitation et 95% Rechargement

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CENTRAL AFRICAN REPUBLIC

TRANSPORT SECTOR PROJECT

PILOT ACTIONS FOR INFRASTRUCTURE WORKS

One of the objectives of the PST would be, by means of the multiple operations which are to be employed and which will constitute very diversified achievements, to best develop the research, study, experimentation and development of appropriate technologies, with precise evaluation of their costs, taking into account the technical possibilities, the skills of the various agents involved in the infrastructure sector and the socioeconomic conditions.

In addition, these pilot actions should help in the development of the medium-sized and small enterprises and of small independent contractors, as well as of their practical training in working according to the rules of the art and controlling their costs.

The non-exhaustive list for these pilot actions would include:

(i) for the knowledge, the surveying, the management of systems of asphalt highways, earth roads and rural earth roads, the creation of a highway data bank;

(ii) for the maintenance of the asphalt system, the technologies relating on the one hand to preservation of the travelable surfaces (sealing of cracks, cold mix for filling in potholes and small crack plugging, wearing surfaces of hot mix of medium and small thicknesses,...) and on the other hand to vegetation control (application of chemical products,...);

(iii) for the improvement of the permanence of earth roads and of roads at their critical points, the technologies of:

- studding of the travelable surfaces by means of stony materials of different sizes in the inclines or in areas subject to erosion;
- sanding of traveled surfaces that are too slippery;
- stabilization with sand of natural gravel sections that are too plastic;
- chemical stabilization of the materials of surface courses in steep inclines, which are seats of erosion phenomena;
- chemical stabilization of embankments in the vicinity of civil engineering works;
- special treatment of embankments for spanning zones of compressible and swampy soils;

- utilization of erosion control devices for the preservation of currents and hydraulic sections of ditches, diversions and surface drainage works (studding, pitching, protection by fascines, wattling, "stilling" basins, storm ditches,...); and

- use of termitary earths for the surface courses of certain roads;

(iv) for some highways and rural roads, for drainage works and civil engineering works, the technologies of intensive use of wood and local materials adapted to the geomorphological, hydrological and climatic situations of different routes, with the employment, depending on the traffic, of rustic or more elaborate solutions, which are nevertheless always dimensioned to meet the requirements of the structural calculations, by using for the elaborate solutions "pieces of wood" fashioned in industrial manner in sawmills; and

(v) for road mending, the technologies using small-size equipment and equipment that is appropriately chosen as a function of the "size" of the contractors and of the skills of the crews.

The above-mentioned pilot actions would, in their different development stages (research, study, experimentation, development), be initiated by different task forces, which could be named:

-- "Asphalt highways maintenance" task force;

-- "Earth roads permanence stabilization" task force;

-- "Intensive use of wood and local materials for the works" task force; and

-- "Road mending" task force.

The task forces would depend on the TSP coordinator. The members of these groups would be representative of :

-- the Administration, and in particular of the technical ministries (Secretariat to the Plan, Department of Public Works, Department of Rural Development,...);

-- medium-sized and small enterprises and small independent contractors;

-- design agencies participating in the corresponding operations of the TSP;

-- the Public Works Laboratory; and

-- if possible, professors of advanced technical establishments and their students of final classes.

The choice of members being made as a function of the nature of the appropriate technologies.

It would seem logical that, depending on the stages of development of the pilot actions:

-- research and study would be the responsibility of the representative persons of the technical ministers, of the design agency in charge of the operation as prime contractor (in which the pilot action is included) and of the laboratory;

-- experimentation (practical execution of test slabs) would be performed by the enterprise or the small contractor responsible for execution of the operation (in which the pilot action is included), would be initiated by the above-mentioned design agency, and would be tested by the laboratory; and

-- final development and tying everything together would be entrusted to the representatives of the technical ministries, to the enterprises and small contractors and to the laboratory.

Depending on the above-mentioned stages, and per task force:

-- research and study would be preceded by meetings that would lead to an explanatory seminar;

-- experimentation would be crystallized by one or more seminars to discuss results; and

-- final development and tying everything together would be the subject of the final seminar.

Simultaneously for the appropriate technologies, specific subjects would be proposed to the students of university technical schools for their finishing studies, to end in specialized seminars.

All of these seminars, which would be presented to expert technicians and discussed with them in depth, would lead:

-- on the one hand to a final report recapitulating and combining the results of the seminars and discussions;

-- on the other hand to ensure dissemination of these appropriate technologies to a broader audience, to technical conferences. These conferences could have a didactic character and be based on attractive and vivid audiovisual support.

Thereafter, each well mastered appropriate technology would be the subject of detailed technical specifications giving:

-- a vivid and detailed description of the technology;

-- the detailed list of the materiel, equipment and tools;

-- the list of materials and products;

-- the detailed timetable of execution of the jobs;

-- the practical dimensioned execution sketches and the specific dimensioned sketches (for the reinforcing irons);

-- the bill of quantities and estimated costs;

-- the measurements and tests for inspection and receiving;

-- the maintenance operation to be performed for good preservation of the finished work; and

-- the specifications to be introduced into the bidding or into the work contracts.

The planned capital expenditures in the TSP for these pilot actions would be 30.000.000 CFAF for each year during the three-year period from 1991 to 1993, i.e., 90.000.000 CFAF.

The planned capital expenditures in the TSP for the seminars would be:

-- 75.000.000 F CFA for preparation;

-- 20.000.000 for the 3 year support.

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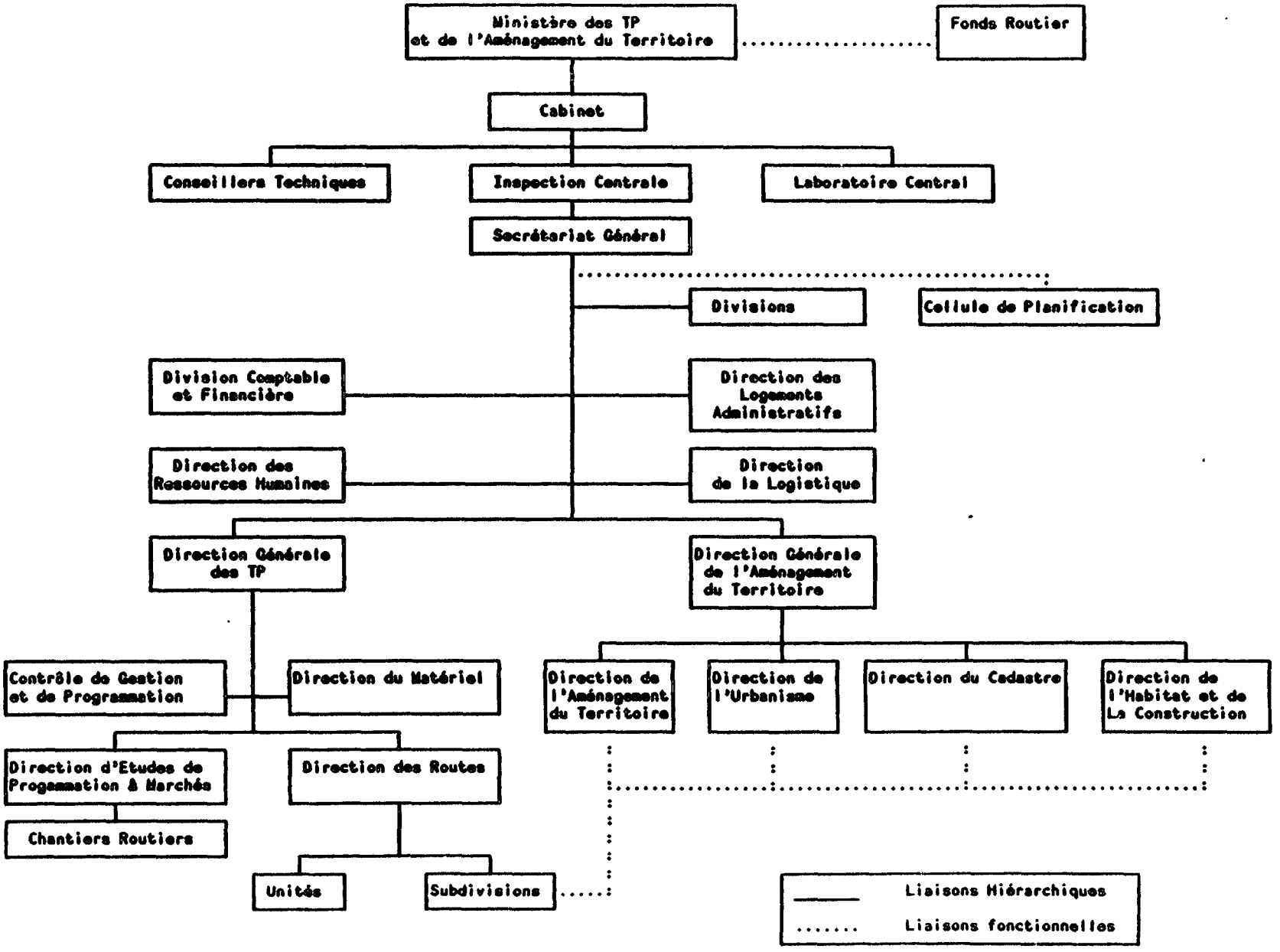
ANNEX 4 - 9

