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Appraisal of a Second Douala Port Project Cameroon

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Western Africa Projects Department
Ports, Railways & Aviation Division

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Currency Equivalents

Currency Unit	=	CFA francs (CFAF)
US$1.00	=	CFAF 225
CFAF 1 million	=	US$4,444.

Fiscal Year: July 1 - June 30

System of Weights and Measures: Metric

Metric		US Equivalents
1 meter (m)	=	3.28 feet (ft)
1 cubic meter (m^3)	=	35.29 cubic feet (cu ft)
1 kilometer (km)	=	0.62 mile (mi)
1 square kilometer (km^2)	=	0.386 square mile (sq mi)
1 hectare (ha)	=	2.47 acres (ac)
1 metric ton (m ton)	=	2,204 pounds (lb)

Abbreviations and Acronyms

AfDB	- African Development Bank
BADEA	- Arab Bank for Economic Development in Africa
CCCE	- Caisse Centrale de Coopération Economique
CIDA	- Canadian International Development Agency
FAC	- Fonds d'Aide et de Coopération
FED	- Fonds Européen de Développement
KfW	- Kreditanstalt für Wiederaufbau
ATC	- Agence Transcongolaise des Communications
CAR	- Central African Republic
CAM	- Cameroon
NPA	- National Port Authority
REGIFERCAM	- Régie des Chemins de Fer du Cameroun
SEPBC	- Société pour Export des Parc a Bois Cameroun
OCCR	- Organisation Controle Conceptia Réalisation
SOGREAH	- Société Grenobloise d'Etudes et d'Applications
DSBI	- Deutsche Socretat Beratender Ingenieure
Ecocentre	- Centre de Cooperation Economique de Macgregor Comarain S.A.
DSA	- Desjardins, Sauriol et Associés Ltée.
TAMCON	- Tamcon International Ltée.
CDA	- Carr & Donald & Associés.

dwt	- deadweight tons
grt	- gross registered tons

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This report has been prepared by Messrs. D. Grant Duff (Engineer), M. Dick and K. Cleaver (Economists), and P. Levy, A. Engvall and D. Screwvala (Financial Analysts).

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SUMMARY

i. The economy of Cameroon which is primarily rural, has developed steadily for many years, and a 5-6% growth of Gross Domestic Product (GDP) is projected by the Bank through 1985. Achievement of this growth level will be largely determined by the development of exports of logs and processed timber from the extensive forest reserves, as well as of other agricultural products. An associated increase in essential imports is also expected to occur.

ii. An expansion of the transport system will be required to support this projected growth, since population density is relatively low, and the sources of exports are far from the ports. The Bank Group has been closely associated with the transport sector for a number of years and has helped finance projects for road, railway and port development, including the First Douala Port Project (Credit 229-CM, US$1.5 million, 1971) now completed. This project increased port capacity to meet requirements until feasibility studies and implementation of the complex Second Port Project now proposed could be carried out. The feasibility studies were undertaken by consultants OCCR/Sogreah/DSBI (France/Germany).

iii. Douala is Cameroon's principal city and major port, lying at the head of the Wouri estuary about 30 km from the open sea. The other ports are of much less importance and serve limited hinterlands, whereas Douala is a focal point for both the road and rail systems of the country. Douala possesses the basic infrastructure needed for a port, but the limited depth of water in the long entrance channel is a handicap to port development in view of the trend towards deeper drafts of vessels; moreover, there is very limited room for expansion because the port is largely hemmed in by the city. The feasibility study carried out as part of the First Port Project analyzed the costs and benefits of development at various sites along the Wouri, and concluded that because of the high additional infrastructure costs which would be associated with the development at other sites, expansion of Douala is the most economic means of providing the increased port capacity now required.

iv. The proposed project would satisfactorily overcome the two major obstacles to development of the port of Douala, namely, the limited channel depth and space for growth, to cover requirements at least for the next decade. Under the project, the entrance channel to the port would be dredged, and some of the material used in reclamation. Road and rail access to the port would be improved. The existing port would be rehabilitated and restructured to permit seaward expansion, and to provide facilities for log exports and a deepwater berth for containers and general cargo. Fishing berths and cold storage facilities would be provided upstream.

v. This extensive development and restructuring of the port area would be undertaken in conformity with development plans for both the city and the railway. The project is estimated to cost about US$120 million equivalent net of taxes, of which about US$71 million is foreign costs. These costs include price and physical contingencies, and are based on consultants' estimates and on the lowest evaluated bid for the main civil works contract.

vi. The Government of Cameroon and the National Port Authority (NPA) have asked the Bank to assist in financing the project. They have also invited other donors to participate, and the financing plan is approximately as follows: Bank Loan US$15 million, IDA Credit US$10.0 million, Canadian International Development Agency (CIDA) US$29.0 million, African Development Bank (AfDB) US$12.4 million, Arab Bank for Economic Development in Africa (BADEA) US$10 million, Kreditanstalt fur Wiederaufbau (KfW) US$8.0 million, French Fonds d'Aide et de Cooperation/Caisse Centrale de Cooperation Economique (FAC/CCCE) US$6.6 million, Fonds Europeen de Developpement (FED) US$4.9 million. The balance of US$24.4 million equivalent would be met by the Government and NPA.

vii. The project would be undertaken under several contracts, as agreed by co-donors and in accordance with the agreed financing plan, which would ensure the coordination of construction works and the earliest start on the most urgent components. The two principal items in the project are major channel dredging and the main civil works contract. The major channel dredging would be undertaken with a dredger and key crew provided by CIDA and with the remaining crew and other costs borne by Cameroon. CIDA would also finance a subsidiary civil works contract and some equipment. Procurement procedures for the CIDA-financed items would be decided by CIDA and NPA.

viii. The main civil works contract has been put to international tender and the lowest evaluated tender has been selected in accordance with Bank guidelines. About 62% of this contract representing mainly downstream port development together with port rehabilitation will be financed and disbursed jointly by IBRD/IDA (53%), KfW (17%), FED (10%), FAC (7%) and the Government (13%). The remainder of the civil works contract will be financed by BADEA, AfDB and FAC/CCCE.

ix. Supervision of construction of the project would be the responsibility of NPA, assisted by CIDA-financed consultants DSA/Tamcon/CDA under terms and conditions acceptable to the Bank and the other co-donors. Construction work is scheduled to start in 1976 and to be completed by 1980, with completion of channel deepening by 1983.

x. A critical element in the justification for the project is timber export potential. The prospects for development of forestry sectors both in West Africa as a whole and specifically in Cameroon were studied in depth, and

it was concluded that potential exports through Douala would reach about 1.1 million tons in 1985. This takes into account forecasts of Cameroonian timber to be evacuated through the secondary port of Kribi, and via the Congo transport system Agence Transcongolaise des Communications (ATC). The existing Douala port facilities are incapable of handling either this projected volume of timber, or the specialized log carriers which are expected to account for an increasing proportion of timber traffic. This will be catered for by creation of the log port, channel dredging, and improvements in road and rail access to the port. The project envisages a progressive increase in the volume of exports of sawn timber and timber products, with a corresponding reduction in the proportion of log traffic.

xi. The proposed development of fishing berths and of the cold store and allied facilities has been decided after an assessment of fish resources along the West African coast, and the demand for both frozen and fresh fish within Cameroon where fish forms an essential staple diet.

xii. The project is expected to produce benefits through avoidance of congestion as traffic develops, reduction in delays to shipping caused by the present limited channel depth, economies arising from the use of specialized log carriers now unable to use the port, and added value from the expansion of fishing and ship-repair activities. The economic return on the project is estimated to be 17%. The bidding on the main civil works contract has established the bulk of the costs, however, even with an increase by 50% in costs of items for which bids have not yet been submitted and a reduction in benefits by 20-35%, the return is still expected to be 9-1/2%. Cameroon will retain about 80% of total benefits through increased tariffs, avoidance of potential shipping surcharges, and the employment generated by expansion of fishing activity.

xiii. The institutional environment for the transport sector has not evolved as rapidly as the physical infrastructure. Agreement has been reached for technical assistance to strengthen the machinery for policy-making and coordination within the sector and to expedite studies and other preinvestment work (notably in connection with forestry feeder road development, development of the Kribi region, and future port investment needs and alternatives).

xiv. NPA has achieved only a modest rate of return on assets since its establishment in 1972, but its cash flow has been satisfactory due to a low debt/equity ratio. Tariff increase proposals, which have been accepted in principle by port users, will virtually double tariffs by 1985, and produce a rate of return of 5% in 1981/82 and 5.4 in 1984/85. The large loan component (over 70%) in financing of the proposed project will increase the debt/equity ratio to a high 53/47 during project construction, but it is expected to decline to an acceptable 33/67 by 1984/85.

xv. NPA's organization and administration have been reviewed, and although found to be generally satisfactory,there is a weakness in the control of port operations. The proposed project therefore provides for the appointment of an experienced Director of Operations who would examine the efficiency of cargo-handling operations now undertaken largely by shipping companies under lease agreements, as well as port regulations and charges to ensure that they provide incentives for optimum cargo throughput. NPA has recently engaged consultants under French technical assistance to review its mannagement structure, and has agreed that recommendations of the study would be discussed with the Bank and the agreed plan of action implemented.

xvi. In view of the need to minimize the heavy expense of maintaining the entrance channel to the port, NPA has arranged for observation of the siltation behavior of the dredged channel during the project construction period, so that a plan could be devised within one year of the channel deepening, for the best method and equipment for maintenance dredging; this plan would be subject to Bank approval. The proposed project provides for training of NPA staff in operation of a dredger to be supplied by CIDA for the channel deepening.

xvii. NPA would have to prepare lease agreements for operation of the new general cargo/container berth, as well as for the new cold store and other fishing port facilities. NPA has provided assurances that these lease agreements would be prepared after consultation and agreement with the Bank on the underlying policy objectives. This arrangement is intended to ensure that the berth is operated with adequate cargo-handling equipment as a common user facility, and that the fishing port facilities are managed by experienced lessees.

xviii. The proposed project is suitable for a Bank Loan of US$15 million to the National Port Authority of Cameroon as Borrower, with the Government of Cameroon as guarantor and for an IDA credit of US$10.0 million to the Government of Cameroon on standard terms. An appropriate Loan term would be 20 years including 4-1/2 years of grace.

CAMEROON

APPRAISAL OF SECOND DOUALA PORT PROJECT

1. INTRODUCTION

1.01 The National Port Authority (NPA) and the Government of Cameroon have asked the Bank to join other donors in financing a project to meet the port of Douala's needs through 1985. The proposed project is to provide port facilities which the country would require to meet projected growth of general cargo and log traffic.

1.02 The new facilities would cater primarily for projected log exports, container traffic, and fishing development. The entrance channel to Douala port would be deepened to accommodate vessels of increased size, especially specialized log and container carriers. Road and rail access to the port would be improved, in conformity with development plans of the city and of the Railway. The project would be capable of further development to meet future traffic, particularly with regard to containers and to increased log exports.

1.03 The project would meet the recommendations of a consultants' study under which alternative sites along the Cameroonian coast and also within the Wouri estuary were considered for development of deep-water port facilities for future general cargo, container traffic, and log exports. Douala was selected as the most suitable site for immediate development because of its accessibility by rail to a large area of forest reserves in southern and eastern Cameroon, and because of its already established port infrastructure. Logs and timber products would continue to be exported largely through Douala, although a limited development program is being undertaken at the secondary port of Kribi in the south to cater for expansion of its road-transported exports. Over the longer term, the consultants' study envisaged the possible development of facilities for containers, oil-tankers, and possibly bauxite traffic at Pointe Limboh which is close to natural deep water (see Map 3010R).

1.04 Total project cost is estimated at about US$120 million equivalent net of taxes, including foreign costs of about US$71 million (60%). To help finance the project, a Bank Loan of US$15 million and an IDA Credit of US$10 million are proposed; other contributors would provide a total of US$70.99 million equivalent as follows: CIDA US$29.0 million, AfDB US$12.44 million, BADEA US$10.0 million, KfW US$8.0 million, FAC/CCCE US$6.66 million, and FED US$4.89 million. The Government and NPA would provide the balance of US$24.4 million equivalent.

1.05 The Association has already financed a First Douala Port Project (Credit 229-CM, US$1.5 million, 1971), which provided an additional berth for handling cement clinker and industrial products and other miscellaneous items; the project has been satisfactorily completed. Other Bank Group operations in the transport sector include two projects for highway development and two for railways: details of these projects are given in Annex 1.

1.06 This report is based on information prepared by consultants OCCR/ Sogreah/DSBI (France/Germany) and Ecocentre (France), by NPA and the Regie des Chemins de Fer du Cameroun (Regifercam), and on the findings of Bank missions. The report has been prepared by Messrs. D. Grant Duff (Engineer), M. Dick and K. Cleaver (Economists), and P. Levy, A. Engvall and D. Screwvala (Financial Analysts).

2. THE TRANSPORT SECTOR

A. Sector Background

2.01 The population of Cameroon is about 6.5 million, and the country covers about 475,000 km^2. A predominantly rural economy, strongly export/ import-oriented, is now more or less adequately served by the primary transport network following a major investment effort over the last ten years to strengthen and extend the system. However, increasing strains have been placed on the system as a result of the increase in traffic associated with growth in Gross Domestic Product (GDP) of about 7% p.a. during the 1960's. Although this growth has slowed down in recent years, a 5-6% p.a. rate of increase in GDP is projected during the next decade, and this will substantially increase the pressure on the transport system. Achieving the above growth rate will depend on energetic efforts to expand production and transport the products, particularly from within the agricultural and forestry areas where transport infrastructure is still inadequate.

2.02 In recent years, largely because of the need to remedy the lack of basic infrastructure and its high cost over long distances, the transport sector has absorbed some 42% of total public investment. The critical issues now are: (i) to ensure that the transport system can handle projected demand while not continuing to absorb a disproportionate share of the country's limited investment resources; (ii) to improve the standard of highway maintenance; and (iii) to ensure the availability of the necessary financial resources.

B. The Transport System

2.03 Douala is the focal point of the Cameroon transport system and handles considerable Chadian and Central African Republic traffic. Its port handles nearly 90% of total Cameroon external trade and is the starting point for the two main axes of road and rail transport to West Cameroon and to Yaounde and the north respectively, which serve the main centers of economic activity. These are concentrated in the coastal region around Douala, and in the regions of Yaounde, Bafoussam, and Maroua in the north; the southeast is relatively unexploited. Each region has its own road network around the main population centers, feeding into the principal axes and serving local needs.

2.04 Douala port has three main forms of traffic: bulk, timber, and general cargo which includes other agricultural exports. Bulk traffic comprises alumina, petroleum, and clinker imports which are handled by specialized facilities of adequate capacity. The general cargo and timber berths are currently over-utilized. With forecast increases in both import and export traffic, particularly of timber, congestion will rapidly occur, with costly ship delays and diversion to other ports (Kribi and Victoria) unless substantial investment is undertaken. The proposed Second Douala Port Project would largely segregate timber from general cargo traffic and provide the capacity necessary for both at least until 1985. Some investment is currently being made at Kribi to serve local requirements. Traffic and prospects at the port of Victoria are insignificant.

