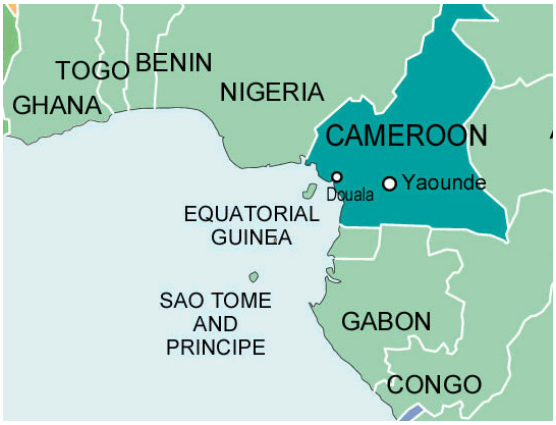
Cameroon

Road Development Project

Report Date: September 2002
Field Survey: March 2002

1. Project Profile and Japan's ODA Loan



Location Map of the Project: Cameroon

A rehabilitated rural road

1.1 Background

The Republic of Cameroon's Fifth Five Year Economic, Social, and Cultural Development Plan, commenced in 1981, allocated approximately 24% of the total amount invested[1] under the plan to agriculture, forestry, and fisheries, which together accounted for approximately one-third of the country's GDP. These three sectors, along with the oil industry, comprised the foundations of the country's economy. In addition to agriculture, forestry, and fisheries, the government considered transport and communications infrastructure to be key factors in the country's development. Of these two, transport sector infrastructure development in particular was emphasized under the fifth five-year plan, and was therefore allocated the second largest share of the total amount invested—after agriculture, forestry, and fisheries—at approximately 18% (see Figure 1).

Given the critical role of road traffic in overland transport, the road sector was accordingly allotted approximately 68%—the highest percentage—of the total assigned to the transport sector under the fifth five-year plan. Domestic road networks in 1982 consisted of a total of 64,000 kilometers, approximately 33,000 kilometers of which was classified as national, state, and provincial infrastructure, and designated as priority road. Roughly 8%, or 2,500 kilometers, of priority roads were paved, while the vast majority remained dirt roads. Accordingly, regular servicing and maintenance was required to ensure that road surfaces were maintained in a manner appropriate to vehicle traffic. There was also an ongoing need for rehabilitation and repair of severely muddied roads, a

1 Figures include public and private investment.

frequent occurrence due to perpetual flooding during the rainy season. The country's repair and maintenance system was, however, lacking in terms of both materials and manpower. In light of these problems, the government of Cameroon declared the enhancement of road maintenance and rehabilitation systems a top-priority issue with regard to the road sector under the fifth five-year plan.

Cameroon has received assistance since 1964 from the World Bank for the development of the country's road sector. In 1979, the Bank provided an 83-million dollar loan for the country's fourth road project, which focused on procurement of road rehabilitation materials and equipment as well as the establishment of a center for related personnel training. However, since this support was sufficient for only a portion of the required rehabilitation, the government of Cameroon requested a Japanese ODA Loan[2] to supplement the World Bank assistance.

Figure 1. Fifth Five-Year Development Plan Investment Breakdown

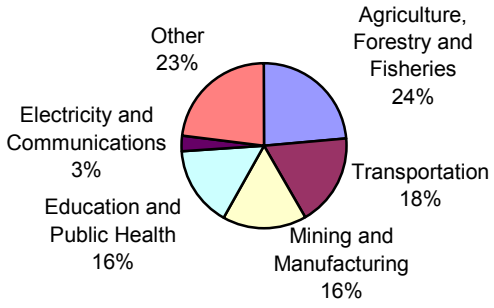
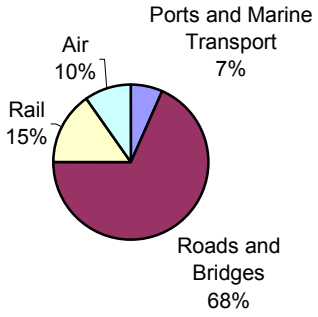