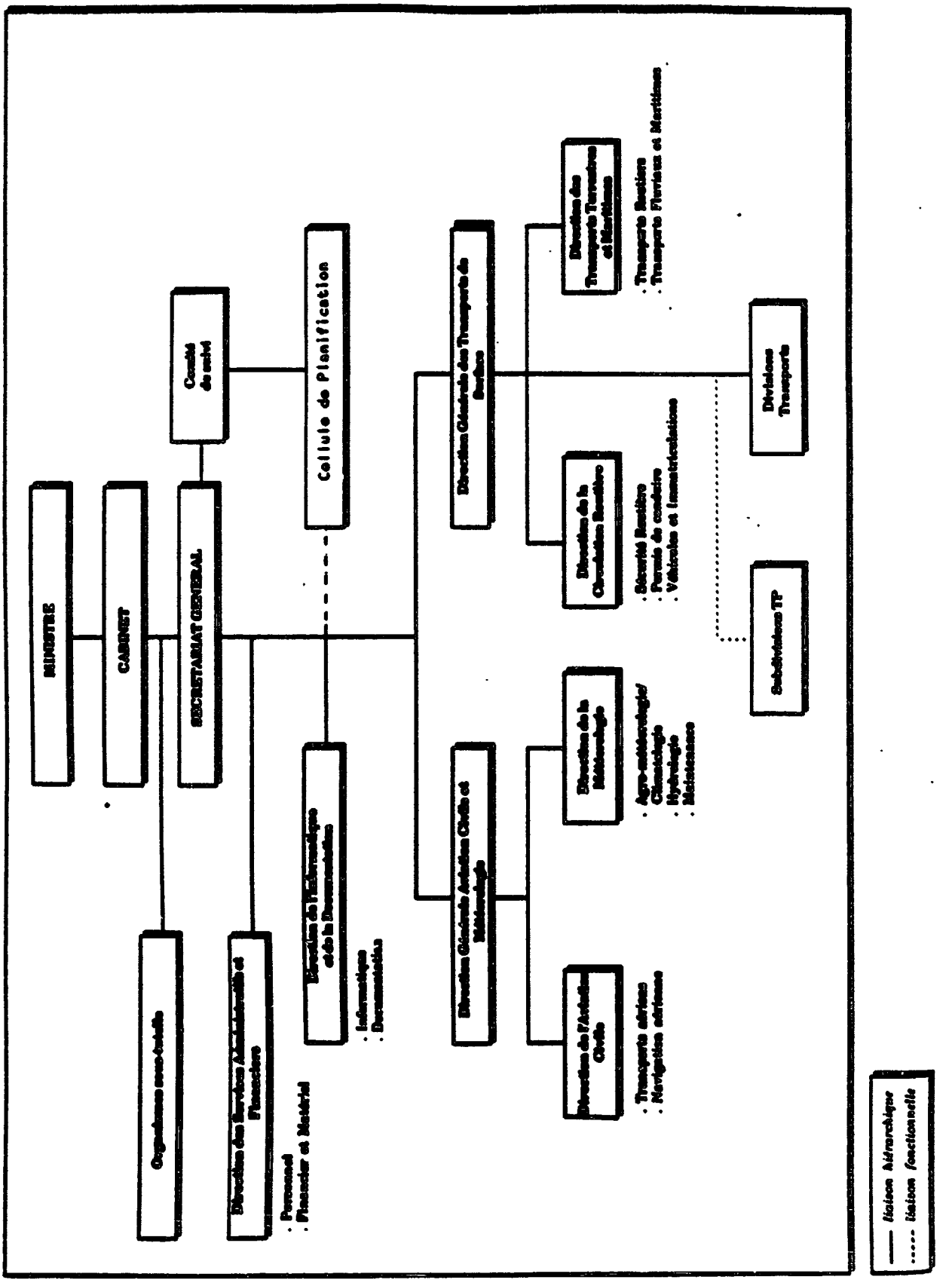
CENTRAL AFRICAN REPUBLIC
TRANSPORT SECTOR PROJECT
TECHNICAL ASSISTANCE PROGRAM

INSTITUTION AND EXPERTISE	MANMONTHS	UNIT COST	TOTAL
		CFAF '000	
MTPAT			
REHABILITATION AND MAINTENANCE COMPONENT			
PROGRAMMING SPECIALIST	50	4300	215000
STUDY AND MONITORING SPECIALIST	50	4300	215000
SUPERVISION SPECIALIST	50	4300	215000
PROCUREMENT SPECIALIST	3	5000	15000
FEEDER ROADS SPECIALIST	50	4300	215000
SUB-TOTAL			875000
TRAINING CENTER			
TRAINING AND PERSONNEL SPECIALIST	50	4300	215000
TRAINING ASSISTANT	30	1500	45000
PREPARATION SEMINARS	15	5000	75000
SUB-TOTAL			335000
PRIVATIZATION			
MANAGEMENT EXPERT OPPER	30	5000	150000
ROAD CONSTRUCTION TRAINER	20	4000	80000
MAINTENANCE SUPERVISER	36	1500	54000
CHIEF MECH ENGINEER WORKSHOP	50	5000	250000
MECHANICAL TECHNICIANS (2X)	100	4300	430000
TRAINERS (2X)	20	4300	86000
ACCOUNTING SUPERVISION	4	3350	13400
SMALL CONSTRUCTION FIRM ASSISTANCE			
FOREIGN EXPERTISE (MAN WEEKS)	12	1250	15000
LOCAL EXPERTISE (MAN WEEKS)	36	100	3600
PROMOTIONAL STUDIES			10000
SUB-TOTAL			1092000
ROAD FUND			
ADMINISTRATOR	50	5000	250000
CONTROLLER	50	4300	215000
ASSISTANT CIVIL ENGINEER	30	1500	45000
COMPUTER TRAINER	3	6400	19200
			529200
MTAC			
SOCATRAF (11 MECHANICS)	240	3500	840000
RIVER MAINTENANCE (SCEVN)	170	3500	595000
BARC ADVISER	10	4000	40000
ROAD SAFETY SPECIALISTS	12	4500	54000
AND EDUCATION PROGRAM	5	3500	17500
			1546500
PLANNING CELL			
PROJECT COORDINATOR	50	5000	250000
COMPUTER SPECIALIST	12	4300	51600
PLANNING TRAINING	12	3350	40200
SUPERVISION TRAINING	12	3350	40200
SUB-TOTAL			382000
TOTAL			4759700