2.05 The railway system comprises two lines. The line serving West Cameroon has old equipment and rolling stock and is neither of major economic importance nor suitable for other than minor investments. The Transcameroon system comprises the old central line to Yaounde (300 km), which handles the bulk of the railway's traffic, and the recently completed continuation to N'Gaoundere (600 km), which at present carries little traffic except timber from Belabo (300 km from Yaounde).

2.06 The road system between Douala and West Cameroon competes with the old Northern railway line and serves local markets. Between Douala and Yaounde it largely complements the railway, with roads feeding into the rail system. Growing traffic congestion in this corridor has led to an ongoing study of alternative investment policies (para. 2.11). In the north, an extensive road system continues the Transcameroon Railway towards Chad, and also serves local market requirements with adequate capacity for many years to come.

C. Transport Planning and Coordination

2.07 The Ministry of Transport is formally responsible for transport planning, but the Ministry of Planning and the Economy has considerable influence on investment priorities in the sector. The Ministry of Equipment, presently responsible for roads, conceptually acts largely as an executing agency. None of the Ministries has adequate transport administration and economic staff; the overall long-term development strategy and system of project preparation and evaluation have not been firmly established. Although as a result, non-economic considerations may tend to have had disproportionate influence on investment decisions, this has not led to a significant misallocation of resources. However, as a result of current transport problems -- such as the choice between road and rail investment in the Douala-Yaounde corridor (where a railway realignment from Yaounde to Otele has already commenced), road upgrading versus network expansion, and the inter-relationship of transport investment with regional development as well as the possibility of a separate highway authority now under consideration -- it will be necessary to achieve a marked strengthening of the machinery for policy-making and coordination within the sector and expeditious implementation of studies and preinvestment work in a number of areas.

2.08 Attempts to reinforce the organization and machinery of planning have not been very successful, but there are now indications of growing Government awareness of departmental weaknesses, and a technical assistant has recently been appointed to advise the Ministry of Transport. Agreement has been reached with the Government on the steps to be taken to further improve the planning capabilities of the Ministries of Planning, Transport & Equipment, as a development of proposals initiated under the Second Highway Project. These steps will take the form of, firstly, recruitment of five technical assistants, comprising three economists - one for each Ministry - and two engineers for the Ministry of Equipment. Secondly, appropriate work programs for these personnel and their counterparts will be established. For the economists these will include inter alia compilation of highway data and its analysis to establish road transport costs and road investment priorities, co-ordination and initiation of sub-sectoral studies, and examination of transport and closely allied sectoral investment plans to ensure cross-sectoral consistency. The engineers would be concerned respectively with construction and maintenance projects and the production of technical data necessary as inputs to the work of the economists. Negotiations are currently underway between the Government and consultants for recruitment of the above personnel whose services would be financed partly under the Second Highway Project and partly under a proposed technical assistance project.

D. Government Objectives and Achievements

2.09 During the Third Plan (1971-76), investments in the transport sector are estimated to total over CFAF 80 billion (out of total public sector expenditure of about CFAF 200 billion). The primary objectives were to substantially improve the transport links between Yaounde and the north and to take the initial steps to improve east/west communications in the country. The Government has been largely successful in these efforts.

2.10 In the Fourth Plan (1977-81). Government objectives are to ensure expansion of the capacity of Douala port and of the railway line in the central Douala-Yaounde corridor, in order to meet traffic demands forecast for the next decade as agricultural and forestry exports increase and as imports grow. The choice of the railway as the economically optimal investment approach for the Douala/Yaounde corridor is, however, not obvious. The ongoing Second Railway Project (Loan 1038-CM, US$16 million, 1974) includes financing of a study of modal coordination in the corridor which is scheduled for completion by December 1976: the results of this study will provide guidance as to the best investment policy, bearing in mind the prospects for both road and rail development.

2.11 One-third of the road program is devoted to completion of ongoing projects: however, there are now clear indications that in the future less emphasis will be placed on primary road development and more on road maintenance and secondary road development, which are essential to projected increases in economic growth and in traffic. A highway maintenance study financed under the Second Highway Project (Loan 935-CM/Credit 427-CM, US$48 million, 1973) has recently commenced.

2.12 The Government has made only little progress in establishing the necessary strategy, policy, and institutions for utilization of forestry resources, an essential pre-condition for developing an appropriate road program in the newer or less developed forestry areas. These measures include the appointment, not later than September 1, 1976, of two consultants to assist the Ministry of Agriculture in the formulation of forestry policy and legislation. The Bank has recently agreed with the Government on the appropriate terms of reference which, together with the names of suggested personnel, have been submitted to Government who are now actively considering them.

Longer-Term Prospects

2.13 The Government's Fourth Plan objectives refer to a balanced regional development and a fuller utilization of resources, and the transport needs associated with these; however, the strategy is not clear, and the transport implications have not been fully developed. The tendency is to concentrate transport investment on the Douala-Yaounde corridor. While this is currently appropriate, the long-term transport requirements of the region south of the corridor may require that consideration be given to the possibility that development of port facilities in the Kribi area in the mid-1980's could relieve pressure on Douala. Accordingly, towards the end of the 1970's, a follow-up will be necessary to the studies carried out on the Douala-Yaounde corridor, forestry road development, and the Kribi master plan, in order to produce a systematic long-term program for transport investment in the southern part of Cameroon as a whole. Discussion with the Government on this issue has already been initiated, and will be one of the subjects to which the transport economist technical assistant allocated to the Ministry of Transport will be expected to give close attention.

3. PORT FACILITIES, ORGANIZATION, AND OPERATIONS

A. Facilities

3.01 The port of Douala lies on the Wouri estuary some 30 km from the ocean. The entrance channel has a limiting depth of about 5 m below water datum, and this restricts the size of fully-laden vessels which may enter or leave port to about 3,500 dwt at high-water; however, vessels of up to about 16,000 dwt use the port when light.

3.02 Port facilities are largely on the Douala side of the estuary bordering the town, where they comprise a marginal wharf totalling almost 1,700 m (nominally eleven berths), with supporting transit sheds and a limited open storage area, a shallow quay and stacking area for handling log exports, as well as a small fishing berth and dockyard. On the opposite side of the estuary at Bonaberi, there is a wharf used mainly for imports of cement clinker and for banana exports. All berths are served by road and rail, and a bridge connects both sides of the estuary. Petroleum imports are handled at a mid-channel berth. Annex 2 gives details of the installations at Douala port and information on other ports administered by NPA.

B. Organization and Staffing of NPA

3.03 NPA is the authority for administration of all Cameroonian coastal and river ports, under the responsibility of the Ministry of Transport and Communications. NPA was established in 1972 with the cooperation of the Association under the terms of the First Douala Port Project (Credit 229-CM). The extent of NPA's powers and obligations, its organizational structure (see Chart), and the nomination of its Director-General have all been agreed with the Bank under that project.

3.04 Staff at present totals 1,089 including 39 at the upper administrative levels, which represents an increase in staff numbers since NPA's establishment of about 18%. Both the numbers and the organizational system are generally acceptable, but there is scope for some consolidation at the upper levels in view of the number of positions provided and the limited needs of a port authority of this size. In addition, the post of Director of Operations is vacant, and the work is presently undertaken by the Harbor Master. NPA has accordingly arranged for consultants ISIS (France) with FAC finance to review its management structure. NPA has agreed to discuss the recommendations of the study with the Bank, to implement the agreed plan of action, and to appoint a Director of Operations whose experience and qualifications are acceptable to the Bank no later than December 31, 1976. NPA also agreed to prepare a manpower plan showing its expected staff requirements (by year and category) over the next five years, together with proposals for meeting these requirements (para. 3.07), this manpower plan to be submitted to the Bank for review by June 30, 1977.

3.05 NPA's collaboration with the Government is reasonably satisfactory, but its representation in the planning of the industrial zones at Douala has lapsed, although this was required under the terms of Credit 229-CM. The Government has agreed to ensure resumption of NPA's representation.

Training and Advisory Services

3.06 Under the terms of Credit 229-CM and in accordance with agreements between NPA and the Bank, NPA has arranged since 1972 for the training of staff and for the engagement of expert advisory staff in certain specific areas. In accounting and budgetary control, consultants IDET, CEGOS, and BCEOM (France) provided experts who have improved procedures and trained NPA staff in the use of computers. In order to improve its maintenance dredging operation, NPA retained experts from Bos Kalis (Netherlands) to assist in operation of its cutter suction dredger "Garoua". An expert from the United Nations Conference for Trade and Development (UNCTAD) has advised on cargo movements and on the tariff structure.

3.07 The above training and the use of advisors has been successful, and under the proposed project would be continued in several fields including maintenance dredging with CIDA-financed technical assistance (para. 4.06). NPA also has a continuing arrangement with the ports of Marseilles and Dakar under which its middle-management staff can be sent for short

training courses in various aspects of port operations. Training of lower-level staff is provided on the job. The present arrangements for training are satisfactory and should be continued; to this end, NPA has agreed to provide assurances that it will submit annually for Bank approval, its proposals for staff training during the period 1977-81.

C. Budget, Accounts, and Audit

3.08 NPA's annual operating and capital budgets are prepared by its management and made operative after approval by its administrative council. NPA's modern accounting system, introduced with the assistance from consultants, provided for under Credit 229CM, conforms to the standards recommended by the Organisation Commune des Etats Africains et Malgache (OCAM) and is generally satisfactory. However, some modifications of the accounts classification would be desirable to clarify the difference between capital and recurrent costs for minor items. These modifications will be introduced over the next two years during computerization of the accounts.

3.09 NPA's accounts are audited by a "Commissaire aux comptes" who is appointed jointly by the Ministers of Finance and of Transport in compliance with the Governmental Decree establishing NPA. Both the provisions of the law and the independence of the auditor, who is a State Financial Inspector, meet Bank Group guidelines regarding the audit of Borrowers' accounts. However, because of the shortage in qualified state financial inspectors, the Government has agreed that NPA should have its accounts audited by a private auditing firm. NPA is looking for a firm acceptable to the Bank to audit its 1975-76 and subsequent accounts. Further, the Government has agreed to (a) take appropriate action to improve the quality of this audit, particulary by including comments on financial management, and (b) submit audited financial statements to the Bank for review and approval within six months after the end of each fiscal year.

3.10 NPA has insurance coverage for road vehicles (as legally required), equipment or buildings rented or hired out (and for which the hirer or tenant) pays), buildings (including equipment) against fire and explosions, harbor floating craft for public liability, and theft of electronic equipment. All other normal risks are met from NPA's own funds, which is an acceptable practice.

D. Operations

3.11 NPA's functions at Douala port include maintenance of the entrance channel by dredging and pilotage. NPA also operates a dockyard, slipway, and floating dry dock, and it maintains the quays and sheds. General cargo is handled by a number of shipping companies using their own equipment: these companies lease transit sheds at the port. Log traffic, currently the most important cargo at Douala port, is handled by the Societe pour Export des Parc a Bois Cameroun (SEPBC) which is owned partly by NPA and partly by companies active in the timber industry. Alumina and its products are handled by ALUCAM which is partly state-owned. Consignees use their own labor to collect cargo. There are no restrictions on night or holiday working, and operations continue for 12 hours per day on average. Details on port operations are given in Annex 2.

3.12 The efficiency of cargo-handling operations at Douala is reasonable compared to many other West African ports, but improvements need to be effected in two areas, log handling and maintenance dredging. At present, about 85% of log traffic arrives at the port by rail and, after sorting at an area upstream, is moved along the quay for loading on vessels at the general cargo berths. This movement of logs hampers the smooth cross-flow of general cargo traffic from vessels to transit sheds and also contributes to severe deterioration of the quay surface. The proposed project provides for construction of a new log port to enable separation of log traffic from general cargo. As regards maintenance dredging, operations are relatively expensive because NPA's dredger is small in relation to the long distances that have to be travelled to deposit the dredged material. Proposals for improving the operational efficiency of maintenance dredging will be considered under the proposed project (para. 4.06).

4. THE PROJECT

A. Objectives

4.01 The principal objectives of the proposed project are as follows:

(i) to provide additional capacity at Douala port for projected traffic, and in particular to provide separate log facilities by the creation of a log port;

(ii) to increase the depth of the access channel to Douala port, at present only about 5 m below low water, to enable specialized log carriers of up to 20,000 dwt, and semi-specialized container ships, to use the port: and

(iii) to improve road and rail access to the port and traffic flow within the port area.

The project would be the major item in NPA's investment program under the Government's Fourth Development Plan (1977-81).

B. Description

4.02 The project would comprise the following principal components:

(i) Downstream port development, including an area for handling logs, three moorings for log-carrying vessels, and a berth for containers and general cargo (Map 11635R).

(ii) Upstream port development, including new fishing berths, cold store and market facilities, and a new dockyard (Map 11680).

(iii) Dredging the entrance channel (Map 3010 R).

(iv) Road and rail access and other port improvements (Map 11680).

(v) Consulting services for supervision of construction.

Details of the proposed project are given in Annex 3 and summarized in paras. 4.03 - 4.07 below.

Downstream Port Development

4.03 At the downstream port, logs would generally arrive by rail at new sidings on the reclaimed area (20 ha), and would then be moved by tugs from the sheltered log basin for loading on specialized vessels at moorings in the channel.

4.04 The proposed container/general cargo berth would be 240 m long and 9.5 m deep with a large open storage area and a transit shed. There would be an option under the civil works contract to extend the berth to 400 meters; this option would be exercised only after agreement with the Bank on the economic and financial justification. The berth would be operated as a common user facility, using mobile cranes and cargo-handling equipment provided by the shipping companies. The design would allow ready adaptation of the berth for future use with rail-mounted container cranes and deepening to 11.5 m. In order to ensure that the specialized facilities at this berth are available to all shippers, NPA has agreed that the formulation of policy governing the preparation of lease agreements for operations at the berth will be undertaken in consultation and agreement with the Bank.

Upstream Port Development

4.05 The proposed project would provide new facilities required to promote development of the fishing industry, as follows: berths totalling 530 m and generally of 5 m depth, cold store, ice plant, market hall, and related facilities. In order to ensure that this new venture would not unreasonably strain NPA's management capability, NPA has agreed that these facilities would be operated by experienced fishing companies, and that the lease agreements for these fishing interests would be prepared after consultation with the Bank on the underlying policy objectives. The proposed dockyard, including workshops and a 500 ton floating dry dock, would replace facilities to be demolished to permit the seaward expansion of the port.

Dredging the Access Channel

4.06 The entrance channel to the port would be deepened by dredging in soft material to a depth of 7.5 m over most of its length (22 km); the outer bar would be dredged to 9.5 m. The existing two-lane channel width would be retained. CIDA would supply a dredger and key crew to

undertake this work, and would train NPA staff in use of the dredger. Because siltation in the deepened channel is expected to be greater than at present, the behavior of the channel will be closely monitored during the deepening operations with a view to establishing, within one year of completion of the works, a plan for future maintenance dredging operations. The proposed monitoring process will include a determination of the suitability of NPA's existing dredger "Garoua" for future maintenance dredging. NPA has agreed to carry out the maintenance dredging plan after Bank approval.