Figure 2. Transport Sector Investment Breakdown



Source: JBIC

1.2 Objectives

To procure the equipment and materials, including construction machinery,

[2] The World Bank supported the enhancement of maintenance and rehabilitation systems for paved roads. The Japanese ODA loan was requested for improvement of such systems for dirt roads.

vehicles, and so on required for the maintenance and rehabilitation of roads, and to carry out related training, in order to elevate maintenance standards of the country's domestic road networks, improve road conditions, and revitalize domestic distribution.

1.3 Project Scope

1. Procurement of the following materials, equipment, and vehicles, as required for an increased number of road rehabilitation work teams

Equipment	Quantity
200-CV bulldozers	8
110-CV bulldozers	7
Motor graders	34
Wheel loaders	5
Tire rollers	8
10-ton dump cars	28
Tank-equipped lorries (sprinkler trucks)	16
Fuel lorries	18
Refueling vehicles	4
Trucks	10
3.5-ton dump cars	64
1.5-ton light trucks	20
Tractor trailers	2
Inspection vehicles	16
Tools (sets)	50

2. Training for machinery maintenance personnel
   The training component of the project consisted of short training sessions covering operations, maintenance, assembly and disassembly, and spare parts control (2-3 weeks, held locally upon delivery of equipment); and extensive training programs designed for mechanics (4-6 months, held in machinery supplier countries).

1.4 Outline of Loan Agreement

Borrower/Executing Agency:

Government of the Republic of Cameroon/Parc National de Material de Genie Civil (PNMGC)

Loan Amount / Loan Disbursed Amount	3,588 million yen / 1,709 million yen
Exchange of Notes / Loan Agreement	January 1983 / June 1984
Terms and Conditions Interest Rate Repayment Period (Grace Period) Procurement	 3.5 % p.a. 30 years (10 years) General United

Final Disbursement Date	January 1990

2. Results and Evaluation

2.1 Relevance

The government of Cameroon deemed the issue of promotion of international and regional trade to be an objective in the national interest, and sought to advance shipments of agricultural and wood products as the country's key commodities. A major obstacle to these goals, however, was the lack of an adequate distribution system. From this standpoint, the issue of road improvement was a critical one, and this project was considered consistent with Cameroon's national development plans. At present, meanwhile, a great number of roads continue to be flooded during the rain season, and while the percentage of paved roads improved from 7.6% in 1982 to 12.3% in 1995, the figure remains low, and the ongoing need for better road maintenance and rehabilitation capability is recognized. Due to liberalization and privatization policies applied to road maintenance and rehabilitation as of the mid-1990s, however, private corporations providing their own construction equipment and materials have become players in the market. This has resulted in a decline in the importance of the role of the Parc National de Matériel de Génie Civil (PNMGC) to procure and/or lease such materials required for road maintenance and rehabilitation.

2.2 Efficiency

2.2.1 Project Scope

Procurement of construction machinery, materials, and equipment was implemented on a scale consistent with the original plan. The training programs for machinery repair personnel, however, were carried out at roughly half the original scale in terms of both duration and cost (see 2.2.3 below).

2.2.2 Project Cost

At appraisal, it was estimated that procurement of construction machinery as well as implementation of training would require the full amount of the Japanese ODA Loan of 3,588 million yen. Costs of both project components, however, amounted to substantially less than estimated (see Table 2). Construction machinery and equipment cost estimates were calculated based on past PNMGC procurement figures, and the gap between projected and actual costs is attributed to severe competition between suppliers in the international competitive bidding process for this particular project. The lower training costs were due to dramatically shortened training periods.

