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PROJECT PERFORMANCE AUDIT REPORT
GABON SECOND HIGHWAY PROJECT (LOAN 580-GA)

February 15, 1977

Operations Evaluation Department

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GABON SECOND HIGHWAY PROJECT (LOAN 580-GA)

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Republic of Gabon Second Highway Project

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PROJECT PERFORMANCE AUDIT REPORT

GABON SECOND HIGHWAY PROJECT (LOAN 580-GA)

PREFACE

This report presents a performance audit of the Gabon Second Highway Project, for which Loan 580-GA of January 1969 to the Republic of Gabon for US\$6 million was closed in April 1975.^{1/} It is based on: information in IBRD files (Loan Agreement, President's and Appraisal Reports, Supervision Reports, and correspondence between the IBRD and the Borrower), as well as discussions with IBRD staff members. Some sections of the Project Completion Report, submitted by the Western Africa Regional Office on December 22, 1975, were also useful in the preparation of this report.

In May 1976, a two-day visit was made to Gabon in connection with this performance audit. The assistance of the Government is gratefully acknowledged.

Exchange Rates -- CFA franc (CFAF)

1968-69	-----	US\$1 = CFAF 247
August 1969-mid 1971	----	US\$1 = CFAF 278
End-1971	-----	US\$1 = CFAF 261
Mid-1972	-----	US\$1 = CFAF 250
End-1972	-----	US\$1 = CFAF 256
Mid-1973	-----	US\$1 = CFAF 205
End-1973	-----	US\$1 = CFAF 235
Mid-1974	-----	US\$1 = CFAF 241
End-1974	-----	US\$1 = CFAF 222
Mid-1975	-----	US\$1 = CFAF 202
End-1975	-----	US\$1 = CFAF 224

^{1/} US\$48,346 was cancelled.

PROJECT PERFORMANCE AUDIT BASIC DATA SHEET

GABON SECOND HIGHWAY PROJECT (LOAN 580-GA)

Amounts (in US\$ mln)

	<u>Original</u>	<u>Disbursed</u>	<u>Cancelled</u>	<u>As of 6/30/76</u>	
				<u>Repaid</u>	<u>Outstanding</u>
Loan 580-GA	6.00	5.95	.05	.80	5.20

Project Data

	<u>Original Plan</u>	<u>Revisions</u>	<u>Actual or Est.</u>	<u>Actual</u>
	Conception in Bank	1967	Feasibility studies financed under Loan 385-GA (First Highway Project)	1968
Board Approval	12/68		1/7/69	
Loan Agreement	1/10/69		1/10/69	
Effectiveness	4/69		4/11/69	
Physical Completion	4/71	May 30, 1970	7/71	
% of original project actually completed	90		100	
Loan Closing	6/30/72		4/75	
Total Costs (US\$ mln)	8.0		8.2	
Econ. Rate of Return (%)	28	Lalara'-Mitzic Road	28	
		Lalara'-Koumameyong Road	25	

Mission Data

	<u>Month, Year</u>	<u>No. of Weeks</u>	<u>No. of Persons</u>	<u>Manweeks</u>	<u>Date of Report</u>
Identification	1/67	1	2	2	4/67
Preparation	-	-	-	-	
Preappraisal	-	-	-	-	
Appraisal	2/68	2	2	4	11/68
Subtotal		3		6	
Supervision I	10/69	0.5	1	0.5	1/70
Supervision II	6/70	1	1	1	8/71
Supervision III	3/71	1.5	1	1.5	5/71
Supervision IV	10/71	1	1	1	11/71
Subtotal		4		4	

Date of Conception in Bank is date Bank first recorded project was being considered for financing and began to follow up that decision in a serious continuous way (Project Negotiations or Country General Files). Actual Loan Closing Date is date of last disbursement out of the loan, as given by Controller's Department data.

PROJECT PERFORMANCE AUDIT REPORT

GABON SECOND HIGHWAY PROJECT (LOAN 580-GA)

HIGHLIGHTS

This project financed construction of two roads to open up a new forest area, preparation of feasibility and engineering studies for roads and a bridge, and procurement of maintenance equipment. It was successfully completed within budgeted limits and without major time overruns. The finished roads show satisfactory economic rates of return.

The project highlights the importance of adequate project preparation through preinvestment studies included in the preceding loan. It also raises the issue of the split of economic benefits between the national economy and foreign logging companies and the need for a proper concession fee system for timber exploitation in the new forestry area opened up by the project roads.

The following points may be of particular interest:

Adequate project preparation (paras. 2, 9, 1.02-1.03, 2.03 and 4.01)

Split of economic benefits and need for a proper concession fee system (paras. 5-8, 11, 3.08 and 4.05).