Road and Rail Access, and Other Port Improvements

4.07 The proposed project provides for improvement on road and rail access to the port and for construction of new railway marshalling yard facilities within the port area. Consultants will carry out a feasibility study under the Third Railway Project to determine the size of a marshalling yard at the new Douala Station outside the port area, as well as ensure coordination of this yard with the railway facilities within the port. NPA has agreed that it will implement the consultants' recommendations, adjusted as necessary to incorporate any changes or modifications mutually agreed with Regifercam and the Bank. To allow construction of the proposed improvements, some buildings near the most seaward of the existing general cargo berths would be demolished and the area incorporated within a new port boundary to improve traffic circulation within the port. Regifercam and the Douala city authorities have collaborated with NPA and their consultants in preparation of the plan for this port expansion and creation of an enlarged customs area. The Government has given assurances that all legal and other necessary steps will be taken to ensure formal acquisition by NPA of the enlarged port area so that it will be available not later than July 1978 to suit the estimated construction schedule. The project also provides for improvement of the paved area of the port which has deteriorated under heavy traffic, particularly logs.

Associated Works

4.08 A number of associated works would have to be undertaken to allow implementation of the proposed port project. NPA and the Government have agreed that they will carry out a plan satisfactory to the Bank covering the execution and financing of the following works as detailed in Annex 4: (i) relocation of the naval base; (ii) lowering the oil pipeline; (iii) modification to municipal utilities; (iv) provision of canoe beach facilities; (v) improvement of road access to Bonaberi berth, Bonaberi industrial zone and across the Wouri bridge; (vi) future commercial facilities within the port; (vii) provision of cargo handling equipment; and (viii) construction of a railway marshalling yard outside the port area.

C. Cost Estimates

4.09 The total project cost, calculated in 1976 base prices (including physical and price contingencies but net of taxes) is estimated at approximately CFAF 27 billion (US$120 million equivalent), including foreign costs

of about US$71 million equivalent. The Government has decreed that all taxes and duties on project construction and supervision will be waived. Cost estimates are detailed in Table 1 and summarized below:

		CFAF million			US$ million /1			% of
		Local	Foreign	Total	Local	Foreign	Total	Total
I	(i) Upstream port	650.8	874.5	1525.3	2.89	3.89	6.78	6
	(ii) Access	1207.6	721.2	1928.8	5.37	3.20	8.57	7
	(iii) Downstream port	2847.7	3627.6	6475.3	12.66	16.12	28.78	24
	(iv) Buildings	425.2	365.3	817.5	1.89	1.74	3.63	3
	(v) Contingencies /2	2112.0	2007.1	4119.1	9.39	8.92	18.31	15
II	Additional berth /3	330.5	497.9	828.4	1.47	2.21	3.68	3
III	Port rehabilitation /3	852.5	123.2	957.7	3.78	0.56	4.34	4
	Subtotal	8426.3	8243.8	16670.1	37.45	36.64	74.09	62
IV	Dredging of entrance channel /3 /4	832.5	4792.5	5625	3.70	21.30	25.00	21
V	Floating dry dock /3	176	702	878	0.78	3.12	3.90	3
VI	Fishing port buildings /3	413	962	1375	1.83	4.28	6.11	5
VII	Consulting Services /3	348	1392	1740	1.55	6.18	7.73	6
VIII	Land acquisition	749	-	749	3.33	-	3.33	3
	Totals	10944.8	16092.3	27037.1	48.64	71.52	120.16	100

/1 Exchange rate - US$1.0 = CFAF 225.0.

/2 Contingencies in item I include physical 15% and price 1976, 13%; 1977, 11 1/2%; 1978 to 1979, 11%.

/3 Contingencies included in items II through VII.

/4 Cost of dredging in item IV includes supply of dredger, and maintenance dredging during the channel deepening period.

4.10 The cost estimates for most of the civil works are based on the lowest evaluated bid price submitted in March 31, 1976 following international competitive bidding, with appropriate physical and price contingencies. Cost estimates for the small remaining amount of civil works and for the floating dry dock are based on those by consultants OCCR/Sogreah/DSBI and appear reasonable. The cost estimate used for the dredging of the port entrance channel is that agreed by CIDA and NPA, who will undertake this part of the project. The estimate implies a dredging unit rate which appears low and is based on rates for physical and price contingencies which are lower than those which the Bank would normally adopt. Nevertheless Cameroon has confirmed that it will if necessary arrange additional finance for any shortfall, and Cameroon would be able to bear this cost. Cost estimates for project supervision are based on estimates by consultants DSA/Tamcon/CDA 1/ (Canada). These project cost estimates exclude the training of NPA staff in a variety of disciplines, including operation of the new dredger, for which CIDA has allocated US$1.0 million equivalent.

D. Execution

4.11 NPA would be responsible for execution of the project, with assistance provided by consultants DSA/Tamcon/CDA to be financed by CIDA (estimated about 80 man-years of consulting services). The consultants have been selected in agreement with, and on terms and conditions acceptable to the Bank and the other co-donors.

4.12 In view of the need to coordinate the views of firms and authorities involved in project construction and to fulfill NPA's responsibility for project execution, NPA has agreed to designate no later than September 30, 1976, a Project Officer with the rank of Assistant Director-General, whose qualifications, experience and terms of employment are acceptable to the Bank. The Project Officer would be authorized to act in the absence of the Director-General in matters affecting project execution. NPA has also arranged to strengthen its staff during the project construction period by the recruitment of two engineers, one specialized in structures, the other in maritime engineering, under French technical assistance. Agreement has been reached with the Government, NPA and the co-donors that the Bank would undertake its customary role in the supervision of the entire project. Civil works construction is expected to start in 1976 and to be completed by 1980 and channel deepening by 1983; the proposed implementation schedule is shown in Annex 5.

E. Procurement

4.13 The project would be executed under the following principal contracts and bidding procedures:

(i) Main civil works (comprising items I & II in the cost estimate para. 4.09).	Under international competitive bidding in accordance with Bank Group guidelines. Materials and equipment for the FAC/CCCE financed dockyard workshops would be procured in French franc zone.

1/ Desjardins, Sauriol et Associes Ltee./Tamcon International Ltee./Carr & Donald & Associes.

(ii)	Port rehabilitation.	Local competitive bidding procedures acceptable to the Bank.
(iii)	Dredger supply.	Under CIDA procedures with bilateral aid.
(iv)	Supply of additional dredging equipment.	Under NPA procedures.
(v)	Crew for dredger operation.	Under CIDA procedures with bilateral aid.
(vi)	Floating dry dock.	Under CIDA procedures with bilateral aid.
(vii)	Fishing port buildings (including equipment).	Under CIDA procedures with bilateral aid.
(viii)	Consulting services.	Under CIDA procedures with bilateral aid.

These arrangements have been agreed upon by donors and by Cameroon and provide for appropriate Cameroonian participation and for unified control of the main civil works.

4.14 The main civil works contract would be divided into parts against which the respective donors would disburse as shown in Table 2.

4.15 The lowest evaluated tenderer for the main civil works contract has been selected in accordance with Bank Group guidelines. No domestic construction firms sought prequalification individually for the main civil works contract in view of their lack of experience in this specialized field. There would, however, be opportunities for such firms to work as subcontractors to the successful tenderer for this contract and to bid for the improvement works at the existing port.

4.16 CIDA will arrange competitive bidding from Canadian sources for the items it proposes to finance under procurement procedures to be decided by CIDA and NPA.

F. Financing and Disbursements

4.17 Donors and the Government have prepared a financing plan (Annex 6) which agrees closely with the project cost estimates. A condition of effectiveness of the proposed Bank Loan and the IDA Credit will be the receipt of assurances satisfactory to the Bank that full financing for the project has been secured.

Item		Financing	Amount		Approximate
			CFAF Billion	US$ Million	% of item
1.	Dredging and reclamation, downstream quays 1/ and transit shed, port rehabilitation	IBRD/IDA	5.625	25.0	53
		KfW	1.8	8.0	17
		Cameroon	1.41	6.27	13
		FED	1.1	4.89	10
		FAC	0.716	3.18	7
			10.649	47.34	100
2.	Road and rail access, utilities	BADEA	2.25	10.0	58
		AfDB	1.4	6.22	36
		Cameroom	0.24	1.06	6
			3.89	17.28	100
3.	Upstream port	AfDB	1.4	6.22	100
4.	Dockyard workshops	CCCE	0.750	3.33	96
		FAC	0.034	0.15	4
			0.784	3.48	100
5.	Dredging of entrance channel (including maintenance dredging). Supply of dredger and floating dry dock. Fishing port buildings. Supervisory consulting services	CIDA	0.525	29.00	68
		Cameroon	3.093	13.75	32
			9.618	42.75	100
6.	Acquisition of land	Cameroon	0.749	3.32	100
	Total financing		27.09	120.39	
	Total cost estimate		27.04	120.39	

1/ Includes additional deep water berth.

4.18 CIDA would arrange with NPA appropriate disbursement procedures for items which it finances. Each donor would be responsible for disbursing in the proportion of its financial contribution to the estimated total cost of the relevant part of the contract. The proposed Bank Loan and IDA Credit would represent about 21% of total project financing or about 53% of funds allocated to the component of the main civil works contract.

4.19 Assuming Loan and Credit signature by September 1976, disbursements from the Loan and Credit are foreseen approximately as detailed in Table 3.

G. Ecological Effects

4.20 Dredging is presently undertaken on a regular basis to maintain the entrance channel at its current depth. Dredging to deepen the entrance channel and the subsequent continuous maintenance dredging necessary to remove siltation would not have a significant effect upon the regime of the estuary. No change is foreseen upon artisanal fishing activity as a result of the project. The reclamation under the project would change a short length of the existing shoreline, but its effect on the hydrographic regime of the estuary would be negligible.

5. ECONOMIC EVALUATION

A. Traffic

5.01 Total commercial (excluding fishing) traffic through Douala port increased from 1.65 million tons in 1969 to 2.09 million tons in 1974 (Table 4). Of these totals, about 30 - 40% was bulk traffic which does not pass through general cargo facilities and is therefore not affected by the proposed project. Project-related traffic grew from 1.18 million tons in 1969 to 1.34 million tons in 1973, and then dropped slightly to 1.32 million tons in 1974 due to a sharp cyclical decline in timber exports.

5.02 Future prospects for Cameroonian imports and exports, and inter alia, traffic passing through Douala, have been examined in detail by consultants. Their forecasts to 1985/86 have been employed as a basis for Douala general cargo demand forecasts detailed in Table 5, modified to take into account the additional information noted below. Over 1974-86, general cargo import traffic is expected to increase by about 6.1% p.a. and exports by about 7.6% p.a., compared with respective averages of 8% and 7% p.a. over 1960-74. A detailed traffic analysis is given in Annex 7.

Timber Traffic

5.03 Timber exports are critical to total demand on non-bulk Douala port facilities; they accounted for 35% of general cargo traffic in 1973 and 30% in 1974. The consultants' forecasts (of 1.6 million tons in 1985/86 compared with 0.48 million tons in 1973) have been modified to take into account the

findings of the most recent studies of forestry potential in West Africa and the assumptions regarding evacuation of timber from south-east Cameroon via the Agence Transcongolaise des Communications (ATC) system, as contained in the Congo Second Railway Project appraisal report (Report No. 745a-COB dated March 9, 1976).

5.04 The probable volume of Douala timber exports, which makes allowance for problems of coordination between the forestry sector, Government and transport modes, is 1.17 million tons in 1985: of this, about 0.92 million tons are expected to be logs. Exports in log equivalents grew by 8.5% p.a. during 1969-73 and at over 7% p.a. over the longer period 1960-73. In 1974, however, there was a sharp decline in exports due primarily to recession in Europe, and recovery has only recently commenced. It is assumed that recovery will continue and that the 1969-73 rate of export growth will be reattained. This forecast increase over the long-term growth rate is primarily a function of the improvement in the total transport system either underway or expected (including the Second Railway Project, the present port project, and future forest road developments).

General Cargo Traffic

5.05 The consultants' forecasts for imports of foodstuffs and miscellaneous items have been increased. This increase takes into account (i) the historical relationship between the growth of imports and that of GDP, (ii) the possibility that there will be an increase in import substitution, and (iii) Bank forecasts that GDP growth will be more rapid during the next decade than in recent years. The net result of the operation of these factors is a forecast growth of 6.5% p.a. for these two categories during the next decade, compared with 6% p.a. during 1969-74. If the historical import/GDP growth ratios continued, import growth would be over 8% p.a.

Fishing Traffic

5.06 The upstream facilities comprise a fishing port and ship-repair installations which would primarily service fishing boats. The volume of commercial fish landings which provides the main justification for these facilities increased over 1970-74 from 23,000 tons to 27,000 tons, with frozen fish becoming increasingly important.

5.07 The potential demand could grow very rapidly if increased supplies of frozen fish were available. However, probable supply constraints (Annex 7) are likely to be important. Basically, the availability of potential Cameroon supplies is critically dependent upon the attitudes of Nigeria and Namibia to extension of their territorial waters which currently supply over 70% of the Douala commercial landings. It is assumed they will follow recent international trends and extend their waters, with fishing by foreign vessels progressively curtailed by physical or financial (license) measures. The net result is a forecast of commercial fish landings in 1985 of 50,000 tons, enabling fish consumption to rise by 20% per capita.

B. Project Components and Economic Benefits

5.08 The total project is analyzed in three parts: downstream facilities, channel dredging, and upstream facilities. These correspond to the most clearly definable sets of economic benefit streams. Details of the economic evaluation are given in Annex 8.

Downstream Facilities

5.09 The downstream complex will comprise a log basin enclosed by a breakwater providing a location for the displaced naval base and preventing loss of floating logs, as well as probably two general cargo/container berths. The second berth is included in the project, but a final decision on its construction will not be required until mid 1977. The utilized capacity of the existing general cargo berths and the new facilities will depend largely on the extent of further productivity improvements at existing berths, the rate of transfer of logs to the log basin, and the degree of containerization of cargo. It is assumed that productivity will improve slowly at about 2% p.a.; that 85% of log exports will be through the log basin by 1985; and that containerized traffic will rise from the current level of 70,000 tons to 350,000 - 400,000 tons by 1985.

5.10 The economic benefits from the downstream facilities take the form of avoidance of excessive ship-waiting time and costs associated with diversion of traffic to other ports in Cameroon. In the absence of the project, increased berth utilization would accommodate about 230,000 tons, and diversion to Tiko/Victoria and Kribi another 200,000 tons. Beyond those levels, the least-cost capacity provision would probably be through construction of a log-handling facility at Manoka (downstream from Douala) in 1983, a solution studied with funds provided under the First Douala Port Project and rejected as significantly less cost-effective than construction at Douala. Table 5 gives details of the forecast distribution of traffic with and without the project. The rate of return on the downstream facilities is about 18% with either one or two general cargo/container berths.

5.11 In addition, the incremental costs and benefits from provision of the general cargo container berth components of the downstream facilities were analyzed separately. The benefit from construction of the first berth is avoidance of additional ship-waiting time and the rate of return is calculated at 17%, thus fully justifying the project component.