Le Nouvel organigramme proposé



Organigramme proposé



Central African Republic
Transport Sector Project
Project Cost Summary

	FCFA 000			US$ 000			% Total	
	Local	Foreign	Total	Local	Foreign	Total	% Foreign Exchange	Base Costs
A. Road Works								
1. Paved Roads	4225950.8	6646136.2	10872087.0	14086.5	22153.8	36240.3	61.1	29.9
2. Graveled Roads	5704520.0	8038665.0	13743185.0	19015.1	26795.5	45810.6	58.5	37.8
3. Feeder Roads	714360.0	1046340.0	1760700.0	2381.2	3487.8	5869.0	59.4	4.8
4. Critical Points	360000.0	540000.0	900000.0	1200.0	1800.0	3000.0	60.0	2.5
Sub-Total	11004830.8	16271141.2	27275972.0	36682.8	54237.1	90919.9	59.7	75.1
B. Aviation								
1. Air Transport	48458.0	103392.0	151850.0	161.5	344.6	506.2	68.1	0.4
2. Meteorology	22500.0	67500.0	90000.0	75.0	225.0	300.0	75.0	0.2
Sub-Total	70958.0	170892.0	241850.0	236.5	569.6	806.2	70.7	0.7
C. Privatization								
1. Workshop	229540.0	849860.0	1079400.0	765.1	2832.9	3598.0	78.7	3.0
2. SME Support	56310.0	330890.0	387200.0	187.7	1103.0	1290.7	85.5	1.1
Sub-Total	285850.0	1180750.0	1466600.0	952.8	3935.8	4888.7	80.5	4.0
D. Institutional Support								
1. MTPAT Support	444975.0	2301325.0	2746300.0	1483.2	7671.1	9154.3	83.8	7.6
2. Planning Cell Support	69420.0	401580.0	471000.0	231.4	1338.6	1570.0	85.3	1.3
3. MTAC Support	288015.0	1689885.0	1977900.0	960.0	5632.9	6593.0	85.4	5.4
Sub-Total	802410.0	4392790.0	5195200.0	2674.7	14642.6	17317.3	84.6	14.3
E. Studies & Pilot Actions								
1. Studies	318600.0	1274400.0	1593000.0	1062.0	4248.0	5310.0	80.0	4.4
2. Pilot Actions	143250.0	396750.0	540000.0	477.5	1322.5	1800.0	73.5	1.5
Sub-Total	461850.0	1671150.0	2133000.0	1539.5	5570.5	7110.0	78.3	5.9
Total BASELINE COSTS	12625898.8	23686723.2	36312622.0	42086.3	78955.7	121042.1	65.2	100.0
Physical Contingencies	1052178.6	1685141.4	2737320.0	3507.3	5617.1	9124.4	61.6	7.5
Price Contingencies	744226.5	1815592.9	2559819.4	2480.8	6052.0	8532.7	70.9	7.0
Total PROJECTS COSTS	14422303.9	27187457.5	41609761.4	48074.3	90624.9	138699.2	65.3	114.6

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Central African Republic
Transport Sector Project
Summary Account by Project Component
FCFA 000

	Paved Roads	Graveled Roads	Feeder Roads	Critical Points	Air Transport	Meteorology	Workshop	SME Support	MTPAT Support	Planning Cell Support	MTAC Support	Studies	Pilot Actions	Total	Physical Contingencies %	Physical Contingencies Amount	Price Contingencies %	Price Contingencies Amount
I. INVESTMENT COSTS																		
A. Civil Works	10268047.0	12762270.0	1624588.0	900000.0	121640.0	0.0	0.0	0.0	48059.0	0.0	0.0	0.0	0.0	25716457.0	9.1	2335184.0	7.2	1850303.7
B. Equipment	0.0	0.0	0.0	0.0	25200.0	90000.0	300000.0	17000.0	369350.0	14000.0	427500.0	0.0	341000.0	1588200.0	0.0	138598.0	5.5	88613.7
C. Technical Assistance																		
1. Local Consultancy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3000.0	0.0	0.0	0.0	0.0	0.0	3000.0	0.0	0.0	5.4	195.9
2. International Experts	0.0	0.0	0.0	0.0	0.0	0.0	766000.0	275000.0	1748000.0	381000.0	1448000.0	0.0	0.0	4522000.0	0.0	0.0	7.5	341164.0
3. Short Term Consultancy	0.0	0.0	0.0	0.0	0.0	0.0	13400.0	25200.0	200000.0	68200.0	0.0	0.0	72000.0	488800.0	0.7	3660.0	7.7	37461.9
4. Fellowships	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38400.0	96000.0	0.0	38400.0	0.0	0.0	172800.0	0.0	0.0	6.9	11892.7
Sub-total	0.0	0.0	0.0	0.0	0.0	0.0	779400.0	342200.0	2126000.0	589000.0	1478400.0	0.0	72000.0	5187000.0	0.1	3660.0	7.6	390764.5
D. Studies & Supervision	631500.0	416000.0	111000.0	0.0	5010.0	0.0	0.0	10000.0	48200.0	48200.0	0.0	1593000.0	0.0	2748910.0	6.1	167370.5	5.9	161678.0
E. Miscellaneous	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20000.0	0.0	57000.0	0.0	127000.0	204000.0	3.1	6350.0	6.4	13825.5
Total INVESTMENT COSTS	10799547.0	13178270.0	1735588.0	900000.0	151850.0	90000.0	1079400.0	369200.0	2594509.0	444000.0	1962900.0	1593000.0	540000.0	35488167.0	7.5	2651074.5	7.1	2502525.4
II. RECURRENT COSTS																		
A. Equipment O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10000.0	151000.0	27000.0	15000.0	0.0	0.0	211000.0	9.4	19900.0	6.8	14334.9
B. Road Manual Maintenance	72540.0	564915.0	25200.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	662655.0	10.0	66265.5	6.5	42959.1
Total RECURRENT COSTS	72540.0	564915.0	25200.0	0.0	0.0	0.0	0.0	10000.0	151000.0	27000.0	15000.0	0.0	0.0	874655.0	9.9	86245.5	6.6	57294.0
Total BASELINE COSTS	10872087.0	13743185.0	1760788.0	900000.0	151850.0	90000.0	1079400.0	397200.0	2745509.0	471000.0	1977900.0	1593000.0	540000.0	36362822.0	7.5	2737320.0	7.0	2559819.4
Physical Contingencies	856899.0	1374318.5	176078.0	90000.0	7592.5	9000.0	30000.0	4000.0	58020.0	3510.0	44250.0	56756.0	27000.0	2737320.0				
Price Contingencies	798787.4	974646.7	126784.0	67499.6	6199.1	2252.2	83349.8	25251.9	197208.8	36529.8	152983.6	74127.7	34941.5	2559819.4	7.3	186643.7		
Total PROJECT COSTS	12527683.4	16091550.2	2063474.0	1057499.6	165641.6	101252.2	1192749.8	416451.9	3001588.8	511039.3	2155883.6	1723877.7	601941.5	41699781.4	7.0	2923963.7	6.2	2559819.4
Taxes	1760259.7	1296987.9	164197.4	84888.0	21171.8	0.0	42242.8	24675.7	141246.0	38994.8	68213.4	98193.9	21116.8	3745179.0	7.4	278035.7		
Foreign Exchange	7748989.7	9478696.8	1234585.3	638859.1	118198.8	70869.1	941814.4	355258.8	2516374.8	435743.7	1639858.7	1381865.7	448881.5	27167457.5	6.7	1810882.4		

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Central African Republic
Transport Sector Project
Summary Accounts by Year

	Totals Including Contingencies FCFA 000				Totals Including Contingencies US$ 000			
	1991	1992	1993	Total	1991	1992	1993	Total
I. INVESTMENT COSTS								
A. Civil Works	10728005.1	9436097.4	9737222.3	29901924.7	35760.0	31455.7	32457.4	99673.1
B. Equipment	903909.7	713278.9	191015.1	1808203.7	3013.0	2377.6	636.7	6027.3
C. Technical Assistance								
1. Local Consultancy	1221.0	1263.7	1311.2	3795.9	4.1	4.2	4.4	12.7
2. International Experts	1763581.7	1154846.1	2085336.2	4863764.0	5878.6	3849.5	6884.5	16212.5
3. Short Term Consultancy	175075.3	145145.9	209630.7	529851.9	583.6	483.8	698.8	1766.2
4. Fellowships	72098.9	54966.5	57627.3	184692.7	240.3	183.2	192.1	615.6
Sub-Total	1951976.9	1356222.2	2273905.4	5582104.5	6506.6	4520.7	7579.7	18607.0
D. Studies & Supervision	1615647.6	747603.5	712907.4	3076158.5	5385.5	2492.0	2376.4	10253.9
E. Miscellenous	82308.0	80302.0	60765.5	223375.5	274.4	267.7	202.6	744.6
Total INVESTMENT COSTS	15281847.2	12334104.0	12975815.7	40591766.9	50939.5	41113.7	43252.7	135305.9
II. RECURRENT COSTS								
A. Equipment OMC	78802.4	81950.5	85362.0	246114.9	262.7	273.2	284.5	820.4
B. Road Manual Maintenance	247516.4	255796.0	268567.2	771879.6	825.1	852.7	895.2	2572.9
Total RECURRENT COSTS	326318.8	337746.5	353929.2	1017994.5	1087.7	1125.8	1179.8	3393.3
Total PROJECT COSTS	15608165.9	12671850.6	13329744.9	41609761.4	52027.2	42239.5	44432.5	138699.2