Table 2 Project Cost

Unit: Million Yen

	Plan	Actual	Difference
Materials/Equipment	3,071	1,485.4	-1,585.6
Spare parts	300	134.2	-165.8
Training	200	89.3	-110.7
Reserve Fund	17	-	-
Total	3,588	1,708.9	-1,879.1

2.2.3 Implementation Schedule

Originally scheduled for a period of 16 months, the materials and equipment procurement process, from bidding preparations to completion of procurement, was completed in October 1987, 19 months after it was initiated, with delays resulting from the additional time required for administrative procedures. Though contract costs amounted to less than initial projections, a development attributed to factors related to the international competitive bidding process as mentioned above, complications arose due to the fact that project duration overlapped with the country's sixth five-year development plan (1986-1991): new road maintenance and rehabilitation plans initiated under the sixth plan necessitated additional construction machinery and materials. In light of these circumstances, the Japanese government agreed to extend the period allotted for the use of the loan by approximately 1.5 years to June 1988. Due to delays in procedures for procurement of additional materials and resultant problems with the loan disbursement period, however, the loan was concluded without the additional procurements.

The training component of the project, on the other hand, was completed in just seven months, eleven months ahead of the original 18 months allotted under the project plan. Details of the training programs are unclear at the present time, but the scaling back of the Japan ODA Loan-assisted project is attributed in part to the fact that other training programs were simultaneously implemented with the financial support of the World Bank. Considering the figures for post-project maintenance and management personnel distribution (see Table 3), operational status of construction machinery, and so on, however, it can be surmised that the shortened training periods had little overall effect on the project.

Table 3 Operation and Maintenance

Unit: No. of persons

	Plan	1988	1989	1990	1991	1992
1. Staff	696	870	862	848	835	824
2. Engineers	21	13	13	11	11	11
3. Technicians/mechanics	220	295	294	294	289	282
4. Operators	60	147	146	143	139	139

Source: PNMGC

2.3 Effectiveness

2.3.1 Operational Status of Materials and Equipment

Subsequent to delivery of materials and equipment to the PNMGC from suppliers in 1987, the materials were put into use for road rehabilitation and other related purposes. Table 4 provides an overview of the status of operation of major pieces of equipment over the five-year period of 1988-1992. Breakdowns began to occur two years after delivery, around 1989. Some of the affected machinery was repaired, however, and as of 1992 and 2000 the equipment was running at 70 percent and 64 percent capacity, respectively. These figures are considered relatively satisfactory. Equipment maintenance was handled primarily at PNMGC repair locations in Yaounde, the capital, and Douala. Normally, product life of construction machinery falls within the range of 6-8 years. The partial breakdown in the space of two years is attributed in part to government cutbacks in assistance to the PNMGC, stemming from the impact on Cameroon of the slowdown in the international market for primary products that began in the latter of the 80s and the economic crisis caused by slowed oil production, among other factors. The cutbacks in turn resulted in the temporary suspension of operations of repair service providers. Other reasons for the untimely breakdowns include problems in procuring spare parts due to insufficient PNMGC budgets and the closing of local supplier branches, also due to the economic crisis.

Table 4 Operational Status of Materials and Equipment

No. of vehicles

	Plan	1988	1989	1990	1991	1992	2000	Rate of operation (%) (As of 2000)
1. Wheel loaders / bulldozers								70.0
(1) In operation	20	20	20	17	12	10	14	
(2) Under repair / requiring repair		0	0	2	7	9	0	
(3) Scrapped		0	0	1	1	1	6	
2. Motor graders / tire rollers / tractors / trailers								68.0
(1) In operation	44	44	34	39	29	28	30	
(2) Under repair / requiring repair		0	9	4	14	15	n.a	
(3) Scrapped		0	1	1	1	1	11	
3. Dump trucks / light trucks / trucks								65.0
(1) In operation	58	58	57	57	43	53	38	
(2) Under repair / requiring repair		0	1	0	15	4	n.a	
(3) Scrapped		0	0	1	1	1	19	
4. Sprinkler trucks / inspection vehicles								46.0
(1) In operation	32	32	30	29	21	24	15	
(2) Under repair / requiring repair		0	1	2	10	7	0	
(3) Scrapped		0	1	1	1	1	17	
5. Fuel trucks								68.0
(1) In operation	22	22	22	18	17	17	15	
(2) Under repair / requiring repair		0	0	2	3	3	n.a	
(3) Scrapped		0	0	2	2	2	n.a	