5.12 The analysis of the construction of a second berth is more difficult. Slight variations in the magnitudes of the variables described in para. 5.09 could cumulatively have a major effect on the need for a second berth. The best estimate is that by 1985 the first general cargo/container berth would be inadequate to meet Douala's requirements. Assuming container traffic grew at only 7% p.a. thereafter (compared with about 14% p.a. forecast for 1973-86), the rate of return on the cost quoted for construction in 1979 (immeidately following completion of the first berth)

is 21% thus giving a priori justification for inclusion of the second berth in the project. Construction could be postponed until 1984 without altering the benefit streams: however, due to high remobilization costs, 1984 construction would be more than twice as expensive in constant prices as 1979 construction. The rate of return on the cost differential over the period 1979 to 1984 is equivalent to 20% on the 1979 cost which is well in excess of the opportunity cost of capital in Cameroon of 9% and thus fully justifies construction of the second berth as a unit with the first (Annex 8, para. 44).

Channel Dredging

5.13 This would produce benefits which are a function of the volume of general cargo (including logs) traffic, but which are independent of the benefits attributable to the downstream facilities. These are: (a) reduced or eliminated ship-waiting time at the mouth of the channel for favorable tidal conditions; (b) avoidance of the need for sub-optimal ship routing of larger vessels due to draft limitations at Douala; (c) benefits from use of specialized log carriers which are currently prominent at ports such as Abidjan, but which cannot economically call at Douala at present. The benefit streams are shown in Annex 8, Table 3. Initially the (a) stream is the most important, but beyond 1985 the (c) stream is expected to figure prominently. The rate of return on channel dredging from 5 to 7.5 meters is 19%.

5.14 The proposed dredged depth was the minimum acceptable to NPA, the Government, and other co-donors. An incremental analysis of the costs/benefits of dredging to 8.4 meters, as originally proposed by NPA, was carried out. This gives a negative rate of return even under the most favorable assumptions regarding incremental dredging costs (Annex 8, para. 46).

Upstream Facilities

5.15 Utilization of the existing shallow fishing berth is estimated at over 85%, exclusive of some deep-draft vessels. Consequently, saturation of the existing berth will occur in the near future. The benefits stem from value lost to the Cameroon economy from the substitution of imports for landed fish which would occur in the absence of the project. Both consultants' and independent Bank estimates suggest that value added in Cameroon is high (approximately 20% of market value).

5.16 The benefits from the workshops are also in value added, are directly related to the number of ships handled, and as the fishing fleet is the most important customer, relate directly to the volume of fishing traffic. The rate of return on the combined fishing port and workshops (in construction of which Bank Group participation is limited to dredging and reclamation works) is 10%, a rate based upon conservative estimates of potential fish stocks. This does not take into account benefits that might arise from possible transfer of artisanal fishing to the new facilities. It is not possible to establish separate rates of return on the two components, due to the large element of joint costs.

5.17 The proposed fishing quay length might be reduced by 80 meters without affecting the basic layout of the upstream facilities. The size of the ship-repair facilities, however, cannot be significantly reduced. Because both the marginal costs and benefits are small in relation to average, the rate of return on the marginal 80 meters is also about 10%, and the original layout has been retained.

Employment Generation

5.18 The project construction costs include local unskilled labor at financial wage rates; the shadow wage rates are significantly less. The difference represents a benefit which will generate a value added to the economy equivalent to a rate of return on the total project of 1/2 - 1%, not including the value of skill increases attributable.

Total Project

5.19 The overall rate of return on the project is 17%. The distribution of costs and rates of return by project component is shown in Annex 8, Table 6.

C. Benefit Distribution

Downstream Facilities

5.20 Shipping companies initially obtain benefits from the avoidance of ship-waiting time, except if real port tariffs are increased and if potential surcharges by shipping lines are avoided. The proposed port tariff increases (para. 6.08) have been accepted by NPA and would enable the direct extraction for Cameroon of about 70% of the benefits from ship-waiting time avoidance; the residual 30% would go directly to the shipping companies. However, (a) there is probably an element of cross-subsidization of Douala traffic by that to other West African ports, because passage up the long channel to Douala is a cost to the shipping companies not experienced elsewhere, and not offset either by higher shipping charges or lower port tariffs (similar at Douala and other West African ports); and (b) in the absence of the project, and with increasing shipping, the disadvantage of Douala would be greater in the near future, and thus a benefit to Cameroon would be avoidance of potentially increased shipping charges. Their prospective level is uncertain, but if they represented half the residual 30%, the combined direct and indirect benefits would give Cameroon a rate of return on the project item of nearly 16%. Excluding the surcharge avoidance benefits gives a return of about 13%.

Channel Dredging

5.21 Benefits from the use of specialized log carriers accrue initially to the logging companies and shippers. Retention of benefits in Cameroon is currently about 30%; this proportion could increase sharply if taxation revisions now under consideration by the Government are implemented. The other benefits (routing optimization and waiting-time avoidance) accrue initially

to the shipping companies, except if extracted by real tariff increases. The proposed real tariff increases account for only about 40% of these benefits, because Douala channel characteristics limit the scope for such increases without inviting retaliation by shipping companies. The benefits accruing directly to Cameroon are therefore about 30% of the first stream, and about 40% of the other two. However, at least half the non-tariff extracted benefits from streams two and three should accrue to Cameroon from avoidance of shipping surcharges, giving a combined total direct and indirect benefit to the country of over 11% on the project item, which is satisfactory.

Upstream Facilities

5.22 The benefits from these facilities have been measured in terms of value added within Cameroon. The total benefit and retained benefit are thus identical.

Total Project

5.23 The benefit retained in Cameroon is expected to be the equivalent of a 14% rate of return on the total project which is satisfactory, particularly in view of the probable benefits from external economies (resulting from retention of Douala as Cameroon's major timber port) expected to result from the project, but which have not been quantified.

D. Sensitivity Analysis

5.24 Sensitivity analysis cost and benefit assumptions are: (a) timber traffic 35% below the probable forecast, and evacuation via Congo ATC of about 0.35 million tons p.a.; (b) import traffic reduced 20% due to lower forecast GDP growth rates; (c) for upstream facilities, landings reduced 25%; (d) all capital and maintenance costs, not already subject to a final bid, increased by 50%. The simultaneous occurrence of these conditions is highly improbable, but in such an event, the following rates of return would result: 12% on downstream facilities: 9% on channel dredging; 5% on upstream facilities: 9.5% on the total project; and a total rate of return to Cameroon of 8%. Risk analysis indicates a 95% probability that the rate of return on the total project will fall between 12.5% and 16.5%.

6. FINANCIAL EVALUATION

6.01 The object of the financial analysis is to determine if the financing plan established in July 1976 can finance the project without severely affecting NPA's future financial position, and establish whether and under what conditions it will provide an acceptable financial rate of return.

6.02 To allow a realistic assessment of NPA's cash position during and after implementation of the project, the financial tables (Tables 8 through 10) have been prepared in current CFA francs under inflation assumptions shown in Annex 9. However, tables showing breakdowns of operating revenues and working expenses for the financial years following 1974/75 have been prepared in both constant 1975 CFA francs and current CFA francs. All proposed targets are based on current prices.

A. Past and Present Financial Performance of NPA

6.03 NPA produced its first commercial accounts in June 1972. Tables 6 and 7 show income statements and balance sheets for the years 1972/73-1974/75; some details are given below:

	(in CFAF million)		
	1972/73	1973/74	1974/75
Operating Revenue	1,044	1,185	1,587
Operating Expenditure	981	1,132	1,438
Net Operating Revenue	63	53	149
Operating Ratio, %	94	96	91
Rate of Return on net fixed assets in use, %	0.9	0.7	0.9
Debt/Equity Ratio	19/81	18/82	4/96

6.04 Adequate cost accounting was not available prior to the establishment of NPA in April 1972. As a consequence, tariffs remained largely unaltered and did not fully reflect operating costs from the mid-1960's until October 1974 when the tariff structure was revised, and a slight increase was applied to rates charged for the various port services (para. 6.08). This has been the main reason for NPA's poor earning situation. In spite of this, however, NPA's working capital and cash position as of June 30, 1975 was satisfactory, since it had not undertaken any major investment since its establishment. NPA's only long-term debt relates to IDA Credit 229-CM (US$1.5 million, January 1971) for the First Douala Port Project.

B. Financing Plan

6.05 NPA's financing plan for the period 1976-77/1981-82 is summarized below. Details of the sources and applications of funds statements (in current CFAF billion) are given in Table 9.

	Current CFAF billion	%
Sources		
Internal Cash Generation	12.1	38
Debt Service	5.5	17
Net Internal Cash Generation	6.6	21
Grants	5.2	16
Loans	19.8	63
Total Sources	31.6	100
Applications		
Second Port Project	26.2	83
Other Investments	1.4	4
Increase in Working Capital	4.0	13
Total Applications	31.6	100

6.06 The donors' and Government's funds under the July 1976 financing plan cover 95% of the project's financing, leaving a modest 5% as NPA's contribution. Assuming NPA's projected financial performance described in para. 6.11 to 6.15 materializes, NPA will easily generate funds to pay for its contribution to the project and finance its regular annual renewal program averaging CFAF 200 million p.a. in 1978-79/1979-80 and CFAF 300 million p.a. thereafter.

6.07 The table in para. 6.05 shows that, of the CFAF 25 billion external funds granted to NPA for the financing of the project during 1976-77/1981-82, CFAF 5.2 billion consists of grants (including CFAF 3.3 billion from the Government of Cameroon). Interest rates on funds to be borrowed range from 0-10% p.a. and repayment periods from 10-50 years (Annex 6). It has been agreed that the proceeds of the IDA Credit would be on-lent by the Government to NPA on the same financial terms as the proposed loan. Conclusion of this agreement would be a condition of effectiveness. Provided the revenue forecasts shown in Table 9 materialize, NPA could accumulate large amounts of uncommitted cash after 1981-82, as a result of project construction and the relatively soft borrowing terms. The Bank discussed the uses of this possible excess cash with the Government and NPA, including: (i) financing of additional port investments; (ii) paying income tax or dividends to the Government; or (iii) speeding up repayment of long-term debt. The Government stated, however, that it is preparing a new law making NPA and other public corporations liable to income tax. If NPA's cash generation during project construction is found to be more than is required to meet its working costs, committed investments, debt service and adequate working capital, a decrease in the Government's contribution to the cost of the project can also be considered.

Tariffs

6.08 The rate revision implemented by NPA in October 1974 simplified tariffs and also brought charges more in line with the cost of providing various port services. NPA has agreed to further restructure tariffs in order to encourage the most efficient use of port facilities, as well as to relate charges to the benefits which users will receive as a result of the proposed project. This would mean that future tariff increases would fall principally upon the larger port users such as timber exporters and international shipping agencies. The size of tariff increases for general cargo operations would thus be maintained below the average required to allow NPA to finance its share of project costs.

6.09 Additional tariff increases would be required during the project implementation for NPA to meet its contribution to the proposed financing plan and achieve the rate of return on net fixed assets in use provided for in the proposed loan agreement Accordingly, NPA has implemented a 15% increase on charges for ships and a 12% increase on charges for goods starting May 1, 1976. The financial forecasts are based on the assumption that NPA will increase its tariffs again by about 30% by July 1, 1978, by 25% when most new port facilities become available to the port users in 1980/81, and by 8% in 1982/83. A further 5% increase in rates is tentatively planned for 1984/85, but a final decision on its implementation will depend upon future developments in the NPA financial position. The proposed increases would, on the average, double tariffs between 1975 and 1985. In constant prices, this represents an increase of about 35%.

6.10 The proposed tariff revisions are not expected to have a detrimental effect on the port's traffic volume. NPA has already informed port users that tariffs would be revised periodically and has obtained their agreement in principle. Accordingly, the Bank has obtained assurances from NPA that: (i) tariffs would be increased as necessary to achieve the specified rate of return (para. 6.13); and (ii) the tariff structure would be revised so that charges reflect the costs of providing various port services.

C. Projected Financial Performance

6.11 Forecast income statements and balance sheets for the years 1975/76-1985/86 are given in Tables 8 and 10. The following table illustrates NPA's projected financial performance over the period.

	1975/76	1978/79	1981/82	1984/85
Net Income (before interest), CFAF billion	0.1	1.1	1.6	1.7
Working Ratio, %	70	55	50	54
Operating Ratio, %	96	72	76	81
Average Net Fixed Assets in Use CFAF billion	7.8	22.3	32.1	32.6
Rate of Return, %	0.9	5.0	5.0	5.3
Debt/Equity Ratio	4/96	53/47	47/53	33/67
Current Ratio	9.8	7.2	4.7	7.6

Due to the substantial contribution of the various donors to the cost of the project and to the easy lending conditions, NPA's financial position during project construction is not expected to be difficult in spite of the large increase in capital investment resulting from the Project. Borrowing will be high (Table 10) and NPA's debt to equity ratio will increase from 4/96 in 1975-76 to 53/47 in 1978-79. However, provided revenue projections are achieved as forecast, the debt to equity ratio will be reduced to an estimated 33/67 and the current ratio is expected to decrease from its present 9.8 to 4.7 by 1981-82 and to steadily increase to 7.6 by 1984-85.

6.12 The above projections show that NPA should be able to finance its share of the project and service the relevant debt. However, to prevent it from borrowing beyond a safe level in the future, NPA has agreed: (i) that it will not incur any additional debt unless the maximum future debt service is covered at least 1.5 times by its internal cash generation, and (ii) that it will not make any investment other than the Project and associated projects (except for minor items totalling not more than CFAF 200 million annually) except in consultation with the Bank between 1977 and completion of project construction.

6.13 In line with the traffic estimates and accounting for assumed tariff increases, gross revenues of the port of Douala are forecast to increase five-fold by 1984/85. The new facilities are expected to result in improved efficiency, and the operating ratio is projected to decrease from the present 96% to 81% by 1984/85, resulting in an increase in net income before interest from CFAF 0.1 billion to CFAF 1.7 billion. However, since future additions to the fixed assets base will be large, the rate of return on net fixed assets will remain low, increasing only from 0.9% in 1975/76 to 5.3% in 1985/86. NPA has agreed to take the necessary steps to earn a rate of return on average net fixed assets in use of not less than 3% during the main project implementation period (1976/77-1979/80), and of not less than 5% thereafter.

6.14 The fixed assets shown on the opening balance sheet in 1972 were valued on a replacement cost basis, and the financial forecasts assume that fixed assets will be revalued in 1978 and again in 1985. The necessity for future revaluations of fixed assets would of course depend to a large extent on the level of future price inflation. NPA has agreed to revalue its fixed assets as of June 30, 1978 and thereafter at five year intervals in consultation with the Bank.

D. Secondary Ports

6.15 The financial analysis does not include the small secondary ports of Garoua, Kribi, and Victoria/Tiko, because they carry only little traffic in relation to that of Douala Port, and because their operations have only a marginal impact on NPA's finances. In 1974/75, revenues of the secondary ports amounted to 11% of NPA's total revenues, and their expenditures to about 14% of those of NPA; these proportions are projected to be about 7% and 13% respectively by 1986. The contribution of the secondary ports to NPA's cash flow was about 10% in 1974/75, and is expected to be only about 5% in 1985/86.