PROJECT PERFORMANCE AUDIT SUMMARY

GABON SECOND HIGHWAY PROJECT (LOAN 580-GA)

I. Project Results

1. The Gabon Second Highway Project (Loan 580-GA of January 1969 for US\$6 million) was a continuation of the First Highway Project (Loan 385-GA of July 1964 for US\$12 million) which was satisfactorily completed in April 1968. The loan for the Second Project helped finance construction of two-lane roads (119 km) between Lalará and Mitzic and Lalará and Koumameyong in the northern regions of the Second and Third Forest Zones (SFZ and TFZ) (see map). These roads were to open up a forest area of about 500,000 ha with a total production potential of about 3.5 million tons. The loan also supported feasibility and engineering studies for roads and a bridge in the Fougamou-Mouila area in the southern region of the SFZ as well as procurement of equipment and spare parts to improve maintenance of project roads and other roads in the Lalará region.

2. Detailed project preparation and early tendering resulted in final construction costs remarkably close to those estimated at appraisal. Construction was carried out smoothly, except for problems related to the supply of laterite which had to be brought from distant quarries. These problems were not attributable to deficiencies in project preparation or implementation. The final project cost was US\$8.2 million, compared with the appraisal estimate of US\$8.0 million. In early 1972, the Bank rightly agreed to a Government request for reallocation of some surplus loan funds to finance purchases of additional road maintenance equipment, and the loan closing date was extended from June 30, 1972 to April 30, 1975.

3. Timber is being produced on schedule in the project area. However, a market glut occurred in 1974-75 as a result of the European recession and timber output almost halved in the area of influence of the roads. The audit rates of return for the Lalará-Mitzic and Lalará-Koumameyong roads are 28% and 25%, respectively, compared with a combined return of 28% expected at appraisal.

4. All of the economically justified road investments resulting from preinvestment studies in the Southern Fougamou-Mouila region are being carried out.

II. Main Issues

5. The economic basis for the project was the exploitation of timber on the lands to be opened up by the roads. The extent to which timber

was cut in a systematic and efficient way was also important insofar as it would affect the country's benefits from the use of this resource. At the time the loan was made the Bank was concerned that concessions for the exploitation of new lands to be opened up by the roads be issued in step with the completion of road construction. It was not at that time particularly concerned with the terms of the concessions themselves. The project focused on the development of a particular road section opening up an area already studied which would account for about 10% of the country's total timber production. Traffic projections were based on the UNDP timber inventory and preinvestment studies by consultants financed under the First Highway Project. A sensitivity test of the world timber prices indicated that the project would earn good returns even if world timber prices declined 10%.

6. In retrospect, there were certain deficiencies in the concession fee system which probably affected the pattern of timber exploitation and some focus on possible changes in the system would have been a worthwhile objective if only a long term one. The basic problem was a tendency for foreign forestry concessionaires to "skim the forest" of the most valuable timber and leave second rate species unlogged. This was related to the fact that low fixed logging costs (including concession fees) and relatively high operating costs made it most profitable for the logging companies to concentrate on short run results and log only the most valuable floatable species (okoumé). This resulted in logging 6 to 7 tons per ha and leaving about 4 tons per ha of the less valuable species. It would appear preferable from the country's point of view to log at a higher rate and to cut species other than okoumé. This would produce higher income for the country and higher Government's revenues as export tax. The Second Highway Project might have provided an opportunity to test whether higher concession fees were an appropriate policy for fostering an increase in output per ha.

7. Another reason for reviewing the concession system was the desirability of recovering from the foreign logging companies (the main road users) part of the construction and maintenance costs of the roads. Until the start of the road construction program in the SFZ supported under the First Highway Project, all major road construction had been undertaken by the private sector. Hence, the need for a proper system of road user charges did not arise. With extension of the exploited area in the SFZ, the Government undertook to build and maintain trunk roads, such as the Alambé-Ayem and Alambé-Lalará roads included in the First Project (see map). The First and Second Highway Projects provided support for maintenance equipment purchases. During implementation of the Second Project, the need arose for a strengthened maintenance effort to make up the backlog and action was taken to renew and increase maintenance equipment. At that point the need for some system for charging road users for at least the cost of maintenance became an important issue. Charges for road users are

also related to the taxing of timber productions. All large trucks belong to forestry companies, and axle loads are difficult to control. A level of road user charges higher than the one existing, although necessary to cover proper maintenance expenditures, might be counterproductive since it would affect the variable costs of logging more than the fixed costs, thus increasing the incentive to "skim the forest." For this reason an appropriate concession fee policy appears to be a suitable method for levying road user charges which correspond to the use of roads for timber-related purposes.