(Source: PNMGC)

2.3.2 Road Rehabilitation Performance

Construction equipment procured with the loan was distributed to priority work groups and utilized for road rehabilitation, maintenance, and operations around the country. However, because data on the rehabilitation has, to date, not been compiled, the extent of the direct impact of the project is difficult to ascertain.

2.3.3 Effectiveness of the Project's Training Component

Of the funds made available for this project, roughly 89 million yen was allocated to training. Specifically, training was offered in Japan by Japanese suppliers for eight advanced-level technicians, and locally for equipment operators and machinery maintenance personnel. In addition, the loan also provided educational materials for engineer training centers in Douala. Since the conclusion of the training program, as noted

above, a greater number of personnel than originally planned engaged in machinery maintenance and operations, and the operational status of the equipment and machinery is considered relatively good. In light of these findings, the training is found to have brought about certain positive results.

2.4 Impact

1) Efficiency of Road Transportation (reduced time required for transport)

Streamlining of traveling time is contingent upon vehicle performance as well as road conditions. In Cameroon, where the vast majority of vehicles are pre-owned, traveling time reduction is considered an appropriate measure of the extent of road improvements. The table below (source: Ministry of Public Investment) presents data for a major road section located in the central part of the country, repaired with construction equipment procured by the project. As a result of rehabilitation, time required for traversing the road was significantly reduced, from approximately six hours to roughly 2.5 hours. Though the road remains unpaved, the dramatically reduced time is nevertheless attributed to improved road conditions made possible by the project.

Table 5 Travel Time Required to cover Ngaoundere~Meiganga (approximately 160km)

Pre-rehabilitation	Post-rehabilitation	Time cut
Six hours	2.5 hours	3.5 hours

Source: Road Agency, Ministry of Public Investment

2) Road Safety Improvement (Reducing the instance of traffic accidents)

One indicator of the improved road conditions brought about by this project is the reduced number of traffic accidents. Though the incidence of traffic accidents is affected by a number of factors, including traffic volume, driver manners, vehicle performance, and so on, better roads do enable safer driving. As illustrated in Table 6 below, the number of traffic accidents trended downward for the five-year period (1990-1994) following road rehabilitation. Taking into consideration the fact that the number of vehicles in the country increased over the same period, as depicted in Table 7, improved road conditions made possible by the project have, to a definite extent, contributed to better road safety.

Table 6 Incidence of Traffic Accidents

	No. of accidents	Fatalities	Injury victims
1990	4,165	804	6,067
1991	4,066	881	6,069
1992	4,184	854	5,824
1993	3,886	880	5,674
1994	3,311	732	4,739

(Source: Bulletin Statistique des Transports 2000)

Table 7 Number of Vehicles

	1980	1992	1993	1994	1995
Cars	35,893	98,100	92,800	88,300	94,757
Buses	30,096	5,500	5,000	5,000	7,158
Trucks		30,800	29,000	27,600	26,868
Trailers/Tractors	791	6,600	5,000	5,000	5,602
Two-wheeled vehicles	—	42,800	40,000	39,000	40,003
Total	—	183,800	171,800	164,900	174,388

3) Facilitating Domestic Distribution

Road transportation in Cameroon is critically important to domestic distribution, given the fact that the country's major export commodities, including agricultural products such as coffee, as well as lumber, and so on, are transported largely by road. Table 8 presents data on the condition of road networks. As shown, new roads built over the 13-year period of 1982-1995 comprised only approximately 3000 km. As of 1995, roughly 31,500 kilometers of the country's total road length (approximately 35,700 kilometers)—nearly 90 percent—was unpaved, underscoring the importance of existing unpaved roads. Judging from these circumstances, the role of the project in promoting road maintenance and rehabilitation capacity is considered a significant one.