E. Sensitivity Analysis

6.16 The sensitivity analysis of financial forecasts given in Annex 11 is based on the following assumptions: (a) 20% decrease in NPA's gross operating revenue: (b) 10% increase in working expenditure; and (c) 10% increase in the cost of the project excluding the main civil works contract. The analysis showed that, should all three sensitivity assumptions materialize simultaneously, NPA would suffer a slight net operating loss for each fiscal year between 1976-77 and 1985-86. The analysis further showed that, using the above assumptions, there would be an cumulated shortage of cash of about CFAF 2.4 billion for NPA by the end of 1981/82 and of about CFAF 3.0 billion by 1985/86. This shortage could only be overcome by an additional tariff increase averaging 10% or by additional long-term borrowing. Both alternatives could be considered without creating major problems to the borrower or the Government. However, all three sensitivity assumptions are unlikely to occur concurrently.

7. AGREEMENTS REACHED AND RECOMMENDATION

7.01 Agreement has been reached with NPA and the Government on the following items:

(a) with the Government:

(i) steps to be taken to improve transport planning and coordination, and the appropriate approach to planning requirements and staffing needed to achieve this (paras. 2.08 and 2.13);

(ii) assurances that the Government will appoint, not later than September 1, 1976, two consultants as technical assistants to the Ministry of Agriculture to assist in formulating policy on development of the forestry sector (para. 2.12);

(iii) confirmation that NPA will be represented in the planning of industrial zones in Douala, according to terms under Credit 229-CM (para. 3.05);

(iv) regarding the audit of NPA's accounts, the Government will: (a) take appropriate action to improve the quality of this audit, particularly by including comments on financial management; and (b) submit audited financial statements to the Bank for review and approval within six months after the end of each fiscal year (para. 3.09);

(v) assurances that the Government will take all legal and other necessary steps to ensure formal acquisition by NPA of the enlarged port area required for proposed improvements on road and rail access to the port, so that it will be available not later than July 1978 to fit the construction schedule (para. 4.07): and

(vi) confirmation of exemptions from taxes and duties on project construction and supervision (para. 4.09).

(b) with NPA:

(i) regarding issues of management and staffing, NPA has agreed to: (a) appoint no later than December 31, 1976 a Director of Operations whose qualifications and experience are acceptable to the Bank; (b) discuss with the Bank the recommendations of the consultants reviewing NPA's management structure and implement an agreed plan of action; (c) prepare a manpower plan showing NPA's expected staff requirements over the next five years, together with proposals for meeting these requirements and submit this plan to the Bank for review by June 30, 1977; and (d) submit annually for Bank approval its proposals for staff training during the period 1977-81 (paras. 3.04 and 3.07).

(ii) that the lease agreements for operations by shipping companies at the proposed new container/general cargo berth, and by fishing companies at the proposed new facilities at the upstream port, would be prepared after consultation and agreement with the Bank on the underlying policy objectives (paras. 4.04 and 4.05);

(iii) that it will establish a plan for future maintenance dredging operations within one year of completion of the proposed channel deepening, and will submit this plan for Bank approval (para. 4.06);

(iv) that it will implement the recommendations of consultants concerning new marshalling yard facilities within the port area, adjusted as necessary to incorporate any changes or modifications mutually agreed with Regifercam and the Bank (para. 4.07);

(v) that it will be responsible for execution of the project, with assistance provided by CIDA-financed consultants to be selected in agreement with, and on terms and conditions acceptable to the Bank and the other co-donors (para. 4.11);

(vi) that it will designate a Project Officer, having the rank of Assistant Director-General, whose qualifications and experience would be acceptable to the Bank (para. 4.12);

(vii) assurances that: (i) tariffs will be increased as necessary to achieve agreed financial rates of return; and (ii) the tariff structure will be revised so that charges reflect the costs of providing various port services (paras. 6.08 - 6.10);

(viii) that: (i) it will not incur any further debt unless the maximum future debt service is covered at least 1.5 times by its internal cash generation; and (ii) it will not make any investments outside the project (except for minor items totalling not more than CFAF 200 million annually) except in consultation with the Bank (para. 6.12);

(ix) that it will take the necessary steps to earn a rate of return on average net fixed assets in use of not less than 3% during the main project implementation period (1976/77 - 1979/80), and of not less than 5% thereafter (para. 6.13); and

(x) that it will, in consultation with the Bank, revalue its fixed assets as of June 30, 1978 and every five years thereafter (para. 6.14).

(c) **with the Government and NPA: that a plan will be prepared, satisfactory to the Bank, covering the execution and financing of the associated projects as detailed in Annex 4 (para. 4.08).**

7.02 Two conditions of effectiveness of the proposed Bank Loan and IDA Credit would be:

(i) The receipt of assurances satisfactory to the Bank that full financing for the project has been secured (para. 4.17); and

(ii) The agreement for on-lending the proceeds of the IDA Credit to NPA has been concluded (para. 6.07).

7.03 The proposed project is suitable for a Loan of US$15 million to the National Port Authority of Cameroon as the Borrower, with the Government as guarantor, and a Credit of US$10.0 million. An appropriate Loan term would be 20 years including 4-1/2 years of grace.

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CAMEROON

SECOND DOUALA PORT PROJECT

PROJECT COST ESTIMATE

	CFAF Million			US$ Million				Approximate % of Project Part A	Approximate % of Total Project	Financing
	Local	Foreign	Total	Local	Foreign	Total	Foreign %			
PART A										
I. MAIN CIVIL WORKS										
i. Upstream Port										
Dredging	133.2	199.8	333.0	.592	.888	1.480	60	2	6	IBRD, IDA, FAC, FED, KFW, CAM
Quays, earthworks	318.3	628.4	946.7	1.415	2.792	4.207	66.38	5		AfDB
Utilities	199.3	46.3	245.6	.886	.206	1.092	18.87	2		AfDB, BADEA, CAM
ii. Road and Rail Access										
Road	650.6	343.4	994.0	2.891	1.527	4.418	34.55	6	7	AfDB, BADEA, CAM
Rail	557.0	377.8	934.8	2.476	1.679	4.155	40.42	6		AfDB, BADEA, CAM
iii. Downstream Port										
Dredging	1252.2	2369.8	3622.0	5.564	10.533	16.097	65.40	21	24	IBRD, IDA, FAC, FED, KFW, CAM
Quays, earthworks	1170.4	1126.8	2297.2	5.202	5.008	10.210	49.05	14		IBRD, IDA, FAC, FED, KFW, CAM
Cathodic protection	6.0	70.4	76.4	.027	.313	.340	92.20	-		AfDB
Utilities	419.1	60.6	479.7	1.863	.269	2.132	12.63	3		AfDB, BADEA, CAM
iv. Buildings										
Transit shed	178.0	76.8	254.8	.791	.341	1.132	30.14	2	3	IBRD, IDA, FAC, FED, KFW, CAM
Workshops, equipment	247.2	315.5	562.7	1.099	1.402	2.501	56.06	3		FAC, CCCE
Sub-total	5131.3	5615.6	10746.9	22.806	24.958	47.764	52.25	64	40	
v. Contingencies										
Physical	850.6	761.2	1611.8	3.780	3.384	7.164	47.23	10		
Price	1261.4	1245.9	2507.3	5.605	5.538	11.143	49.69	15		
Sub-total	2112.0	2007.1	4119.1	9.385	8.922	18.307	48.72		15	
Sub-total	9243.3	7622.7	14866.0	32.191	33.880	66.071	51.20	89	55	
II. ADDITIONAL BERTH	228.3	343.9	572.2	1.015	1.528	2.543	60.10	3		IBRD, IDA, FAC, FED, KFW, CAM (Subject to IBRD approval of economic and financial justification)
Contingencies										
Physical	34.2	51.6	85.8	.152	.229	.381	60.10	1		
Price	68.0	102.4	170.4	.302	.455	.757	60.10	1		
Sub-total	330.5	497.9	828.4	1.469	2.212	3.681	60.10	5	3	
TOTAL	7573.8	8120.6	15694.4	33.660	36.092	69.752	51.70	94	58	
III. PORT REHABILITATION	522.0	75.4	597.4	2.321	.335	2.656	12.63	5	4	IBRD, IDA, FAC, FED, KFW, CAM
Contingencies										
Physical	78.3	11.3	89.6	.348	.050	.398	12.63	-		
Price	252.2	36.5	288.7	1.121	.162	1.283	12.63	1		
Sub-total	330.5	47.8	378.3	1.469	.212	1.681				
Sub-total	852.5	123.2	975.7	3.789	.547	4.336	12.63	6		
TOTAL PART A	8426.3	8243.8	16670.1	37.450	36.639	74.089	49.40	100	62	

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SECOND DOUALA PORT PROJECT

PROJECT COST ESTIMATE

Item	CFAF million			US $ million			Approximate Foreign %	Approximate % of Project Part B	Approximate of total project	Financing
	Local	Foreign	Total	Local	Foreign	Total				
PART B										
IV. CHANNEL DEEPENING										
Supply of dredger and Equipment	-	2295	2295	-	10.200	10.200	100	24	9	CIDA, CAM
Dredging	832.5	2497.5	3330	3.700	11.100	14.800	75	35	12	CIDA, CAM
Sub total	832.5	4792.5	5625	3.700	21.300	25.000	85	59	21	
V. FLOATING DRY DOCK	176	702	878	0.780	3.12	3.90	80	9	3	CIDA, CAM
VI. FISHING PORT BUILDINGS	413	962	1375	1.830	4.28	6.11	70	14	5	CIDA CAM
VII. CONSULTING SERVICES (supervision)	348	1392	1740	1.550	6.18	7.73	80	18	6	CIDA, CAM
TOTAL PART B	1769.5	7848.5	9618.0	7.864	34.882	42.746	81.7	100	35	
PART C										
VIII. LAND EXPROPRIATION	749	-	749	3.324	-	3.329	-		3	CAM
GRAND TOTAL	10944.8	16092.3	27037.1	48.638	71.521	120.164	59.7		100	
Rounded				49	71	120				

Notes:
1. Currency exchange rate US$1.0 = CFAF 225.0
2. Physical contingency 15% on Part A Civil Works and 10% on the remainder. Price contingencies on Part A 1976 13%, 1977 11.5%, 1978 through 1979 11% and 8% per annum on all Part B items. Physical and price contingencies included in Part B items. No contingency for Part C.
3. Channel dredging in Part B(IV) includes maintenance dredging costs during the construction period.
4. Sources. Lowest evaluated bid for civil works in items I(A to D) and II; estimate by consultants OCCR/Sogreah/DSBI and NPA for item III estimate by CIDA and its consultants and by consultants OCCR/Sogreah/DSBI and DSA/Tamcon/CDA and NPA for remaining items.
5. CIDA financed training of NPA staff excluded.

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TABLE 1
Sheet 2

CAMEROON

SECOND DOUALA PORT PROJECT

COST ESTIMATES AND FINANCING ALLOCATION

Project Item	Cost Estimate				Financing											
	CFAF million				IBRD/IDA FAC,FED,KFW,CAM		AfDB		CAM, AfDB, BADEA		FAC, CCCE		CIDA.CAM		CAM	
		Contingencies														
	Net	Physical	Price	Total	Net	Total	Net	Total	Net	Total	Net	Total	Net	Total	Net	Total
I. MAIN CIVIL WORKS																
(i) Upstream Port																
Dredging	333	49.9	36.3	419.2	333	419.2										
Quays	946.7	142.0	147.4	1236.1			946.7	1236.1								
Utilities	245.6	36.8	56.2	338.6					245.6	338.6						
(ii) Road & Rail Access																
Road	994.0	149.1	351.6	1494.7					994.0	1494.7						
Rail	934.8	140.2	269.3	1344.3					935.0	1344.3						
(iii) Downstream Port																
Dredging	3622.0	543.3	806.7	4972.0	3622.0	4972.0										
Quays	2297.2	344.6	425.9	3067.7	2297.2	3067.6										
Cathodic Protection	76.4	11.4	21.4	109.2			76.4	109.2								
Utilities	479.7	71.9	161.4	713.0					479.7	713.0						
(iv) Buildings																
Transit Shed	254.8	38.2	93.5	386.5	254.8	386.5										
Workshops	562.7	84.4	137.6	784.7							562.7	784.7				
Sub-total	10746.9	1611.8	2507.3	14866.0	6507.0	8845.2										
II. ADDITIONAL BERTH	572.2	85.8	170.4	828.4	572.2	828.4										
III. PORT REHABILITATION	597.4	89.6	288.7	975.7	597.4	975.7										
Sub-total	11916.5	1787.2	2966.4	16670.1	7676.6	10649.5	1023.1	1345.3	2654.3	3890.6	562.7	784.7				
IV. CHANNEL DREDGING																
Dredger & Equipment	-	-	-	2295.0									2295.0			
Dredging	-	-	-	3330.0									3330.0			
Sub-total	-	-	-	5625.0									5625.0			
V. FLOATING DRY DOCK				878.0									878.0			
VI. FISHING PORT BUILDINGS	-	-	-	1375.0									1375.0			
VII. CONSULTING SERVICES																
Supervision	-	-	-	1740.0									1740.0			
Sub-total	-	-	-	9618.0									9618.0			
VIII. LAND ACQUISITION	749.0	NIL	NIL	749.0										749	749	
TOTAL	-	-	-	27037.1	7676.6	10649.5	1023.1	1345.3	2654.3	3890.6	562.7	784.7	9618.0	749	749	

Notes:
1. Source of cost estimates, Consultants OCCR/Sogreah/DSBI, DSA/Tamcon/CIDA NPA and CIDA. Costs for items I and II based on lowest evaluated bid.
2. Amount of contingencies for CIDA financed items not available.
3. Additional berth financing subject to donor agreement.
4. For actual amounts and terms of donor financing see Annex 6.

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TABLE 2

CAMEROON

SECOND DOUALA PORT PROJECT

Estimated Schedule of Disbursements

Bank Fiscal Year and Quarter Ending	Cumulative Disbursements at End of Quarter (US$ Million)	
	IBRD/IDA Contribution	Total Donor Financing
1976-77		
December 31, 1976	2.025	5.985
March 31, 1977	4.375	11.855
June 30, 1977	6.080	20.660
1977-78		
September 30, 1977	8.850	30.655
December 31, 1977	12.240	42.715
March 31, 1978	14.180	54.045
June 30, 1978	16.780	65.785
1978-79		
September 31, 1978	19.445	77.205
December 31, 1978	22.090	89.440
March 31, 1979	22.590	98.850
June 30, 1979	23.510	102.920
1979-80		
September 30, 1979	24.275	105.255
December 31, 1979	25.000	107.665
March 31, 1980	25.000	108.550
June 30, 1980	25.000	109.360

	Cumulative Disbursements at end of Quarter (US$ Million)	
	IERD/IDA Contribution	Total Donor Financing
1980-81		
September 30, 1980	(see note below) 1/	110.165
December 31, 1980		110.980
March 31, 1981		111.795
June 30, 1981		112.650
1981-82		
September 30, 1981		113.510
December 31, 1981		114.365
March 31, 1982		115.225
June 30, 1982		116.120
1982-83		
September 30, 1982		117.010
December 31, 1982		117.905
March 31, 1983		118.800
June 30, 1983		119.765
1983		
September 30, 1983		120.160

Sources: Estimates by consultants, NPA and CIDA.