8. The Second Highway Project provided an opportunity to test, at least in the TFZ, whether higher concession fees were appropriate. The project might have included economic studies of timber production bearing on this subject. No logging permits had been issued in the TFZ by the time the project was appraised. When the Government asked the Bank to include in the project the Matora-Koumameyong section (TFZ) (see map), which was the continuation of the Lalará-Matora road in the SFZ, the Bank asked, and the Government agreed, to include in the Loan Agreement a covenant by which the Government was to issue permits to start timber production in the TFZ not later than January 1973. That was an appropriate moment to have considered studies of alternative concession fee policies to increase output per ha as well as corresponding economic benefits for the country from future concessions. Granting of new timber production permits without revising concession fees created a precedent that has persisted until the preparation of the important Chemin de Fer Transgabonais (CTRA) project. In 1972, the Government increased the concession fees in the area of influence of the CTRA. But incentives for more intense timber production will not materialize until the start of operations of CTRA.

II. Conclusions

9. The system by which a road project contains feasibility and engineering studies for the following project proved successful under the Gabon Second Highway Project. Most roads studied and prepared under the project have been constructed successfully. The Second Project was adequately prepared through preinvestment studies included in the First Project. Early preparation and issuance of tenders during appraisal of the Second Project made it possible to base construction cost estimates on bids received and approved before Board presentation. The remarkable completion of the project within budgeted limits can also be attributed partly to the safety margin left in the loan proceeds as unallocated.

10. The actual and forecast pattern of timber production is close to appraisal expectations. An important reason is that appraisal forecasts were based on logging plans prepared by logging companies. The task was made easier by the fact that only four companies were to operate in the area of influence of the road and all had long experience in timber exploitation and markets.

11. But, the issue of incremental production in the project area is conspicuously related to that of the distribution of benefits arising therefrom. While the Second Highway Project did not provide sufficient leverage to introduce institutional improvements, such as a fairer fiscal system, it provided a good opportunity, because it was to be followed by other transport projects, to study and introduce by stages some measures to increase and capture for Gabon the benefits of the project. In particular, a concession fee system more favorable for Gabon and Government's revenues might have been tested in the TFZ.

12. In summary, the project was successfully completed within budgeted limits, without major time overruns, and with satisfactory economic rates of return. It was also a minimum package, low-risk undertaking, the justification for which has only been marginally influenced by the two-year delay in building and operating the CTRA. The project has positively contributed to Gabon's economic development not only in the northern regions of the SFZ and TFZ where the project roads were built and are being properly maintained but also in the southern region of the SFZ where justified investments resulting from preinvestment studies included in the project are being carried out by the Government.

PROJECT PERFORMANCE AUDIT REPORT

GABON SECOND HIGHWAY PROJECT (LOAN 580-GA)

I. Background

1.01 Gabon is well endowed with forests and minerals including petroleum. Timber was the main Gabonese export until the oil price increase of 1974. In the early 1960s, most timber was produced in an area close to the coast, the First Forest Zone (FFZ). The most valuable specie (okoumé) was transported to port on the Ogoué River but this means of transport was limited by a number of rapids, called the "waterfall line." After more than 60 years of intensive logging, timber stands in the FFZ were exhausted and in 1962 the Government launched a program to transfer the logging industry into the vast virgin forests beyond the waterfall line, the Second Forest Zone (SFZ). Production in the SFZ depended largely on the construction of high standard trunk roads and of feeder roads, the latter to be financed privately by the timber concessionaires.

1.02 In 1964, the Bank made a US\$12 million loan to the Government of Gabon (Loan 385-GA) for the First Highway Project, which included construction of three roads (147 km) to open up the SFZ. Additional roads (173 km) also were constructed in the SFZ, with financing provided by the Government. Logging permits for some 2 million ha were awarded, and in 1967 more than 50% of total production originated from the new concessions. Also included in the First Project were feasibility studies of other roads. Those studies were completed in 1966 and reviewed by a Bank mission in early 1967. Detailed engineering studies, financed by the Government, were prepared by consultants in 1967. These studies were the basis for the proposed Second Highway Project, which the Bank appraised in January/February 1968. Prenegotiation discussions with a Gabonese delegation were held in October 1968 and, at the Government's initiative, the scope of the project was extended to include also construction of the Matora-Koumameyong section of the Lalarã-Koumameyong road. This section was to serve the Third Forest Zone (TFZ) where a UNDP-financed forest inventory was being carried out and the Government was planning to issue logging concessions.