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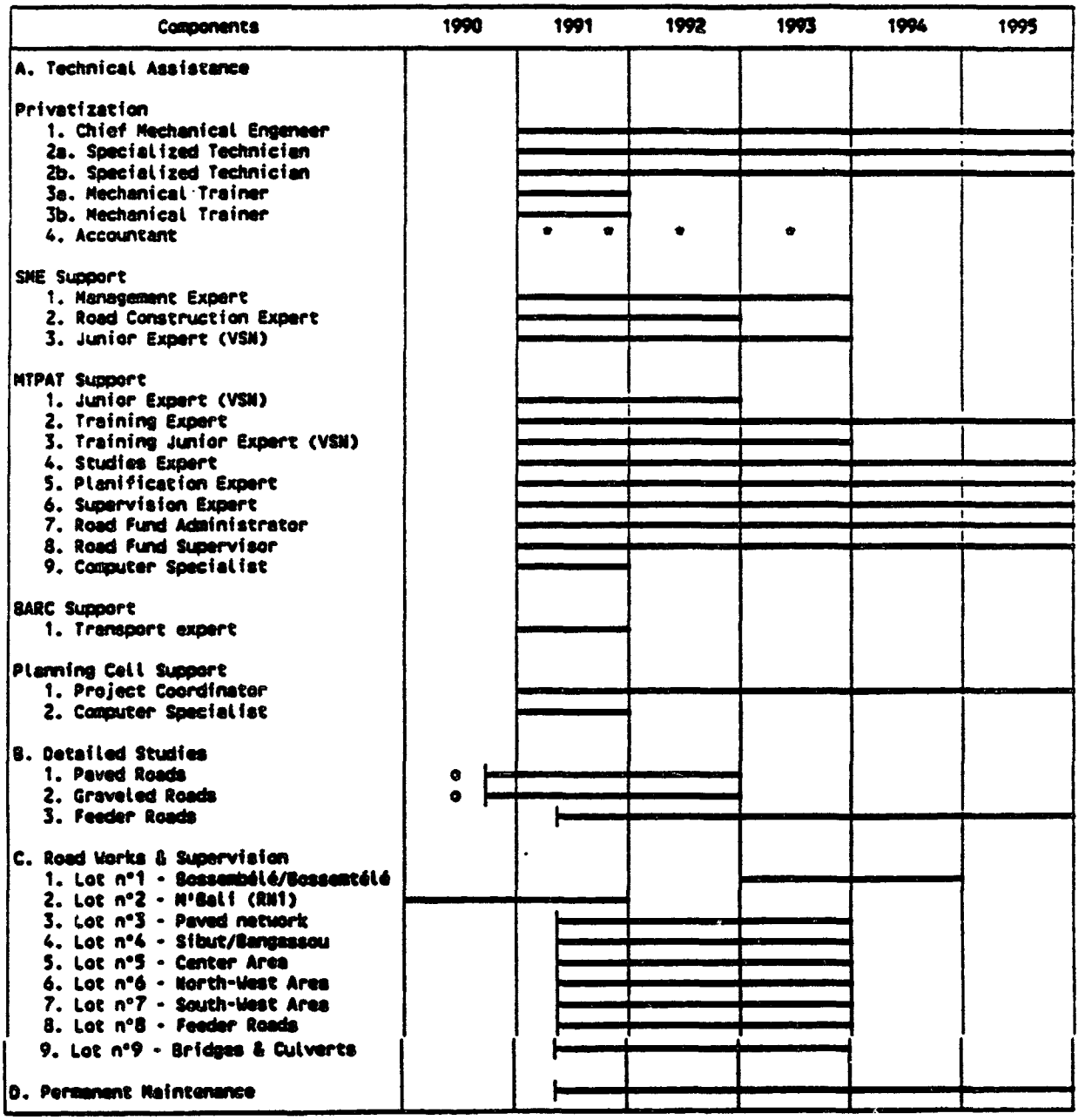
CENTRAL AFRICAN REPUBLIC

TRANSPORT SECTOR PROJECT

Implementation Schedule



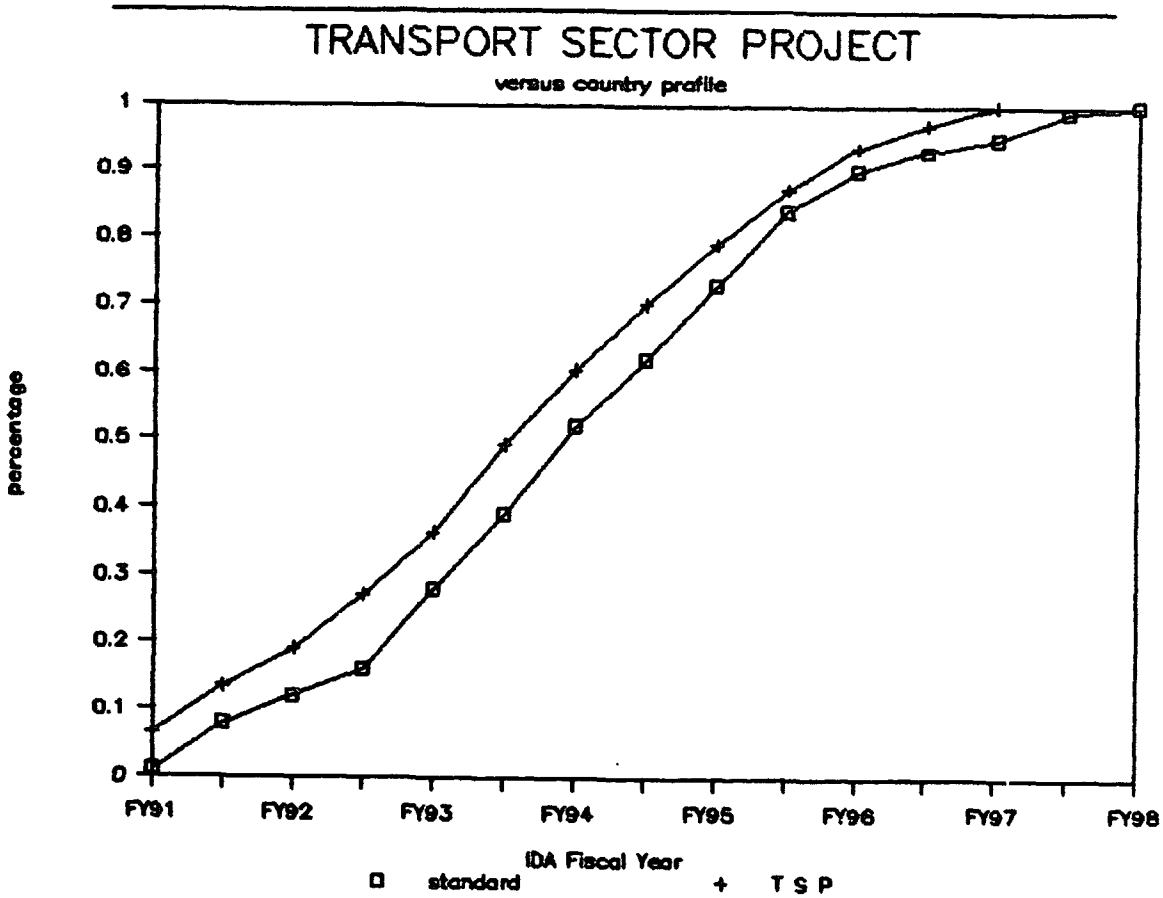
o International Competition Bidding

CENTRAL AFRICAN REPUBLIC

TRANSPORT SECTOR PROJECT

Disbursement Profile

IDA's FY	FY Semesters US$ Million	Cumulative US$ Million	Cumulative %	Standard Disbursement Country Profile %
FY91	4.00	4.00	0.06	0.01
	4.30	8.30	0.13	0.08
FY92	3.50	11.80	0.19	0.12
	5.00	16.80	0.27	0.16
FY93	5.70	22.50	0.36	0.28
	8.00	30.50	0.49	0.39
FY94	7.00	37.50	0.60	0.52
	6.00	43.50	0.70	0.62
FY95	5.50	49.00	0.79	0.73
	5.00	54.00	0.87	0.84
FY96	4.00	58.00	0.94	0.90
	2.20	60.20	0.97	0.93
FY97	1.80	62.00	1.00	0.95
				0.99
FY98				1.00



Including rapid disbursing componentfor RN1 M'Bali reconstruction works (US$5.3 M during 1990-91; and US$1.5 M PPF refinancing at Credit effectiveness).