1/ $25 million disbursed by December 31, 1979

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Table 4

SECOND DOUALA PORT PROJECT

Port of Douala - Total Import and Export Traffic
('000 tons)

	1969	1970	1971	1972	1973	1974
Imports						
Petroleum Products	256	283	322	306	350	340
Fertilizer	51	42	58	38	44	35
Equipment	68	113	76	86	77	84
Cement	106	110	36	28	10	18
Clinker	23	38	121	148	138	210
Alumina	88	104	87	92	91	95
Food & Beverage	117	135	135	152	163	160
Other	216	271	305	276	274	289
Total Imports	925	1,096	1,140	1,126	1,147	1,231
Exports						
Logs	298	294	299	284	403	319
Sawn Timber	53	61	71	76	76	84
Total Timber	351	355	370	360	479	403
Coffee	68	71	75	78	84	107
Cocoa	57	61	67	62	67	69
Cocoa Products	21	19	18	20	21	23
Bananas	35	37	40	68	69	75
Cotton	31	31	24	27	37	30
Aluminum	52	41	40	42	31	32
Other	113	108	95	82	102	119
Total Exports	728	723	729	739	890	858
TOTAL TRAFFIC	1,653	1,819	1,869	1,866	2,037	2,089

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SECOND DOUALA PORT PROJECT

Port of Douala Traffic Forecasts

('000 tons)

	Actuals			Esti-mate	Forecasts										
	'69	'73	'74	'75	'76	'77	'78	'79	'80	'81	'82	'83	'84	'85	'86
Imports															
Petrol	256	350	340	384	433	490	554	620	698	756	820	889	964	1046	1111
Clinker/Cement	129	148	228	236	254	273	293	316	340	344	348	352	356	360	360
Alumina	88	91	95	98	101	104	108	112	115	116	117	118	119	120	120
Wine	16	17	18	18	18	18	19	19	19	20	20	20	21	21	22
Grain	40	53	51	55	61	66	72	78	86	93	101	110	119	125	133
Other Food	61	93	91	96	102	118	114	121	130	135	143	152	161	170	181
Equipment	68	77	84	89	94	100	106	112	119	127	134	142	151	160	170
Fertilizer	53	44	35	33	31	28	26	23	21	25	29	34	38	43	46
Other Imports	216	279	289	308	328	349	372	396	422	450	480	511	545	590	627
Total Imports	925	1147	1231	1317	1423	1576	1664	1797	1948	2072	2192	2328	2474	2625	2770
Exports															
Logs	298	403	319	366	420	443	480	513	560	620	680	750	836	920	1000
Sawn Timber	53	76	84	93	100	107	110	117	120	140	160	190	220	250	270
Total Timber	351	479	403	406	520	550	590	630	680	760	840	940	1050	1170	2170
Coffee	68	84	107	107	107	108	108	109	109	113	118	123	129	137	142
Cocoa and Products	78	88	92	98	100	104	106	112	116	119	122	125	129	133	138
Bananas	35	69	75	79	84	89	94	98	103	106	109	113	117	120	127
Cotton	31	37	30	32	34	36	39	42	45	47	49	51	53	54	56
Aluminum	52	31	32	35	38	41	44	47	51	52	52	52	52	52	52
Other Exports	113	102	119	122	125	128	131	134	138	143	148	154	163	170	178
Total Exports	728	890	858	930	1008	1056	1114	1172	1242	1340	1438	1558	1693	1836	1953
Total Traffic	1653	2037	2089	2247	2431	2632	2778	2969	3190	3408	3630	3886	4167	4461	4723

Forecasts of Project-Related General Cargo Traffic and Capacity Provision
('000 tons)

	Actual			Esti-mate	Forecast										
	'69	'73	'74	'75	'76	'77	'78	'79	'80	'81	'82	'83	'84	'85	'86
Imports	542	549	568	591	627	661	700	740	786	842	897	959	1024	1088	1156
Exports	641	790	751	816	886	926	976	1027	1088	1182	1277	1382	1524	1654	1808
(of which logs)	298	403	319	366	420	443	480	513	560	620	680	750	830	920	1000
Total	1183	1339	1319	1407	1513	1587	1676	1767	1874	2024	2174	2341	2548	2742	2964
Capacity at Optimum Utilization Existing Berths (9)			1415	1440	1466	1500	1530	1570	1623	1643	1665	1686	1706	1730	1770
Thru new facilities									251	381	509	655	842	1012	1194
Log basin									196	250	330	420	530	670	830
New container/general cargo berth									55	131	179	235	312	342[1/]	364
Alternative Capacity Provision															
(a) via buoys									147	169	194	223	259	300	324
(b) increased berth utilization									227	207	185	164	144	120	80
(c) diversion to other existing ports										5	130	230	210	190	190
(d) diversion to Manoka												38	229	402	600

1/ approximately the maximum sustainable capacity of one berth

Forecast of Traffic for the Fishing Port and the Repair Facilities

	Actual and Forecast Commercial Fish Landings (000 tons)						Forecast of the number of boats expected to use the repair facility 1/			
		Industrial 2/				Artisanal	Trawlers based in Douala	Trawlers not based in Douala	Petroleum research boats, cargo boats, oil tankers	Total
Year	Total	Total	Fresh	Frozen	Shrimp					
1970	41	23	17	5	1	18				
71	42	24	15	7	2	18				
72	42	26	16	8	2	19				
73	43	27	16	9	2	19				
74	43	27	15	9	2	20				
75	43	23	15	9	2	20				
76	44	23	14	10	2	21				
77	44	23	14	10	2	21				
78	45	23	14	11	2	22	12	2	11	25
79	50	27	14	11	3	22	14	3	11	28
80	54	31	15	13	3	23	16	5	11	32
81	59	35	15	15	4	23	17	5	11	33
82	63	39	16	18	4	24	18	5	12	35
83	68	44	17	22	4	24	20	5	12	37
84	73	48	19	25	4	25	22	5	13	40
1985	76	50	21	25	4	26	23	5	14	42

1/ Because the new repair facilities provide a service (in the form of the floating dock) which is not currently in existence, the present intermittent use of the existing repair facilities is not a useful guide on which to base forecasts. The forecast of demand for the repair facilities is based upon the assumption that 30% of the 40-boat fishing fleet predicted to exist by 1978 will use the port repair facilities, the residual continuing to use their own facilities. By 1980, if the projections of fish throughput are correct, there will be 48 fishing boats of which 16, or 33%, are expected to use the repair facility. By 1985, the fleet will have expanded to 67 boats of which 23, or 34% are expected to use the repair facilities. The slight increase in percentage use is expected to occur as depreciation of the boat owners' private repair facilities occur. Some of these owners will make use of the port's repair facilities rather than replacing their own. The projections are conservative, since by 1985 it is quite possible that the entire fishing fleet will be using the repair facilities. The percentage of boats using the facilities was estimated by the consultant from responses to questionnaires sent to boat owners asking them if they would use such facilities.

2/ The capacity of the existing fishing berth is estimated as 16,000 tons fresh fish and 13,000 tons shrimp and frozen. It is anticipated these capacities would decline (see Annex 9, Part II)in the absence of renovation of the berth,and thus effective capacity declines until the new facilities enter service in 1979/80. Thereafter,throughput is constrained by the forecast growth of supplies, up to capacity of 21,000 tons fresh and 38,000 tons frozen and shrimp.

CAMEROON

SECOND DOUALA PORT PROJECT

Table 6

National Port Authority
Douala Port

Income Statements 1972/73-1974/75
(in millions of CFAF)

	Actual		
	1972/73	1973/74	1974/75
OPERATING REVENUE			
Charges Against Ships			
Pilotage	46	52	131
Toll Fees	76	25	63
Berthing and Mooring	41	13	33
Other	9	83	208
Subtotal	172	173	435
Charges Against Merchandise			
Loaded	248	222	210
Unloaded	376	445	420
Other	-	31	29
Subtotal	624	698	659
Rentals			
Sheds	113	146	148
Timber Depot	36	50	51
Subtotal	149	196	199
Miscellaneous	99	118	294
TOTAL OPERATING REVENUE	1,044	1,185	1,587
OPERATING EXPENDITURE			
Administration	111	115	147
Maintenance	233	218	279
Salaries and Wages	196	247	316
Materials and Supplies	72	113	145
Water and Electricity	48	62	79
Other	16	39	50
Total Working Expenditure	676	794	1,016
Depreciation	278	338	422
Provisions	27	-	-
TOTAL OPERATING EXPENDITURE	981	1,132	1,438
NET OPERATING REVENUE	63	53	149
Net Non-Operating Revenue	622	55	133
NET INCOME	685	108	282
Working Ratio	65	67	64
Operating Ratio	94	96	91
Average Net Fixed Assets in Use	7,219	7,444	7,787
Rate of Return	0.9%	0.7%	0.9%

CAMEROON

SECOND DOUALA PORT PROJECT

Table 7

National Port Authority
Douala Port

Balance Sheets 1972/73 - 1974/75
(in millions of CFAF)

As of June 30:	Actual 1973	Actual 1974	1975
ASSETS			
Fixed Assets			
Gross Value	7,595	8,187	8,916
Less: Depreciation	278	616	1,038
Net Fixed Assets in Use	7,317	7,571	7,878
Work in Progress	621	509	408
Total Fixed Assets	7,938	8,080	8,287
Investments	31	40	46
Current Assets			
Cash	1,883	1,519	1,284
Receivables	174	164	310
Payment in Advance	1	9	21
Stores	77	81	97
Total Current Assets	2,135	1,773	1,712
TOTAL ASSETS	10,104	9,893	10,045
LIABILITIES			
Equity			
Capital	6,906	6,906	8,436
Retained Earnings	685	793	1,075
Total Equity	7,591	7,699	9,511
Long-Term Debt			
FIDES	1,428	1,372	-
IDA	339	360	360
Total Long-Term Debt	1,767	1,732	360
Current Liabilities			
Payables	644	304	174
Loan Installment Due in One Year	102	158	-
Total Current Liabilities	746	462	174
TOTAL LIABILITIES	10,104	9,893	10,045
Current Ratio	2.9	3.8	9.9
Debt/Equity Ratio	19/81	18/82	4/96

CAMEROON

Table 8

SECOND DOUALA PORT PROJECT

National Port Authority
Douala Port

Forecast Income Statements

(In Millions of CFAF)

		1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86
OPERATING REVENUE												
Charges Against Ships												
Pilotage	A	158	174	201	224	218	226	232	259	276	294	310
	B	174	220	254	368	358	456	470	574	612	685	722
Toll Fees	A	109	117	134	147	142	145	155	164	174	184	194
	B	120	148	170	243	235	293	314	366	389	431	454
Berthing and Mooring	A	266	315	366	398	432	455	504	556	591	624	656
	B	292	398	462	653	709	920	1021	1232	1309	1451	1526
Subtotal	A	533	606	701	769	792	826	891	979	1041	1102	1160
	B	586	766	886	1864	1302	1609	1805	2172	2310	2567	2702
Charges Against Merchandise												
Loaded	A	237	262	273	291	307	325	344	364	386	410	435
	B	261	323	336	466	492	657	697	788	835	931	988
Unloaded	A	521	577	625	677	735	768	803	928	1003	1084	1171
	B	573	711	770	1084	1177	1552	1628	2007	2169	2461	2659
Subtotal	A	758	839	898	968	1042	1093	1147	1292	1389	1494	1606
	B	834	1034	1106	1550	1669	2209	2325	2795	3004	3392	3647
Rentals	A	254	280	294	332	359	389	409	454	492	534	580
	B	279	344	361	530	573	786	830	978	1060	1208	1312
Miscellaneous	A	145	145	297	411	717	732	773	865	888	920	954
	B	160	179	367	660	1152	1480	1568	1876	1926	2097	2175
TOTAL OPERATING REVENUE	A	1690	1870	2190	2480	2910	3040	3220	3590	3810	4050	4300
	B	1859	2323	2720	4004	4696	6144	6528	7821	8300	9264	9836
OPERATING EXPENDITURE												
Staff	A	625	645	685	775	810	865	930	1080	1110	1140	1176
	B	669	742	836	1015	1134	1368	1495	1861	2044	2247	2468
Materials and Supplies	A	380	440	520	560	585	650	710	810	850	890	940
	B	414	519	660	767	860	1063	1100	1428	1591	1762	1963
General Expenses	A	185	220	250	295	315	350	400	450	475	495	525
	B	202	260	318	404	463	573	613	794	890	980	1096
Sundries	A	10	10	10	10	10	10	10	10	10	10	10
	B	11	12	13	14	15	17	18	18	19	20	21
Total Working Expenditure	A	1200	1315	1465	1640	1720	1875	2050	2350	2445	2535	2645
	B	1296	1533	1827	2200	2472	3021	3226	4101	4544	5009	5548
Depreciation	A	314	333	414	544	846	1069	1088	1106	1124	1144	1162
	B	490	514	534	687	1293	1501	1708	1983	1999	2519	2534
TOTAL OPERATING EXPENDITURE	A	1514	1648	1879	2184	2566	2944	3138	3456	3569	3679	3807
	B	1786	2047	2361	2887	3765	4522	4934	6084	6543	7528	8082
NET OPERATING REVENUE	A	176	222	311	296	344	96	82	134	241	371	493
	B	73	276	359	1117	931	1622	1594	1737	1757	1736	1754
INTEREST ON LONG-TERM DEBT	B		84	408	639	921	937	917	873	812	750	686
NET INCOME	A	150	138	(97)	(343)	(577)	(841)	(835)	(739)	(571)	(379)	(193)
	B	73	192	(49)	478	10	685	677	864	945	986	1068
AVERAGE NET FIXED ASSETS IN USE	A	7976	7953	10950	14152	18902	23620	23383	22586	21771	20937	20084
	B	7787	7974	10794	22273	32076	32685	32102	31927	30261	32598	34224
RATE OF RETURN %	A	2.2	2.8	2.8	2.1	1.8	2.0	2.5	0.6	1.1	1.8	2.5
	B	0.9	3.5	3.3	5.0	3.0	5.0	5.0	5.6	5.8	5.3	5.1
WORKING RATIO %	A	71	70	67	66	59	62	64	65	64	63	62
	B	70	66	67	55	53	50	50	52	55	54	56
OPERATING RATIO %	A	90	88	86	88	88	97	97	96	94	91	88
	B	96	88	87	72	80	74	76	78	79	81	82

CAMEROON

SECOND DOUALA PORT PROJECT

National Port Authority

Forecast Sources and Applications of Funds

(In Millions of CFAF)