1.03 At the time of the prenegotiation discussions in October 1968, construction cost estimates, lower than previous estimates, were quite firm. Initially, as the result of the 1967 detailed engineering studies, the total project cost was estimated at US\$10.7 million, for which a US\$8 million Bank loan was to be provided to cover the foreign cost. In mid-1968, the Government called for bids in accordance with procedures set out in the Bank's "Guidelines for Procurement." A bid submitted by an Italian firm was substantially below initial estimates, based on costs for the First Highway Project. After a thorough investigation of all elements of the bid, the Government recommended, with Bank's concurrence, that the contract be awarded to the firm. Despite the addition to the

project of the Matora-Koumameyong road section, the total cost estimate was reduced from US\$10.7 million to US\$8 million, and the proposed loan reduced from US\$8 million to US\$6 million. The project was approved by the Board on July 1, 1969.

1.04 The main project components were:

- (a) construction of a two-lane road from Lalará north to Mitzié (55 km) and a two-lane road from Lalará east to Koumameyong (64 km) (see map);
- (b) consultants' services for:
 - (i) detailed engineering (completed in March 1968 and financed retroactively) and construction supervision of the two project roads;
 - (ii) feasibility studies for a bridge in the Fougamou-Mouila region and for the following roads (see map);
 - improvement of the primary road Fougamou-Mouila-Divevi (165 km);
 - construction of the Divevi-Lebamba road (20 km);
 - improvement of the secondary road Youmbi-Mandji (45 km);
 - construction of a bridge over the N'Gounié River in the Mouila-Onoye-Yeno road.
 - (iii) detailed engineering and preparation of tender documents for about 180 km of road and a bridge, to be selected on the basis of the above feasibility studies; and
- (c) procurement of equipment and spare parts for improved maintenance of the project roads and other roads in the region.

1.05 In addition to the standard covenants, the Loan Agreement stipulated that the Government would:

- (a) prepare a detailed list of maintenance equipment to be procured under the loan and make suitable financial arrangements for regular replacement of maintenance equipment;
- (b) follow satisfactory procurement procedures and time schedules; and
- (c) issue permits to logging concessions in the influence area of the Matora-Koumameyong section in the TFZ so that logging in this area would begin not later than January 1973.

1.06 The two-lane roads to be constructed were to open up a forest area of about 500,000 ha in the Lalará-Mitzic and Lalará-Koumameyong regions, where total production potential was estimated at a minimum of 3.5 million tons (5 tons of okoumé and 2 tons of miscellaneous species per ha). The preinvestment studies were directed at opening up the important agricultural region of Mouila, south of the SFZ.

II. Project Implementation and Costs

2.01 The project has been satisfactorily completed at a total cost of US\$8.2 million (Table 1), 2.5% over the appraisal forecast of US\$8 million (including contingencies). The actual cost (expressed in US dollars) of detailed engineering, construction, and supervision for the roadworks was 18% over the appraisal forecast (excluding contingencies). This cost overrun is mainly due to the additional haul of laterite and price escalation. But it was more than offset by the price and quantity contingencies allowed for in the appraisal estimates and actual construction cost was 4% below the appraisal estimates, including contingencies. Finally, expenditures for highway maintenance equipment amounted to US\$1.04 million as against US\$0.25 million expected at appraisal. The reason for the substantially higher actual cost was the procurement of additional equipment not foreseen at appraisal (para. 2.08).

Road Construction

2.02 The road construction works were completed almost as expected at appraisal. Construction of the Lalará-Mitzic road (55 km) was completed on schedule on April 15, 1971, while construction of the Lalará-Koumameyong road (64 km) was completed 3-1/2 months behind schedule on July 15, 1971.

2.03 Given the difficult natural conditions (heavy rainfall, dense forest environment, and remoteness of the site) construction was, on the whole, conducted efficiently. The contract was executed relatively smoothly because:

- (a) The works were carefully engineered. Throughout construction, no substantial differences were found between quantities estimated during engineering and quantities effectively required.
- (b) The contractor brought in a large pool of heavy equipment, most of which was new. This equipment was well maintained and achieved good output.
- (c) Although the contractor had only one road construction engineer on the job, he employed experienced expatriate technicians and qualified workers to fill the key positions of field foreman and chief mechanic.
- (d) From the outset, construction supervision was thorough and strict, thus setting high standards of workmanship.

2.04 The only problem of some importance encountered during construction was the lack of suitable laterite quarries along two 25 km sections of the project roads. Quarries were carefully studied during detailed engineering: the materials were tested and the capacities of the quarries were estimated on the basis of test holes dug on a 50 m square grid. In several cases, however, when the quarries were cleared and stripped, the laterite layer was found to be too thin (less than 50 cm) or so irregular and tilted that it could not be exploited economically. These quarries had to be abandoned and laterite hauled from more distant quarries.

2.05 The quality of the road construction work is good. The only problem that has arisen after completion has been the result of heavy rains which have caused embankments to erode, resulting in ditches being filled and culverts clogged. This damage has been repaired by the contractor under the warranty clause.