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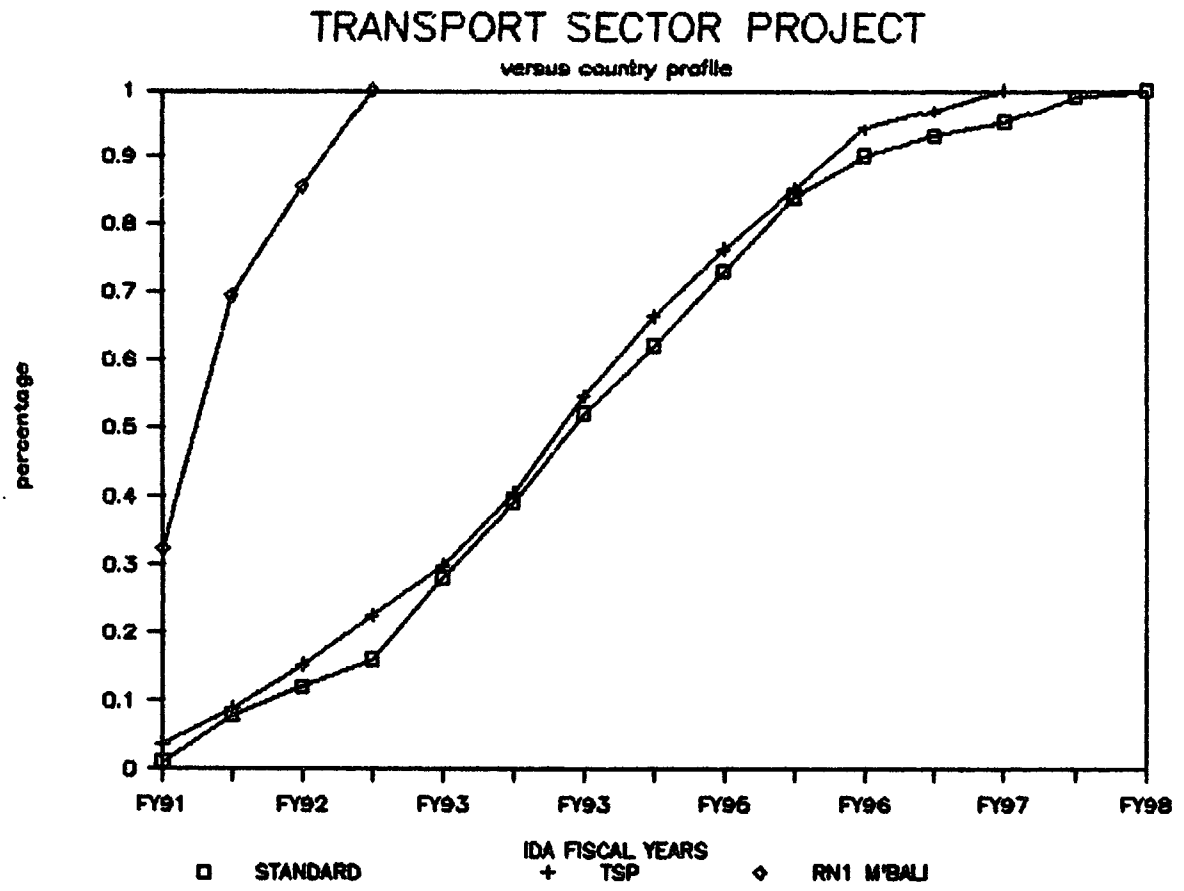
March 27, 1990

CENTRAL AFRICAN REPUBLIC

TRANSPORT SECTOR PROJECT



TSP disbursement profile excluding rapid disbursing component for RN1 M'Bali works.

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March 27, 1990

CENTRAL AFRICAN REPUBLIC

TRANSPORT SECTOR PROJECT

ROAD FUND FINANCING

I. REVENUES OF THE ROAD FUND

On the basis of the audited financial statements of 30 September 1987 and of 31 December 1988, it turns out that the Fonds Routier (Road Fund) is in a deficit situation (240 million CFAF in 1987 and 5.9 billion in 1988) due mainly to insufficient revenue allocated to cover the current operating expenses. The 87 deficit does not include provisions for major repairs or for replacement, whereas these two provisions are included in 88. To remedy this situation, which ultimately would risk compromising the realization of objectives assigned to the Road Fund at the time of its establishment, an increase of revenues is proposed which does not necessitate, under the present economic conditions, raising the price of fuel at the pump. This increase would lead to the following revenue levels: 2.1 billion in 1990, 2.2 in 1991, 2.4 in 1992 and 2.7 billion in 1993. If these objectives were to be attained, the Road Fund would be able to cover its operating expenses for the period in question (1990-93). These expenses should be understood in the broad sense, i.e., including amortization of the Road Fund capital assets and provision for replacement of the equipment stock. The establishment of this provision is justified by the needs for equipment necessary for maintaining a force account crew for repair of critical road sections as well as a crew for regrading operations. While changing from work under force account to work by contractor during the Transport Sector Project (TSP), the two above-mentioned crews will be maintained to permit the Road Fund to continue some activity under force account on highways, civil engineering works and ferries. This provision has been calculated on the basis of the replacement value of the stock at the end of 1989 (estimated as 1.8 billion CFAF) and taking into account the average remaining useful life from that date (5 years).

II. HIGHWAY FUND AND HIGHWAY TAXATION

The revenue levels mentioned in Chapter I would not be attained without a progressive increase of user fees, since it is understood that macroeconomic forecasts indicate very small variations in the volume of fuel consumed relative to the 1989 level. Under these conditions, it is planned to transfer part of the stabilization tax to the Road Fund. If this transfer should become effective, user fees for the 90-93 period should then be understood as over and above the stabilization tax.

In order to compensate the reduction of the fiscal resources that would result from such a transfer, it would be advisable to institute appropriate

highway taxation measures intended to increase Government revenues, which measures could include an increase in the vehicle tax.