	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1976/77 - 1981/82
SOURCES												
Operating revenue	1859	2323	2720	4004	4696	6144	6528	7821	8300	9264	9836	26415
Working expenditure	1296	1533	1827	2200	2472	3021	3226	4101	4544	5009	5548	14279
Cash generated from operations	563	790	893	1804	2224	3123	3302	3720	3756	4255	4288	12136
Grants		974	1547	931	676	514	554	599	55			5196
Loans		3297	8563	7263	597	30						19750
Total Sources	563	5067	11003	9998	3497	3667	3856	4319	3811	4255	4288	37082
APPLICATIONS												
Investments	300	4668	10585	8559	1678	1034	1059	1121	388	300	300	27583
Debt service												
Interest		84	408	639	921	937	917	873	812	750	686	3906
Amortization					248	531	789	810	832	855	1175	1568
Total Debt Service		84	408	639	1169	1468	1706	1683	1644	1605	1861	5474
Increase (Decrease) in working capital	(52)	98	76	223	(149)	(71)	(127)	129	89	541	(162)	50
Total Applications	248	4850	11069	9421	2698	2431	2638	2933	2121	2446	1999	33107
Cash increase (decrease) in yr.	315	211	(66)	577	799	1236	1218	1386	1690	1809	2289	3975
Cash brought forward from previous year	1284	1599	1810	1744	2321	3120	4356	5574	6960	8650	10459	1599
Cash at the end of the year	1599	1810	1744	2321	3120	4356	5574	6960	8650	10459	12748	5574
Debt coverage	N.A.	9.4	2.2	2.8	1.9	2.1	1.9	2.2	2.3	2.7	2.3	

TABLE 9

Table 10

CAMEROON

SECOND DOUALA PORT PROJECT

National Port Authority

Forecast Balance Sheets
(in millions of current CFAF)

as of June 30	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
ASSETS												
Fixed Assets												
Gross value	8916	9225	10293	16599	35158	38186	39170	40229	41250	42138	52336	52636
Minus depreciation	1038	1528	2042	3262	3949	5242	6743	8451	10434	12433	16845	19379
Net fixed assets in use	7878	7697	8251	13337	31209	32944	32427	31778	30816	29705	35491	32957
Work in progress	409	400	4000	12000	2000	650	700	700	800	300	300	300
Total Fixed Assets	8287	8097	12251	25337	33209	33594	33127	32478	31616	30005	35791	33257
Investments	46	46	46	46	46	46	46	46	46	46	46	46
Current Assets												
Cash	1284	1599	1810	1744	2321	3120	4356	5574	6960	8650	10459	12748
Receivables	310	309	387	453	667	782	1139	1223	1303	1383	1911	2029
Payments in advance	21	11	14	17	20	24	27	32	37	42	48	54
Stores	97	207	260	330	384	430	492	557	633	710	792	889
Total Current Assets	1712	2126	2471	2544	3392	4356	6014	7386	8933	10785	13210	15720
TOTAL ASSETS	10045	10269	14768	27927	36647	37996	39187	39910	40595	40836	49047	49323
LIABILITIES												
Equity												
Capital and reserves	8436	8436	8796	8796	8796	8796	8796	8796	8796	8796	8796	8796
Revaluation reserve				3035	3035	3035	3035	3035	3035	3035	11040	11040
Subsidies for investments			974	2521	3452	4128	4642	5096	5795	5850	5850	5850
Retained earnings	1075	1148	1340	1291	1769	1779	2464	3141	4005	4950	5936	7004
Total Equity	9511	9584	11110	15643	17052	17738	18937	20168	21631	22631	31622	32690
Long-term debt	360	360	3297	11860	19123	19472	18971	18182	17372	16540	15685	14519
Current Liabilities												
Payables	174	325	361	424	472	538	748	771	782	833	885	948
Loan installments due in one year						248	531	789	810	832	855	1175
Total Current Liabilities	174	325	367	424	472	786	1279	1560	1592	1665	1740	2123
TOTAL LIABILITIES	10045	10269	14768	27927	36647	37996	39187	39910	40595	40836	49047	49323
Current Ratio	9.8	6.5	6.8	6.0	7.2	5.5	4.7	4.7	5.6	6.5	7.6	7.4
Debt/Equity Ratio	4/96	4/96	23/77	40/60	53/47	52/48	50/50	47/53	44/56	42/58	33/67	31/69

CAMEROON

SECOND DOUALA PORT PROJECT

Table 11

National Port Authority

Debt Service

	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88
ADB FIRST TRANCHE												
Mobilization	601	744	55									
Repayments						97	104	113	122	131	142	154
Balance	601	1345	1400	1400	1400	1303	1199	1086	964	833	691	537
Commitment charge	3	2										
Interest	24	78	110	112	112	112	105	96	87	78	67	55
Total interest and commitment charge	27	80	110	112	112	112	105	96	87	78	67	55
ADB SECOND TRANCHE												
Mobilization		438	962									
Repayments							97	104	113	122	131	142
Balance		438	1400	1400	1400	1400	1303	1199	1086	964	833	691
Commitment charge		6	2									
Interest		18	73	112	112	112	112	105	96	87	78	67
Total interest and commitment charge		24	75	112	112	112	112	105	96	87	78	67
ABEDIA												
Mobilization		706	1544									
Repayments					67	71	75	80	84	89	94	102
Balance		706	2250	2250	2183	2112	2037	1957	1873	1784	1690	1590
Interest		21	88	135	135	131	127	122	118	113	108	102
CCCE												
Mobilization		750										
Repayments							150	150	150	150	150	
Balance		750	750	750	750	750	600	450	300	150		
Interest		21	41	41	41	41	41	33	25	17	8	
IBRD and IDA												
Mobilization	1368	2408	1515	334								
Repayments					181	363	363	363	363	363	363	363
Balance	1368	3776	5291	5625	5444	5081	4718	4355	3992	3629	3266	2903
Commitment charge	13	21	16	1								
Interest	40	229	281	485	501	485	452	420	388	355	323	291
Total interest and commitment charge	53	250	297	486	501	485	452	420	388	355	323	291
KFW												
Mobilization	439	773	485	103								
Repayments											164	168
Balance	439	1212	1697	1800	1800	1800	1800	1800	1800	1800	1636	1468
Interest	4	12	28	35	36	36	36	36	36	36	36	32
CIDA												
Mobilization	889	2744	2702	160	30							
Repayments											131	130
Balance	889	3633	6335	6495	6525	6525	6525	6525	6525	6525	6394	6264
Interest												
TOTALS												
Mobilization	3297	8563	7263	597	30							
Repayments					248	531	789	810	832	855	1175	1057
Balance	3297	11860	19123	19720	19502	18971	18182	17372	16540	15685	14510	13453
Commitment charge	16	29	18	1								
Interest	68	379	621	920	937	917	873	812	750	686	620	547
Total commitment charge and interest	84	408	639	921	937	917	873	812	750	686	620	547

CAMEROON

SECOND DOUALA PORT PROJECT

Bank Group Activities in the Transport Sector of Cameroon

Bank Group lending for transport development in Cameroon has been as follows:

1. Loan 663-CM (US$12 million), Credit 180-CM (US$7 million), March 1970, First Highway Project: This project provided for improvement of the roads Ngaoundere-Garoua (246 km) and Tiko-Victoria (22 km), and preinvestment studies for improvement of the roads Garoua-Mora (260 km) and Douala-Pont du Nkam (180 km).

The entire project has been completed. Construction of the Tiko-Victoria road was satisfactorily completed in April 1973. Construction of the Ngaoundere-Garoua road was temporarily stopped in 1973 when failures occurred on some newly-built sections because of drainage problems. The road design was then partially improved, and construction was completed in June 1975. Because of the need for these design improvements, and also due to the effects of inflation, final project costs amounted to US$35.2 million as compared with the original estimate of US$25.1 million. Original Bank Group financing of US$19 million was increased by US$2 million in May 1975 to match currency realignments. Loan/Credit funds are now fully disbursed.

2. Loan 687-CM (US$5.2 million, June 1970), First Railway Project: The project consisted of track renewal work, as well as reconstruction of the Japoma Bridge and procurement of motive power and rolling stock.

Project execution has been satisfactory for track renewal work and delivery of motive power and rolling stock. However, unforeseen technical difficulties such as extremely bad subsoil conditions made lengthy studies necessary before selecting the site and the optimum design of the new railway bridge at Japoma, near Douala. Bids were called at the completion of these studies, and results showed that the Loan Funds allocated to this item would be insufficient to cover the full construction costs of the new bridge. Supplementary financing was provided under the Second Railway Project. (Loan 1038-CM).

3. Cr. No. 229 - Douala Port Project: US$1.5 million Credit of January 14, 1971; Effective Date: April 14, 1971; Closing Date: December 31, 1974; Original Closing Date: June 30, 1973). The Douala Port Project commenced in July 1972 and physical work under the Credit was satisfactorily completed in November 1974. Covenants and undertakings agreed during Credit negotiations have been reasonably fulfilled, but financial targets were not achieved. Remedial financial measures are included in the proposed Second Douala Port Project.

4. Cr. No. 429, Loan No.935 - Second Highway Project: US$24 million Credit of September 26, 1973; Effective Date: December 20, 1973; Closing Date: December 31, 1978 and US$24 million Loan of same date; Effective date: December 20, 1973; Closing Date: December 31, 1978. The Government has awarded civil works contracts for all three roads, and construction began in December 1974. Contractors started work slowly on the Douala-Pont du Nkam (161 km) and Pont du Noun-Foumban (50 km) roads, and delays of six months to one year are expected. Construction of the Garoua-Mora (260 km) road is progressing satisfactorily. However, because of the expected large project cost overrun due to inflation, the Garoua-Figuil section (93 km) of this road has been deleted, and on March 2, 1976 the Board of Executive Directors approved a US$15 million supplementary Credit. The Bank concurrently reduced its participation in road construction from 68% to 47%. Government notified the consultants selected for the highway maintenance study in February 1976 but has taken no action to date to appoint technical assistance experts or initiate forestry stuides. The project was re-appraised in September 1975, and the total cost is now estimated at US$143 million. This would leave a financing gap of about US$74 million. In view of the unexpected magnitude of the cost overruns and the absence of additional financing from new donors, the Government has agreed to postpone construction of one road section (90 km). This would reduce total project cost to about US$121 million of which about US$83 million are foreign exchange costs. A supplementary credit of US$15 million was approved in March 1976 to help alleviate the burden imposed on the Government by the project's cost overruns.

5. Loan No. 1038 - Second Railway Project: US$16.0 million Loan to REGIFERCAM of September 18, 1974; Effective Date: December 18, 1974; Closing Date: December 31, 1977. Procurement of main project items is satisfactory. The track material has been delivered and rolling stock is being purchased. Although problems were encountered in the construction of the foundation for the Japoma bridge, the works are expected to be completed by April 1977. Due to the fluctuation in exchange rates during project implementation, additional financing was required to cover the cost of the equipment already ordered and of the reconstruction of the JAPOMA bridge. Consequently, the railway has obtained a supplier's credit of US$890,000 to supplement Bank financing for the rolling stock, and the foreign exchange cost of the consulting services (US$925,000) originally included in this Second Railway Project have been transferred to the Third Railway Project financed under Loan No. 54 which is not yet effective. Due to the world slump in the timber market and recent substantial increases in staff costs, REGIFERCAM experiences difficulty in attaining the financial covenants included in the Loan Agreement. During the negotiations of the Third Railway Project, the Second Railway Project financial targets were retained and the Government and REGIFERCAM undertook to take the necessary measures including tariff increases to achieve the target set for 1978/79. A first tariff increase averaging 12.4% has been implemented, effective June 1, 1976, and subsequent tariff increases will be implemented on July 1, 1977 and 1978, respectively.

6. Loan No.54 - Douala Railway Station and Marshalling Yard Engineering Project: US$2.3 million Loan of July 25, 1976; Effective Date: September 27, 1976; Closing Date: October 31, 1978. The Loan is not yet effective.

CAMEROON

SECOND DOUALA PORT PROJECT

Description of Existing Port Organization and Facilities

A. Organization and Operations of NPA

1. Control of NPA is exercised by an Administrative Council whose president is nominated by Decree by the President of the United Republic of Cameroon. There are eleven members of the Council consisting of representatives of the Ministries of Transport, Finance, Planning, Industry and Commerce, and Labor, and of the Douala Chamber of Commerce, the Director-General of the Cameroon Railway, two representatives of maritime interests and two Government nominees. The chief executive officer of NPA is its Director-General who is directly responsible to the Administrative Council.

2. NPA's functions at Douala port include ~~conservancy~~ and provision of navigational aids, pilotage, and operation of a dockyard for repairs of its own workboats and other small craft. General cargo is handled by four shipping companies which operate under lease agreement at designated berths and sheds. Log traffic is handled by the Societe pour Export des Parc a Bois Cameroun (SEPBC) in which NPA has an equity interest and aluminum products by ALUCAM, which is partly state-owned. SEPBC uses its own log-carrying equipment ashore, as well as tugs and barges. NPA maintains the quays and sheds. The shipping companies use their own cargo-handling equipment; NPA in addition rents a few mobile cranes and other items.

3. The present arrangements for general cargo handling are reasonably satisfactory and result in traffic throughput similar to other West African ports. For example, about 1000 tons of general cargo and logs per meter of quay were handled during 1974 at the general cargo berths. This calculation excludes berths handling special cargoes such as cement clinker, bananas and alumina.

4. About 85% of log traffic arrives at the port from forest areas by rail and is sorted and stacked in the storage area at the upstream end of the port. From here the logs are usually moved by special log tractors and trailers direct to the general cargo berths for loading, although some floatable logs are also launched into the water and towed to vessels at the general cargo berths or at moorings in the estuary. The logs are placed aboard vessels either in the hold or as deck cargo using the ships own gear. This movement of logs along the general cargo berths and stacking on the quay apron prior to loading at times obstruct the flow of general cargo from transit sheds to vessels. Moreover, the stacking and handling of heavy logs is a major cause of deterioration of the quay surface, which in turn impedes the operation of fork-lift trucks between vessels and sheds. This problem is addressed under the present project.

5. NPA undertakes responsibility for establishing suitable procedures for cargo-handling operations at Douala through lease agreements with the shipping companies who use the transit sheds, and through the other cargo handling and port organizations on which it is represented.

6. NPA maintains the port entrance channel at its present depth of about 5 m below low water datum with its dredger "Garoua". The entrance channel is relatively stable in its present alignment and depth, although maintenance dredging is expensive, and the fine silt which accumulates is difficult to dredge. The "Garoua" operates both by transporting material to deposit grounds and by overspill dredging to place bed material in suspension on ebb tides.

B. Port of Douala

Access and Topography

7. The port of Douala/Bonaberi is located at the head of the Wouri estuary about 30 km from the ocean. Vessels reach the port by a two-way channel, 150 m wide and over 9 km in total length, which is maintained by dredging to a depth of about 5 m below low water. There is an outer bar with a depth of about 7 m. Mean tidal range is about 1.7 m. The channel consequently limits the size of vessels which may enter port to about 3,500 tons dwt, or up to about 16,000 tons when lightly laden.

8. The port lies largely on the Douala side of the estuary, with some industrial wharves on the Bonaberi side. A road and rail bridge connects both; principal connections are shown on Maps 11633 and 11635R. The port occupies a very restricted site, hemmed in by the town of Douala and by a cliff which runs close to the downstream general cargo berths. Improvements within the port area and of road and rail access are envisaged under the proposed project.