2.06 Detailed engineering and construction supervision was done by a Gabonese firm owned and staffed by French nationals. The good performance of all parties was a key element in successful execution of the works.

2.07 Maintenance of roads included in the project is good. Users consulted by the Operations Evaluation Department were satisfied, and public works officials consider that the division in charge of maintenance of the project roads ranks first among the ten national divisions in quantity and quality of work accomplished.

Road Maintenance Equipment

2.08 In early 1972, the Government requested reallocation of some surplus loan funds to finance purchases of additional road maintenance equipment to:

- (a) meet 1972 maintenance requirements; and
- (b) compensate for the existing maintenance backlog brought about by the development of the road network in the late 1960s.

The Bank agreed, and the closing date of the loan was extended from the original date of June 30, 1972 to April 1975.

Preinvestment Studies

2.09 The scope of the feasibility studies for the main Fougamou-Lebamba axis was modified by mid-1970, with Bank agreement, to include paving of the Sindara-Fougamou section (20 km) and the Fougamou-Mouila section (110 km) as well as paving or construction of a gravel road from Mouila to Lebamba (75 km).

2.10 After feasibility studies were finalized, preparation of engineering and tender documents of economically justified road sections was also financed under the loan. The works and sections involved were: paving

of the road between Sindara and Mouila (130 km); construction of a gravel road from Mouila to Nangha (50 km); and construction of a two-lane bridge over the N'Gounié River at Mouila. Bidding documents reflected the Bank staff's suggestions that:

- (a) a bid bond be required;
- (b) the percentage of payments in foreign exchange be defined; and
- (c) exchange rates to compute foreign exchange payments be determined.

The two-lane Mouila Bridge was finished in September 1974 and the works on the two roads are expected to be completed by 1978.

2.11 Construction of the Nangha-Lebamba road (25 km) was also found to be economically justified. But the only part carried out has been the bridge over the Lebamba River. The rest of the road has not been constructed because, after the Government increased its oil revenues in 1974, the Government preferred instead to develop the Lebamba-Tchibanga-Mayumba corridor which will provide shorter access for agricultural products to the Atlantic Ocean through the Port of Mayumba, now under study by the Government. Under this new strategy, the Lebamba-Mayumba road is being improved, a two-lane bridge at Tchibanga on the Nyanga River has been built, and construction of a bridge over the Mayumba Lake will start in 1977. The new Government strategy does not justify construction at present of a gravel road between Nangha and Lebamba, the section of the Sindara-Lebamba corridor with the lowest traffic and with minor traffic effects on the rest of the corridor. Finally, the Youmbi-Mandji road was not improved as the feasibility studies showed it was unjustified.

III. Economic Reevaluation

3.01 The project roads were expected to open up a new forest area of about 500,000 ha in the Lalará-Mitzic and Lalará-Koumameyong regions. Timber in those regions was untouched, and the production potential was estimated at about 3.5 million tons. The economic benefits of the proposed road construction project were measured through the increase in timber production. A 28% rate of return was expected.

3.02 Actual timber production and a revised forecast in the project area are very close to appraisal forecasts (Table 2), with two exceptions. One is that actual production in 1974-75 halved due to a world timber market glut. The other is that forecast additional production to be brought about by the impact of the Chemin de Fer Transgabonais (CTRA) will be delayed two years beyond appraisal expectations as construction is behind schedule.

3.03 A forestry enterprise is logging in the Lalará-Mitzic road area. Other forestry enterprises are also using that road. Average daily traffic on the road in 1975 was 110 vehicles per day (vpd). Roughly one-third was large timber-carrying trucks. Non-timber traffic in 1975 was 75 vpd as compared with 15 vpd in 1967 and about 50 vpd forecast at appraisal for 1980.

More enterprises in the influence area are expected to use the road to connect with the railway at Alembé when the CTRA starts operations in late 1978 or early 1979.

3.04 Two logging companies operate in the area of the Lalará-Koumameyong road, which also connects Lalará with logging concessions located to the east up to Makokou. Average daily traffic on this road was 320 vpd in 1975. Roughly one-third was timber trucks. Non-timber traffic in 1975 was 220 vpd versus 7 vpd in 1966. This significant increase was not envisaged at appraisal and is due to activity in the project area as well as farther away in the TFZ. Lalará is now a main crossroad. Considerable timber traffic passes through Lalará on its way to N'Djole, where logs are unloaded into the Ogoué River to be carried downstream by barges to Port Gentil. Traffic to and from Libreville also passes through Lalará. Production and traffic in the Lalará-Koumameyong area will be less affected by the CTRA because most of that area will be exploited before the railway starts operations.

3.05 The net value added of the incremental timber production and other services in the influence area of the roads has been estimated in Table 3. This data, together with actual timber production up to 1975 and revised projections for the remaining useful life of the project, has been used for estimating the economic benefits of the project at audit.