Table 8 Condition of Road Networks

(km)

	1982	1995
Paved roads	2,552	4,288
Unpaved Roads	30,229	31,454
Total	32,781	35,742

Source: Annuaire Statistique du Cameroun 1999, etc.

2.5 Sustainability

2.5.1 Operations and Maintenance

As of the year 2000, the equipment procured under this project was operating at 64 percent capacity, indicating that operations and maintenance have been carried out with a certain degree of competence considering the long period of time that has passed. However, the executing agency—PNMGC—has been weakened by economic crisis, as revealed by the decline in its personnel: staff levels stood at over 800 at the time the project was implemented, but this figures has fallen to roughly 250 due to the number of

employees retiring or migrating to the private sector. Further, local supply branches that were operating immediately following equipment delivery closed down after struggling with problems related to the adverse business climate induced by the crisis. Their closure greatly hindered parts procurement.

Endeavoring to resolve this situation, the government of Cameroon appealed to the Japanese government for grant aid in 1990, and in response was granted three refueling vehicles in 1993 and parts in 1995 valued at 500 million CFA (Cameroonian currency). Regardless of the fact that equipment has operated relatively well, as described above, the problem of spare parts procurement is expected to persist into the future, necessitating that caution be exercised with regard to future maintenance and operations.

2.5.2 Road Maintenance and Rehabilitation Policy

Liberalization and privatization of Cameroon's road sector has been promoted in that country as part of the World Bank's structural adjustment assistance program, resulting in the contracting of maintenance and rehabilitation of roads to the private sector as of around 1995. Since 1998, excluding emergency operations, the great majority of construction has been carried out by private corporations.

In tandem with this development, the PNMGC now leases materials and equipment more and more to the private sector instead of to the government's road agency, but the PNMGC's role in road rehabilitation and maintenance is gradually declining due to the fact that a number of private companies possess their own equipment. The role of the private sector is thus expected to expand, and the possibility exists that the PNMCG itself may undergo privatization.

3. Lessons Learned

For future projects similar to this project—which covered materials and equipment procurement only, it is advisable to set indicators, at the appraisal stage, regarding construction volume—to measure operations and effectiveness—in order to establish a quantitative basis for evaluation and tracking of the effect of the project subsequent to the utilization of the materials/equipment by the borrower country. Further, it is also recommended that equipment and vehicle selections be made in light of such factors as durability, feasibility of rehabilitation, and accessibility of spare parts, as well as basic performance.

Comparison of Original and Actual Scope

Item	Plan		Actual
(1) Project Scope 1) Procurement of road operation / maintenance and rehabilitation materials /equipment 2) Training	200-cv bulldozers 110-cv-bulldozers Motor graders Wheel loaders Tire rollers 10-ton dump cars Tank-equipped lorries (sprinkler vehicles) Fuel lorries Refueling vehicles Trucks 3.5-ton dump cars Light trucks (1.5 ton) Tractor trailers (35 ton) Inspection vehicles Tools (sets)	8 7 34 5 8 28 16 18 4 10 64 20 2 16 50	as planned
2. Implementation Schedule Pre-bidding preparation Tender and contract Procurement Training	 Sept.-Dec. 1984 Jan.-April 1985 May-Dec. 1985 May-Dec. 1985		 Five months March-June 1987 April-Oct. 1987 Seven months
3. Project Cost Foreign Currency Local currency Total Exchange Rate	 3,588 million yen -- 3,588 million yen 1 CFA＝0.50 yen		 1,709 million yen -- 1,709 million yen 1 CFA = 0.68 yen