III. PROGRESSIVE FINANCING BY THE MTPAT BUDGET OF EXPENSES FINANCED BY THE ROAD FUND AND NOT RELATED TO UPKEEP AND MAINTENANCE

The audit reports for the periods ending 30 September 1987 and 31 December 1988 indicated that the resources of the Road Fund had been used to finance fuel, salary, upkeep and repair expenses of vehicles that are not related to highway upkeep and maintenance. These non-maintenance related expenses were identified during appraisal. They rose to about 146 million CFAF in 1988 (12 months) and are estimated at about 150 million CFAF for 1989. For 1990, projections suggest an amount of 144.55 million CFAF, which would have to be absorbed by the national budget. Of this amount, 112.55 million CFAF was determined on the basis of the three following criteria: the capacity of the Government budget to absorb the expenses in question, the comparison of the expenses with expenses of the same nature committed by other ministries, and the specificities peculiar to MTPAT. The difference of 32 million CFAF concerns building maintenance (15 million CFAF), maintenance of equipment and office equipment (10 million) and purchase of equipment and office equipment (7 million CFAF), which in principle should be taken from the Government budget starting in 1990. It has been assumed that the projected amount of 112.5 million CFAF would serve as the basis for determining the share of expenses to be financed by the MTPAT budget. Consequently, on the basis of discussions with officials of the Road Fund on the one hand and of the Ministries of Economy and Finance and of MTPAT on the other hand, it is recommended that financing by the budget of MTPAT be effected progressively from now to the end of 1993 in the following manner:

Heading	Total amount 90, thousands of CFAF	Amount of price/account per MIPAT budget Additional 90	Amount of price/account per MIPAT budget Additional 91	Addition in 1992	Addition in 1993
Operating fuel	30.000				30.000
Trip fuel	14.000			14.000	
Operating lubricant	4.500				4.500
Trip lubricant	2.100			2.100	
Vehicle parts	9.000		9.000		
Vehicle repairs	4.000		4.000		
Office supplies	8.750		8.750		
Building location	8.900	8.900			
Rents	9.300	9.300			
Brief trip	5.000		5.000		
Prolonged trip	2.000		2.000		
Building miscellaneous	15.000			15.000	
TOTAL	112.550	18.200	28.750	31.100	34.500
Building mainten.	15.000	15.000			
Office equip. and hardware mainten.	10.000	10.000			
Purchase of hardware and office equip.	7.000	7.000			
Grand total	144.550	50.200	28.750	31.100	34.500
Annual addition		50.200	28.750	31.100	34.500
Cumulative addition		50.200	78.950	110.050	144.550

CENTRAL AFRICAN REPUBLIC

TRANSPORT SECTOR PROJECT

Road Fund Income Statements (CFAF millions)

	F Routi 15 mois 1988	Bdg MTPAT 15 mois 1988	F Routi 12 mois 1988	Bdg MTPAT 12 mois 1988	F Routi 1989	Bdg MTPAT 1989	F Routi 1990	Partie Finances/ MTPAT 90	F Routi 1991	Partie Finances/ MTPAT 91	F Routi 1992	Partie Finances/ MTPAT 92	F Routi 1993	Partie Finances/ MTPAT 93
REVENUES														
Petroca	2172000		1737600		1750000		2100000		2200000		2400000		2600000	
Other	38000		30400		35000		42000		44000		48000		52000	
Total Revenues	2210000		1768000		1785000		2142000		2244000		2448000		2652000	
EXPENSES														
Carburant Fonctionnement	356019	13000	284815	10400	332542	35504	349169	30000	356152	30000	363275	30000	370541	0
Carburant Mission	60169	29090	48135	18472	59100	715	62055	14000	63296	14000	64562		65853	
Lubrifiant	64987	2678	51974	2142	68949		70297	6600	71703	6600	73137	4500	74599	0
Pieces Engins	31610	101	25288	81	101854		106737		108872		111049		113270	
Pieces Vehicules	149327	36090	119462	28872	80720	11333	84756	9000	86452		88181		89944	
Pieces Machines-Outils	1565	1737	1252	1390	2878	120	3021		3082		3144		3206	
Fournitures Ateliers	6740	8	5392	6	9218	30	9670		9873		10070		10272	
Pieces Pour Baca	7830		6264	0	4789		5029		5129		5232		5336	
Lots de Bord	6510	2605	5208	2084	2892	452	3037		3097		3159		3222	
Pneumatiques	17283	488	13826	390	73276	5658	76939		78478		80048		81649	
Batteries	10659	29	8527	23	9951	195	10459		10668		10882		11099	
Reparations engins	6175	187	4940	150	5272		5535		5646		5759		5874	
Reparations vehicules	29598	11794	23678	9435	35870	9590	37684	4000	38417		39168		39969	
Fournitures Materx	102242	4548	81794	3638	87046	20	91398	0	93228		95090		96902	
Acquisition Voitures			0	0	0		0		0		0		0	
Acquisition Outillage	16547	2612	13238	2090	12684	21	13297	7000	13563		13834		14111	
Entretien Installation	24314	1853	19451	1482	11688	3276	12272	0	12518		12768		13024	
Entretien Materiel de Bureau	7538	6785	6030	5428	7373	2557	7741	10000	7896		8054		8215	
Marche OPPER	398800		318880	0	140532		147559		150510		153520		156590	
Remboursement Factures	7120		5696	0	21038		22090		22532		22983		23442	
Fournitures Bureaux	28571	10289	22857	8231	43900	9123	46095	8750	47016		47957		48916	
Etudes Informatiques	3497		2798	0	5443		5715		5830		5946		6065	
Entretien Immobilier	12736	3067	10189	2454	8802	2601	9242	15000	9427		9615		9808	
Location Immobiliere	1498		1198	0	7530	7530	7907	8900	8065		8226		8390	
Charges Locatives	13826	166	11061	133	8766	8766	9204	9300	9388		9576		9768	
Autres Charges Diverses	36897	7224	29518	5779	52237	3722	54849		55946		57065		58206	
Permanents Base	207345	1516	165876	1213	138306	11000	145221	0	148126		151088		154110	
Permanents Baca	33101		26481	0	47844		50026		51026		52047		53088	
Rappel Salaires BaseB	3504		2803	0	4064		4268		4353		4440		4529	
Rappel Salaires Baca	223		178	0	821		862		879		897		915	
Temporaires Entretien Routier	28110		22488	0	44174	228	46383		47311		48257		49222	
Temporaires Baca			0	0	265		278		284		290		296	
Temporaires Barrage Pluie	23732		18986	0	19587		20565		20956		21376		21803	
Temporaires Comptage Routier	583		466	0	998		1048		1069		1091		1112	
Rappel Temporaires Routier	2315		1852	0	3326		3493		3563		3634		3707	
Rappel Temporaires Baca	1070		856	0	94		98		100		102		104	
O.C.S.S.	56725		45380	0	54889		57634		58788		59962		61161	
Indemnites	45654	7008	36523	5606	9256	120	9718		9913		10111		10313	
Mission courte duree			0	0	4040	510	4242	5000	4327		4414		4502	
Mission longue duree			0	0	5852	78	6145	2000	6268		6393		6521	
Indemnites Formateurs			0	0	1150	1150	1207		1231		1256		1281	
Indemnites Loyer			0	0	300		315		321		328		334	
Prime de fonction a_/			0	0	29574	876	31053		31674		32307		32953	
I.F.P.P.	10975		8780	0	9960		10458		10667		10881		11098	
Frais Tenue des Comptes	124		99	0	314	59	330		337		343		350	
ULE/FAC	70527		56422	0	10512		11038		11258		11484		11713	
UERBQ/FAC	93169		74535	0	10800		11340		11567		11798		12034	
Biens et Services Consommes	24962		19970	0	72		76		77		79		80	
Reparations	41205		32964	0	151		159		162		165		168	
Caisse d'avance			0	0	20701		21736		22171		22614		23067	
Aides et Secours Divers	2732	584	2186	467	1705	648	1790		1826		1863		1900	
Assurances	1604	413	1283	330	6581	210	6910		7048		7189		7333	
Frais de Reception	1572	1215	1258	972	2048	83	2151		2194		2238		2282	
				0		0		0		0		0		0
Hors Program Entreti Routi b_/	116782	4771	93426	3817	53720	647	56406		57535		58685		59859	
Divers c_/	42712	38658	34170	30926		33000	0	15000	0	15000	0		0	
TOTAL	2210564	182516	1768451	146013	1673027	150019	1756578.	144550	1791811.	65600	1827648	34500	1864201	0
CASH FLOW	-564		-451		111973		385322		452188		620352		787799	
Amortissements de Biens Propres			-32000		-32000		-32000		-32000		-32000		-32000	
Provision Pour Renouvellement			-360000		-360000		-360000		-360000		-360000		-360000	
Resultat Net	-564		-392451		-280027		-6678		60188		228352		395799	
Part annuel finance par MTPAT sur 145 millions de FCFA								50200		28750		31100		34500
Cumul Part annuel finance par MTPAT sur 145 millions de FCFA								50200		78950		110050		144550

a_/ includ unditenfied(270,271)
b_/ Operation Jaguar
c_/ Budget MTPAT 1989: Including 112,261 A262 unidentified due to insufficient analytical accounting system
c_/ Budget MTPAT 1990: Including renewal of fixed assets
c_/ Budget MTPAT 1988: Including Chalet de Mobaye, Fete des Moissons et Fete du 1er Decembre