3.06 These economic benefits, when compared with corresponding incremental economic costs (actual construction and maintenance costs of project roads and incremental maintenance cost of the existing Lalará-N'Djole section), produced an audit rate of return for the Lalará-Mitzic and Lalará-Koumameyong sections of about 28% and 25%, respectively, compared with a combined return of 28% forecast at appraisal. These close results have been the consequence of the interaction of different factors:

- (a) an 8% overrun in construction costs expressed in 1968 CFAF prices;
- (b) a substantial reduction in timber exports in 1974-75;
- (c) a two-year delay in the expected timber production increase induced by the CTRA;
- (d) a higher value added than estimated at appraisal; and
- (e) a higher than expected forecast for world timber prices after 1976.

3.07 Real world timber prices have fluctuated between 1971 and 1975 (Table 4). But their impact on the benefit stream of the project is small since the largest price increase (about 10% in real terms) took place in 1974 when production halved and practically all production was highly priced okoumé.

3.08 The economic rate of return is also satisfactory from the Government viewpoint (about 15% for the Lalará-Mitzic road and 14% for the Lalará-Koumameyong road). Returns for the logging companies are much higher than those for the Government. The split of benefits between the Gabonese economy and the foreign logging companies has subsequently become of interest to the Bank and an analysis undertaken by the Bank staff has provided support for a substantial increase in concession fees in the influence area of CTRA introduced by the Gabonese Government by mid-1972. This increased concession fee will recover, for the Gabonese economy, part of the economic benefits to be generated by the operation of the railway.

IV. The Role of the Bank

4.01 First, the success of project preparation can be largely attributed to the fact that the feasibility and engineering studies for the Second Highway Project were included in the First Highway Project. Early project preparation permitted firm bids to be submitted by appraisal. Final project costs were remarkably close to appraisal estimates. This was due partly to early firm bids made possible by sufficient project preparation and partly to the level of contingencies allowed for in the cost estimates. Cost overruns due to transport of laterite from places further away than originally foreseen was an unfortunate — although not crucial — event and cannot be attributed to deficiencies in project preparation or implementation.

4.02 Second, the provisions in the Loan Agreement whereby the Borrower agreed to issue permits to start logging operations at the time the roads are put in operations have been a key factor to ensure the economic use of the project roads. In 1976, one logging company was operating in the Lalará-Mitzic area and two in Lalará-Koumameyong area. Other forestry enterprises are using these roads to transport their timber production and will continue to do so even after CTRA starts operation. Timber production is close to forecasts at appraisal (Table 2), and this confirms the economic justification of the project.

4.03 Third, the Bank's insistence on regular replacement of maintenance equipment was instrumental in keeping adequate maintenance standards, without which many project benefits would have been lost. When the Government requested in early 1972 a reallocation of surplus funds left in the Loan 580-GA account to purchase new maintenance equipment, the Bank was right in agreeing to this reallocation and in extending to April 1975 the original closing date of June 30, 1972. Maintenance of roads included in the project is now good, users are satisfied, and quantity and quality of maintenance work in the influence area of the project road ranks first in the country.

4.04 Fourth, including preinvestment studies in the project has been successful. As a result of these studies, the construction of the important Sindara-Nangha axis, which will make possible the timber and agricultural development of the Fougamou-Mouila region is now underway. The Government changed its strategy for the Lebamba region following the increases in oil

prices and higher oil revenues, deciding to develop the Lebamba-Tchibanga-Mayumba corridor to provide an alternative sea access to Lebamba and to develop the Nyanga Valley. This change in strategy prevented construction of a gravel road between Nangha and Lebamba.

4.05 Fifth, a system of higher fees for timber concessions might have contributed to increase the average timber output per ha, thus enhancing the economic justification of timber-related roads, and could have helped the Government to recover a large part of its expenditures on road construction and maintenance. In the same way as highway projects often include feasibility and engineering studies for subsequent projects, the First Highway Project might have included an economic study of timber production and provisions for testing the effect of higher concession fees on output in the TFZ where no concessions had been allowed before the start of the project. Four years later, the Bank did recommend a system of higher concession fees in the influence area of the future CTRA. These recommendations were adopted by the Government. The effects of that system are expected to materialize when railway operations begin.

V. Conclusions

5.01 The project was successful in all aspects, and objectives set at the time of appraisal have been reached. Early preparation of the Second Highway Project as part of the First Highway Project was instrumental in good planning, tendering, bidding, and execution. The project was completed as planned, except for a considerable increase in the amount of equipment and spare parts for road maintenance, which was agreed to by the Bank. This expansion produced good results. The audit rates of return are satisfactory and timber production in the project area is broadly proceeding as forecast at appraisal. Development impacts of the project are already noticeable in the Lalará (north of SFZ) and Mouila (south of SFZ) regions. The project is also helping to generate substantial foreign exchange revenues for the Government.

TABLE 1

PROJECT PERFORMANCE AUDIT REPORT
GABON SECOND HIGHWAY PROJECT (LOAN 580-GA)

Comparison of Appraisal Estimates and Actual Project Costs

Items	Appraisal Estimate	Actual Cost	Bank Financed		Actual % Over Total	% Over-runs Over Appraisal Estimates
			Estimated	Actual		
----- (US\$ thousands) -----						
Road Construction	3,940	4,655	2,950	3,500	75	18
Consultants Services						
Detailed engineering of project road	470	470	360		75	-
Construction supervision	390	525	315		60	35
Highway preinvestment studies	<u>1,480</u>	<u>1,410</u>	<u>915</u>		65	-5
Subtotal	2,340	2,405	1,750	1,590		3
Highway Maintenance Equipment ^{/1}	250	1,040	200	835	80)
Contingencies	<u>1,470</u>	<u>100</u> ^{/2}	<u>1,100</u>	<u>75</u> ^{/2}	<u>75</u>) -51
Total	<u>8,000</u>	<u>8,200</u>	<u>6,000</u>	<u>6,000</u>	73)
US\$1 = CFAF	247	278	247	278		
CFAF million equivalent	1,976	2,280	1,482	1,668		15.5

/1 Equipment items greatly increased over what was initially envisaged.

/2 Possibly required for minor road repairs.

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Timber Production in the Project Area
(thousand tons)

Year	Appraisal				Audit			
	Lalara-Mitzic		Lalara-Koumameyong		Lalara-Mitzic		Lalara-Koumameyong	
	Okoume'	Miscellaneous Species	Okoume'	Miscellaneous Species	Okoume'	Miscellaneous Species	Okoume'	Miscellaneous Species
1970	10	8	42	13	-	-	-	-
1971	20	10	42	13	25	15	40	-
1972	20	10	42	13	27	16	40	15
1973	40	10	42	13	30	20	40	15
1974	40	10	42	13	15	10	20	10
1975	61	16	42	13	11	8	17	10
1976	61	16	42	13	33	20	40	10
1977	61	16	60	19	40	20	40	10
1978	61	16	60	19	45	20	45	15
1979	85	21	60	19	45	20	45	15
1980	85	21	60	19	70	20	65	20
1981	85	21	60	19	70	20	65	25
1982	85	21	60	19	90	15	65	25
1983	45	11	18	6	90	10	65	20
1984	45	11	18	6	70	10	65	20
1985	24	5	-	-	70	10	20	5
1986	24	5	-	-	70	10	20	5
1987	24	5	-	-	40	5	20	5
1988	24	5	-	-	40	5	-	-
1989	24	5	-	-	40	5	-	-
1990	-	-	-	-	35	-	-	-
Total	<u>924</u>	<u>243</u>	<u>690</u>	<u>217</u>	<u>926</u>	<u>254</u>	<u>692</u>	<u>220</u>

TABLE 2

Source: Appraisal; Report No. TO-692a), Table 6. Audit: estimates from logging companies and by Operations Evaluation Department mission.

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Calculation of Value Added of Timber Exploitation at World Market Prices
(1968 CFAF/ton)

	Okoume			Miscellaneous Species				
	Foreign ^{/1} = Inputs	Local + Transfers	Net Value ^{/2} + Added	Foreign ^{/1} = Inputs	Local + Transfers	Net Value ^{/2} + Added		
FOB World Market Price For Timber	10,500 ^{/3}	4,450	1,200	4,850 ^{/4}	7,000 ^{/11}	3,200	1,000	2,800 ^{/12}
Of which:								
Logging process	3,200 ^{/5}	1,450	350 ^{/5}	1,400	3,200 ^{/5}	1,450	350 ^{/5}	1,400
Road transport	2,850 ^{/6}	1,250	600 ^{/7}	1,000	2,390 ^{/14}	1,000	500 ^{/7}	890
Miscellaneous	500 ^{/8}	250	100 ^{/9}	150	500 ^{/8}	250	100 ^{/9}	150
Export tax	2,300 ^{/10}	-	-	2,300	360 ^{/10}	-	-	360
Profits of logging companies	1,650 ^{/1}	1,500 ^{/13}	150	-	550 ^{/1}	500 ^{/15}	50	-