CENTRAL AFRICAN REPUBLIC

TRANSPORT SECTOR PROJECT

Collection of Tax ("Vignette") on Vehicles
Collections of Bangui Tax Office - Year 1989

Categories	Amount CFCA[1/]	Number tax sold	Number of vehicles taxed (estimate)	Collection Rate[2/]
A (less than 4 HP)	15.000	236	1.000	23,60 %
B (4 to 7 HP)	20.000	1.675	1.800	93,10 %
C (8 to 10 HP)	40.000	1.331	1.600	83,20 %
D (11 to 12 HP)	50.000	492	800	61,40 %
E (13 to 15 HP)	60.000	143	300	47,70 %
F (16 HP and over)	75.000	496	800	62,00 %

1/ 1989 Revenues were about millions of CFAF 160.78 whereas 1988 Revenues amounted to about millions of CFAF 155.3

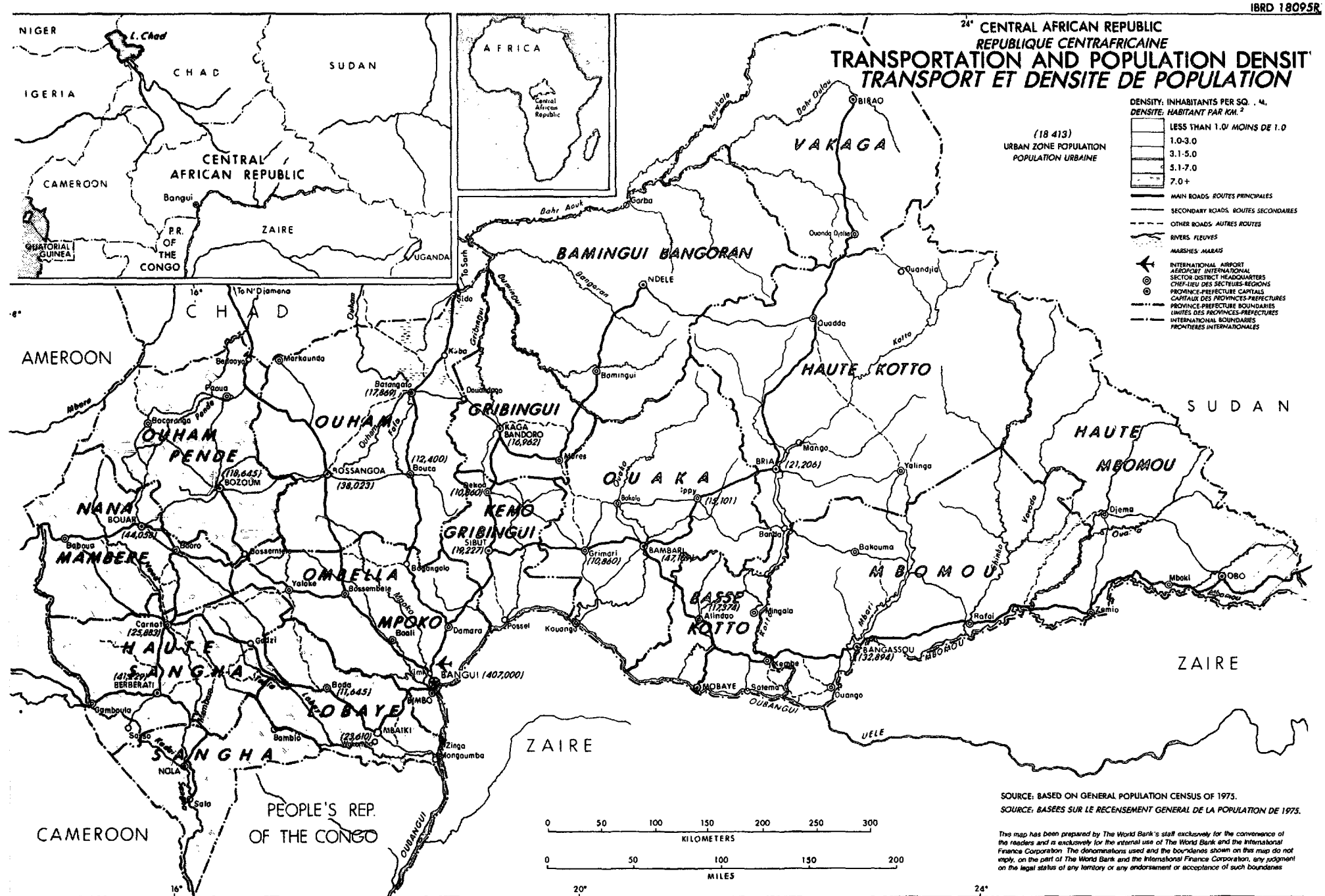
2/ The collection rate for the light vehicles is higher than that for heavy vehicles.

AF1IN
March 29, 1990

MAP SECTION

IBRD 18095R

CENTRAL AFRICAN REPUBLIC
REPUBLIQUE CENTRAFRICAINE
TRANSPORTATION AND POPULATION DENSITY
TRANSPORT ET DENSITE DE POPULATION



SOURCE: BASED ON GENERAL POPULATION CENSUS OF 1975.

SOURCE: BASEES SUR LE RECENSEMENT GENERAL DE LA POPULATION DE 1975.

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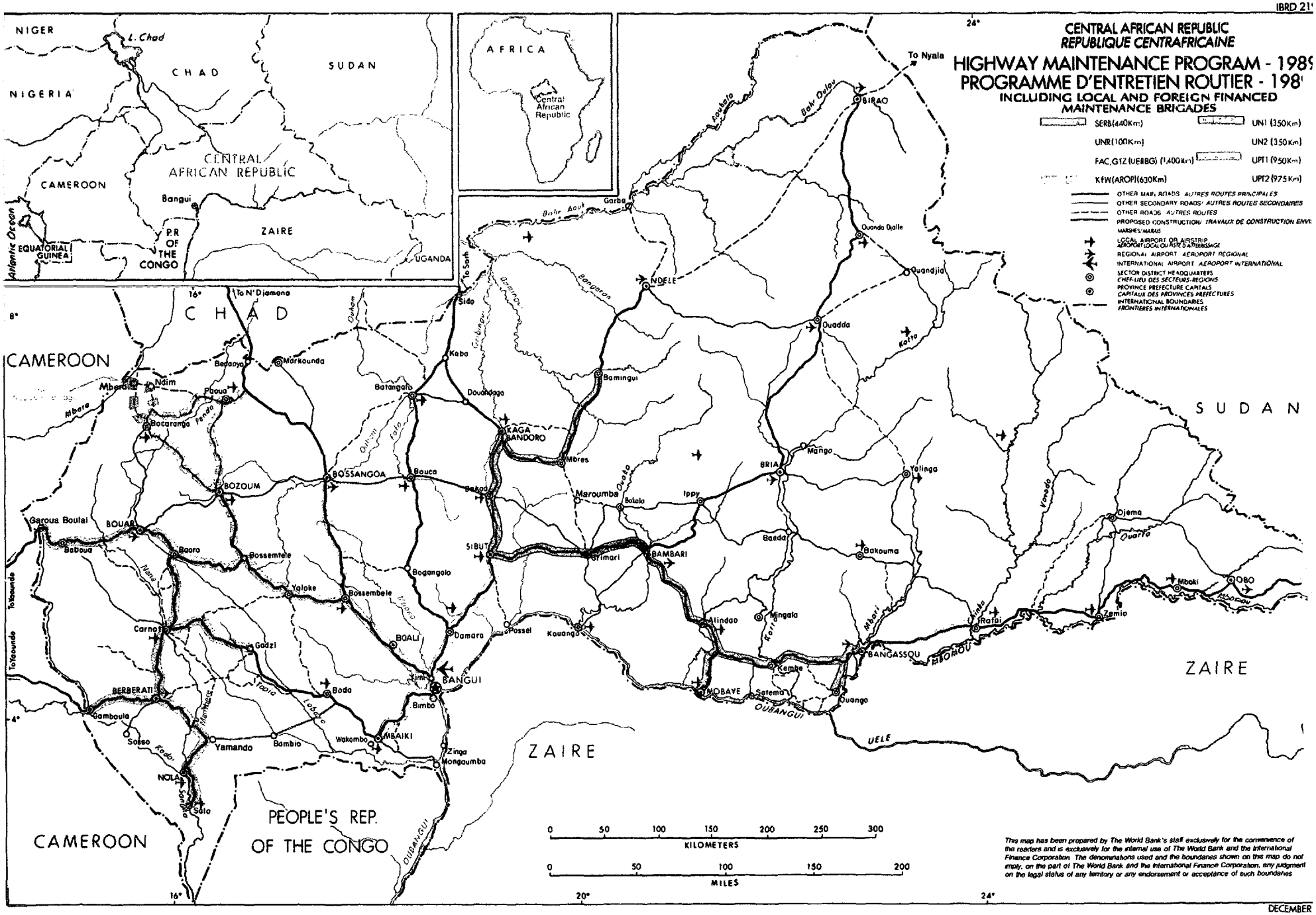
APRIL