- ^{/1} From office memorandum from Mr. L. Y. Pouliquen to Mr. E. V. K. Jaycox, March 23, 1970. Table - Timber Production Cost and Value Added. Adjusted to average timber output of 7 ton/ha. It includes remittances abroad.
- ^{/2} Calculated by difference: Value added = total cost at world market prices - foreign inputs - local transfers. It includes retribution to foreign labor and expatriate profits reinvested in Gabon.
- ^{/3} From Appraisal Report No. TO-692a, Table 8. Okoume world market prices per ton = CFAF 9,000 + CFAF 1,500 (profits of logging companies remitted abroad).
- ^{/4} It compares with net economic benefits of CFAF 3,400/ton calculated at appraisal as value of timber excluding remitted profits (CFAF 9,000/ton) less logging costs excluding taxes (CFAF 2,850/ton) less road transport costs excluding taxes (CFAF 2,250/ton) less miscellaneous costs excluding taxes (CFAF 500/ton) (Appraisal Report No. TO-692a, Table 8). The difference between value added equal to CFAF 4,850/ton and economic benefits of CFAF 3,400/ton is CFAF 1,450/ton and includes additions to national income (wages and local inputs) of logging process, road transport and miscellaneous costs.
- ^{/5} Appraisal Report No. TO-692a, Table 7 and 8: cost of logging process excluding taxes = CFAF 3,200/ton - CFAF 350/ton = CFAF 2,850/ton.
- ^{/6} To N'Djole, 170 km @ CFAF 13/tkm (CFAF 2,200/ton) plus CFAF 650/ton rafting to Port-Gentil, including trans-shipment and forming of rafts. Appraisal Report No. TO-692a, Table 7.
- ^{/7} Appraisal Report No. TO-692a, Table 8: road transport excluding taxes = CFAF 2,250/ton = CFAF 2,850/ton - CFAF 600/ton.
- ^{/8} Appraisal Report No. TO-692a, Table 7. It includes unloading and overheads at head office.
- ^{/9} Not taken into account in Appraisal Report. See Note 1.
- ^{/10} Appraisal Report No. TO-692a, Table 9. Calculated for "derogataires".
- ^{/11} From Appraisal Report No. TO-692a, Table 8. World market prices for miscellaneous species, per ton = CFAF 7,000 = CFAF 6,500 + CFAF 500 (profits of logging companies remitted abroad).
- ^{/12} It compares with net economic benefits of CFAF 900/ton calculated at appraisal as value of timber excluding remitted profits (CFAF 6,500/ton) less logging costs excluding taxes (CFAF 2,850/ton) less road transport cost excluding taxes (CFAF 2,250/ton) less miscellaneous costs excluding taxes (CFAF 500/ton) (Appraisal Report No. TO-692a, Table 8). The difference between value added equal to CFAF 2,800/ton and economic benefits of CFAF 900/ton is CFAF 1,900/ton and includes additions to national income (wages and local inputs) of logging process, road transport and miscellaneous costs. It is higher than those additions generated by okoume mainly because of lower profits remitted abroad by logging companies.
- ^{/13} Equivalent to US\$5.4/ton. See Note 1.
- ^{/14} Higher capacity utilization of timber trucks carrying okoume allows to consider marginal costs in the section N'Djole-Owendo for miscellaneous species.
- ^{/15} Equivalent to US\$1.8/ton. Average profit of okoume and miscellaneous species is US\$1.8/ton at an average output level of 7ton/ha. See Note 1.

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Evolution of FOB Timber Prices, Port Gentil
(Excluding Remitted Profits of Foreign Logging Companies)

<u>Year</u>	<u>Okoume</u>		<u>Miscellaneous Species</u>	
	<u>Appraisal</u>	<u>Audit</u>	<u>Appraisal</u>	<u>Audit</u>
	----- (CFAF/ton, 1968 prices) -----			
1971	9,000	9,000 ^{/1}	6,500	6,000 ^{/1}
1972	9,000	9,100 ^{/1}	6,500	6,550 ^{/1}
1973	9,000	9,500 ^{/1}	6,500	6,000 ^{/1}
1974	9,000	9,900 ^{/1}	6,500	6,000 ^{/1}
1975	9,000	9,000 ^{/1}	6,500	6,000 ^{/1}
1976	9,000	10,100 ^{/2}	6,500	6,500 ^{/2}
1977	9,000	10,700 ^{/2}	6,500	7,200 ^{/2}
1978	9,000	11,100 ^{/2}	6,500	7,500 ^{/2}
1979	9,000	11,500 ^{/2}	6,500	7,700 ^{/2}
1980	9,000	12,000 ^{/2}	6,500	8,000 ^{/2}
1985	9,000	12,000 ^{/2}	6,500	8,000 ^{/2}

^{/1} Actual, checked on the field with logging companies, Second Forest Zone. Adjusted with indices of Report EC-166/76, Commodity Trade and Price Trends, page 73.

^{/2} Adjusted with indices from Report No. 814/76, Price Prospects for Major Primary Commodities, Table 13.