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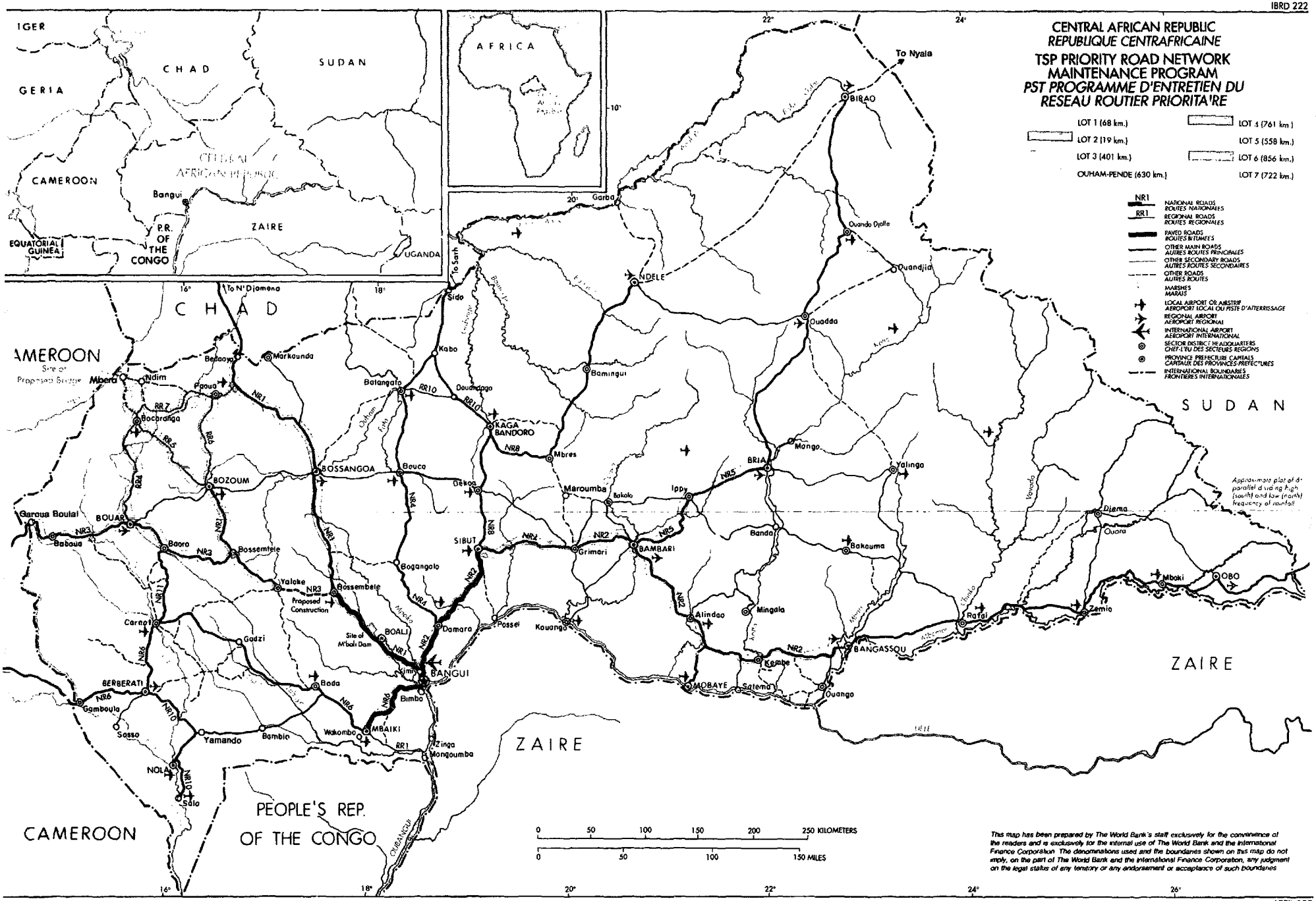
DECEMBER


CENTRAL AFRICAN REPUBLIC
REPUBLIQUE CENTRAFRICAINE
TSP PRIORITY ROAD NETWORK
MAINTENANCE PROGRAM
PST PROGRAMME D'ENTRETIEN DU
RESEAU ROUTIER PRIORITA'RE
LOT 1 (68 km.)
LOT 2 (19 km.)
LOT 3 (401 km.)
OUHAM-PENDE (630 km.)
LOT 4 (761 km.)
LOT 5 (558 km.)
LOT 6 (856 km.)
LOT 7 (722 km.)
NR1 NATIONAL ROADS ROUTES NATIONALES
RR1 REGIONAL ROADS ROUTES REGIONALES
PAVED ROADS ROUTES BITUMEES
OTHER MAIN ROADS AUTRES ROUTES PRINCIPALES
OTHER SECONDARY ROADS AUTRES ROUTES SECONDAIRES
OTHER ROADS AUTRES ROUTES
MARSHES MARAIS
LOCAL AIRPORT OR AIRSTRIP AEROPORT LOCAL OU PISTE D'ATTERRISSAGE
REGIONAL AIRPORT AEROPORT REGIONAL
INTERNATIONAL AIRPORT AEROPORT INTERNATIONAL
SECTOR DISTRICT HEADQUARTERS CHEF-LIEU DES SECTEURS REGIONS
PROVINCE PREFECTURE CAPITALS CAPITAUX DES PROVINCES-PREFECTURES
INTERNATIONAL BOUNDARIES FRONTIERES INTERNATIONALES
AFRICA
CHAD
SUDAN
CAMEROON
ZAIRE
EQUATORIAL GUINEA
UGANDA
P.R. OF THE CONGO
PEOPLE'S REP. OF THE CONGO
To Nyala
BIRAO
NDELE
Ouanda Djalle
Ouandjia
Ouadda
Garba
To Sarh
Sido
To N'Djamena
Kabo
Batangafo
Markounda
Bedaoya
Mbaera
Ndim
Paoua
Bocaranga
Bamingui
KAGA BANDORO
Mbres
BOSSANGOA
Bouca
Dekoa
BOZOUM
Maroumba
Bakala
Ippy
BRIA
Mango
Yalinga
Djema
Ouara
Mboki
OBO
Garoua Boulai
BOUAR
Baboua
Baoro
Bossemtele
Bossembele
Yaloke
Proposed Construction
Carnot
Gadzi
SIBUT
Grimari
BAMBARI
Banda
Bakouma
Bogangolo
Damara
Posse
Kouango
BOALI
Site of M'bali Dam
BANGUI
Boda
Bimbo
Mingala
Alindao
Rafai
Zemio
BANGASSOU
Kembe
MOBAYE
Salema
Ouango
BERBERATI
Gamboula
Sosso
Yamando
Bambio
Wakombo
MBAIKI
N'zinga
Mongoumba
NOLA
Salo
Ouham
Lobaye
Mambere
Kadei
Sangha
Oubangui
Uele
Nana
Kotto
Ouaka
Kemo
Vovodo
Mbomou
Chinko
Approximate plot of 4-parallel during high (south) and low (north) frequency of rainfall
0 50 100 150 200 250 KILOMETERS
0 50 100 150 MILES
16° 18° 20° 22° 24° 26°
10°
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