Operating Schedule

9. The port's normal working hours are from 07.30 to 12.00 hours, and from 14.00 to 17.30 hours, but cargo-handling operations are undertaken without restriction on work during nights, Sundays or holidays, and on average a 12-hour day is worked.

10. Vessels using the port do not normally require assistance from tugs in berthing, but one tug is available commercially, and another is on order. Pilotage is compulsory.

Port Installations

11. Berths. On the left bank of the estuary (Douala side), there are effectively 9 general cargo berths of varying lengths in a continuous wharf of 1,494.5 m, a berth of 174 m for vessels unloading ore and loading aluminum

ingots, a shallow log-launching berth of 30 m, a shallow berth of 165 m used by fishing vessels, and the dockyard. The general cargo berths have associated transit sheds (totalling 54,000 m^2), and in some cases open storage areas (33,000 m^2). A continuous wharf of 350 m on the Bonaberi side is designated as the industrial wharf, and handles cement clinker imports and banana exports.

12. The limiting depth alongside the general cargo berths and the industrial wharf is 8.5 m, and at the fishing berth 5.0 m. At the log-launching berth and other shallow berths, the depth is less than 2.0 m. Oil-tankers discharge at a dolphin berth in the channel with 8.0 m alongside, which is operated by a commercial consortium. There are three temporary buoy moorings used by SEPBC for loading log-carrying vessels. The general cargo berths are served by rail: approximately one-third of this traffic is carried by road.

Dockyard and Floating Craft

13. Douala port also has a dockyard operated by NPA, equipped with a 100 ton slipway, about 21000 m^2 of workshops and stores and a garage. There are a 1,200 ton capacity floating dock and two floating cranes of 10-ton and 100-ton capacity. NPA has a number of launches, including seven pilot boats and other work boats.

Dredgers

14. NPA has two dredgers based at Douala. The self-propelled cutter suction dredger "Garoua" of 500 m^3 hopper capacity with a 500 m^3 barge is used for maintenance of the port entrance channel. A very small cutter suction dredger "Kienke" with floating pipeline is used for minor maintenance work within the sheltered areas of the port.

B. Secondary Ports

Port of Kribi

15. Kribi is a sheltered lighterage and shallow quay port located in the south, with a growing traffic in agricultural and log exports. It has the following present characteristics and is undergoing development.

Quays	250 m
Log park capacity	7,000 m^3
Storage area	2,500 m^2
Shed capacity	8,500 m^3

Port of Victoria-Tiko

16. This is a small port in the rocky bay of Ambas, of diminishing importance in the Western region, which caters particularly for cocoa and rubber exports. The facilities comprise:

A finger quay	about 80 m
Transit sheds and warehouses	about 3,500 m^2
Storage area	about 10,000 m^2

Tiko

17. A small port in a sheltered location in the western region, of limited importance, Tiko caters particularly for banana exports. Its facilities include:

Main wharf	about 135 m with depths to 7 m
Lighterage wharf	about 120 m
Transit shed	about 3,500 m^2

Garoua

18. A river port on the Benoue in northern Cameroon, Garona has been of limited importance since the Nigerian civil war. Its facilities comprise:

Quay	256 m
Storage	120,000 m^2
Shed	4,800 m^2
Petroleum storage and berth capacity	22,000 m^3

CAMEROON

SECOND DOUALA PORT PROJECT

Main Project Characteristics

Background

1. Development of the port of Douala has reached a stage where it is no longer practicable to increase deep-water berth capacity without a major re-structuring of the port layout. Seaward extension of the port is blocked by the dockyard and naval base and hampered by the restricted width available between the quay alignment and the town (see Maps). At the rear of the passenger terminal where the port area is narrowest, the ground rises steeply, making an inland extension of the port rather costly. Development of the upstream end of the port would be hampered by limited water depth and by the existing fishing industry, while the Bonaberi side of the channel has been zoned for industrial development and has problems of access.

2. The proposed project accordingly envisages the seaward development of the port for general cargo traffic, container traffic and log exports. This development would be facilitated by using material from deepening the entrance channel which at present has a very limited depth of about 5 m at low water. The dockyard which would be demolished to make way for access to the additional berths would be re-located upstream in a development linked to an expanded fishing port. Buildings adjoining the downstream berths would be demolished in order to expand the very restricted port area in accordance with plans prepared jointly by the Douala city authorities, Regifercam and NPA, for a ring road for the town and for improved rail access; only the first stage of improved road and rail access is included in the project. The main components of the proposed project are described below.

Downstream Port Development

3. Log Port. A new log port would be created at the downstream end of the existing berths, using material from channel deepening to form a reclaimed area for the reception, sorting, and stacking of logs. The dockyard and the naval base would be demolished and re-located to permit this proposed seaward expansion.

4. About 85% of log traffic would be expected to continue arriving by rail at the port where marshalling and other railway facilities would be provided; these facilities would handle about 4 to 5 trains per day, each of about 175 tons. A new railway marshalling yard which is the subject of the Third Railway Project would be situated at Bassa industrial zone outside the port to cater for rail movements through the port.

5. An estimated 20 ha of the reclaimed area would be used for log exports, of which about 10 ha would be allocated to log reception and sorting, 7 ha to the storage of non-floatable logs. and 3 ha for floatable logs. A rock-rubble protected breakwater would provide a sheltered area of about 18 ha for logs to be launched and formed into rafts or loaded into barges from a shallow quay of 350 m length, for transport by tugs to vessels at three buoy-mooring stations in deep water in the main channel, or to vessels at the general cargo berths depending on the volume of logs to be loaded. This system of log handling follows the practice most widely adopted at other West African ports and is considered the most economical and flexible method for handling traffic volumes projected at Douala port.

6. The above facilities could accommodate about 4 weeks' supply of logs and would provide adequate storage for the anticipated traffic up to about 1.1 million tons of logs by 1985. The storage area could be readily extended if needed for increased log traffic by merely paving an additional area of the reclamation.

7. A beach for canoe fishermen would also be provided near the log port in an attempt to discourage canoes from entering the commercial port. A shelter and other essential facilities would be provided by the city authorities under a separate project.

Container/General Cargo Berth

8. A deep-water berth 240 m long with 9.5 m depth alongside at low water would be constructed for container and for general break-bulk cargo. There is an option to extend the berth to 400 m subject to an economic, financial and operational justification to be approved by the Bank. It would have a supporting paved storage area of about 8 ha and would be designed to permit future deepening to 11.5 m. During the initial stages, goods and containers would be handled either by ships' gear or mobile cranes and by fork-lift trucks ashore, and the berth could be readily converted for use with a rail-mounted container crane if the need arose. A transit shed of about 5000 m^2 capacity would be provided ashore, and the berth would have the usual utilities.

9. This berth, together with a transit shed, would be operated as a common user facility, with each shipping/cargo handling company continuing to make arrangements for its own ship and shore container-handling equipment as at present. Stuffing and unstuffing of the containers would be undertaken outside the port area. Within the downstream port, an area would be allocated for companies using the berth to provide their own office accommodation and truck-parking area. A limited number of containers would continue to be handled at the existing general cargo berths and stored either at the new berth or at a small upstream subsidiary storage area.

10. A small amount of settlement of the dredged material used in the reclamation is bound to occur with time. Accordingly, roadways and quay aprons would be paved with interlocking concrete blocks which can be lifted

and relaid when settlement occurs. The log stacking area will be paved with a layer of pozzulana which is economical and can be regraded periodically. The bituminous surface of the container and general cargo stacking area can be relaid or upgraded as future traffic development or other circumstances may require.

11. Tenderers have submitted prices for a possible extension of this container/general cargo berth to 400 m (two berths) to enable an evaluation of the merits of constructing this additional length under the project.

Upstream Port Development

12. The upstream end of the port would be redeveloped to accommodate the dockyard and workshops displaced by the seaward extension of the port and to provide better facilities for fishing vessels. An area in the channel which is presently exposed at low water would be reclaimed by closure of part of the Wouri Bridge and by dredging reclamation with a rock rubble protected embankment which would also help reduce silt deposition on ebb tides from the main Wouri channel.

Fishing Port

13. Berths for fishing vessels would total about 530 m, most of which would have a depth of 5 m and a small length of 6.5 m where the fishing berths join the site allocated to future ship-repair facilities. The facilities in the upper port area for fishing interests include a cold store of about 15,000 m^3 capacity, an ice plant capable of producing 150 tons of ice per day, a market hall with a public area of about 500 m^2, and an area of 3000 m^2 available for fishmongers with 400 m^3 of cold storage capacity, in addition to a small workshop, administrative offices, and electrical substation. NPA would lease these facilities to fishing interests under agreements acceptable to the Bank.

Dockyard and Workshop Area

14. A dockyard and workshop area linked to the fishing port would be provided, together with administrative buildings and a fitting-out quay. Existing machinery and equipment in the present workshops, supplemented by new equipment provided under French aid and purchased within the Franc zone, would be installed in a new dockyard workshop complex at the upstream port area. These new facilities would enable NPA to carry out the repair and maintenance of its buoys and navigational equipment, dredging craft, pilot launches and miscellaneous work boats, as well as offer an essential service for fishing vessels and other small craft. A floating dry dock of 500 tons capacity would be provided with CIDA financing to replace the present small slipway which would have to be demolished to permit construction of the downstream port development.

Dredging

15. The entrance channel would be dredged to a depth of 7.5 m below low water datum over a length of about 22 km, and would retain its present width of 150 m to permit two-way passage at high water of log-carrying and other large and specialized vessels of up to about 20,000 tons dwt. At the outer bar, the dredged width would be 250 m and the depth 9.5 m because of the need for greater tolerances in this exposed situation. The material to be dredged is soft, and it is expected that a trailing suction dredger would be used. The net volume of material to be dredged is about 7.6 million m^3; side slopes would be dredged to about 1 in 10 which would be suitable.

16. Sand from the dredged channel adjoining the present port would be used to create the large reclaimed area needed for port expansion. Surplus material including silts and clays would be deposited at sea and ashore at deposit grounds to be selected by the supervisory consultants. During the period of channel deepening, the behavior of the channel and estuary would be kept under review to provide as much information as possible on future siltation, and hence on the most suitable equipment and method of maintenance dredging operations. Consideration would then be given to the possible use in maintenance operations of NPA's existing cutter suction dredger (500 m^3 hopper capacity) and of a dredger to be supplied by CIDA for channel deepening. Training would be provided in the use of the new dredger.

Road and Rail Access

17. The project would provide improved road and rail access from the city to the new downstream port area, and new railway marshalling yards and facilities to handle the increased traffic. This would entail the demolition of buildings in the city, and an expansion of the port area near the most seaward of the general cargo berths. Rail access would be improved within the enlarged port area and in conjunction with the future marshalling yard at Bassa industrial zone. The railway facilities within the port would be examined by consultants under the Third Railway Project to insure their compatibility with the new Douala marshalling yard and station. The plans for improvement of road and rail access have been prepared in cooperation with Pecifercam and Douala city authorities, and conform to their ultimate development plans. The improvements to port access and the creation of the new reclaimed areas would enable repairs to be carried out on paved areas within the existing port boundaries which have so far been neglected.

Consulting Services

18. CIDA would finance the services of consulting engineers to be engaged to assist NPA in project execution, in coordination of all project components including bilaterally and items financed by several donors and in preparation of progress reports for the Government and the co-donors. The consultants have been selected in agreement with and on terms and conditions acceptable to the Bank and the other co-donors.

Associated Projects

19. The proposed major improvements to the port of Douala make it necessary or advisable to carry out various additional works not included in the project. Details of these associated projects are given in Annex 4.

CAMEROON

SECOND DOUALA PORT PROJECT

List of Associated Projects

The proposed major improvements to the port of Douala make it necessary or advisable to carry out various additional works not included in the project. These associated projects are described below, together with details of arrangements to be made to assure their implementation within specified time-limits, in accordance with the tenderers agreed construction program and after Bank consultation.

1. New Naval Base

The existing naval base will have to be demolished to permit extension of the port area downstream for the new log port and container/general cargo berth. The Government will arrange for the base to be vacated by June 1977 to suit the contractors' construction program.

Arrangements will be made, in agreement with NPA, to accommodate naval vessels either at Douala or other NPA commercial ports until completion of a new base, a site for which would become available at the seaward end of the log port breakwater by 1979. The costs of constructing the new base and of providing alternative accommodation for naval vessels, will not be charged to NPA or the proposed project.

2. Oil Pipeline

The underground oil pipeline which connects the mid-channel oil tanker berth to the storage tanks ashore will have to be lowered in order to provide an access channel of adequate depth to the proposed fishing berths and dockyard. NPA will arrange with the oil companies to have the necessary alterations made to suit the port construction program; the financing plan for the works will be agreed with the oil companies.

3. Modification to Municipal Utilities, and New Offices for Maritime Companies

To allow for the planned port expansion, offices and other property in the city near the downstream general cargo berths will have to be demolished. This demolition and the associated improvements in road and rail access which are proposed under the project, will necessitate the modification of utilities outside the port boundary such as water supply, telephone lines, electricity, and drainage. The appropriate state and municipal utility organizations will ensure that the required modifications will be carried out to suit the approved port construction program; the financing plan for such modifications will be agreed between NPA and the appropriate authority.

The displaced maritime companies will be given every assistance, for example, by issuing of building permits and arranging suitable alternative accommodation so that port business is not adversely affected. The financing plan for demolition of property outside the port boundary will be agreed with the respective owners.

4. Canoe Beach Facilities

The proposed project makes provision for a new beach for canoe fishermen at the seaward end of the new log port to discourage their use of the commercial port. In order to provide an incentive for using this beach, the Douala City Authority will make available by 1980, at its own expense, the following amenities: a shelter, supply of fresh water, and adequate parking and other facilities.

5. Improvement to Road Access to Bonaberi berth, Bonaberi industrial zone, and across the Wouri Bridge

Since the Wouri Bridge links the two sides of the estuary on which NPA operates port facilities, NPA has a special interest in maintaining its surface, as well as the road access to Bonaberi berth and to the Bonaberi industrial zone, all of which are now in very poor condition (See Map 11680). The Government will take the necessary steps to have the roads and the bridge surface repaired by 1980; the costs of these works will not be charged either to NPA or to the proposed port project.

6. Future Commerical Facilities within the Port

The shipping companies and other firms who would use the new container/general cargo berth and the new log port will require office accommodations, parking space, and associated facilities as traffic develops. NPA plans to make it possible for these companies to construct their required facilities at their own cost. Also, when present log operations are moved downstream, NPA plans to allocate space in the upstream port to companies wishing to finance and build warehouses and allied port facilities. Planning and financial arrangements for these commercial facilities will be done in consultation and agreement with the Bank.

7. Cargo-handling Equipment

As traffic develops at the new log port and the container/general cargo berth, the companies undertaking cargo-handling (including logs) will require additional equipment. NPA will prepare appropriate lease agreements for these new port facilities to ensure the availability of adequate cargo-handling equipment, including tugs, as needed; the policy governing these lease agreements will be subject to Bank approval.

8. Future railway marshalling yard

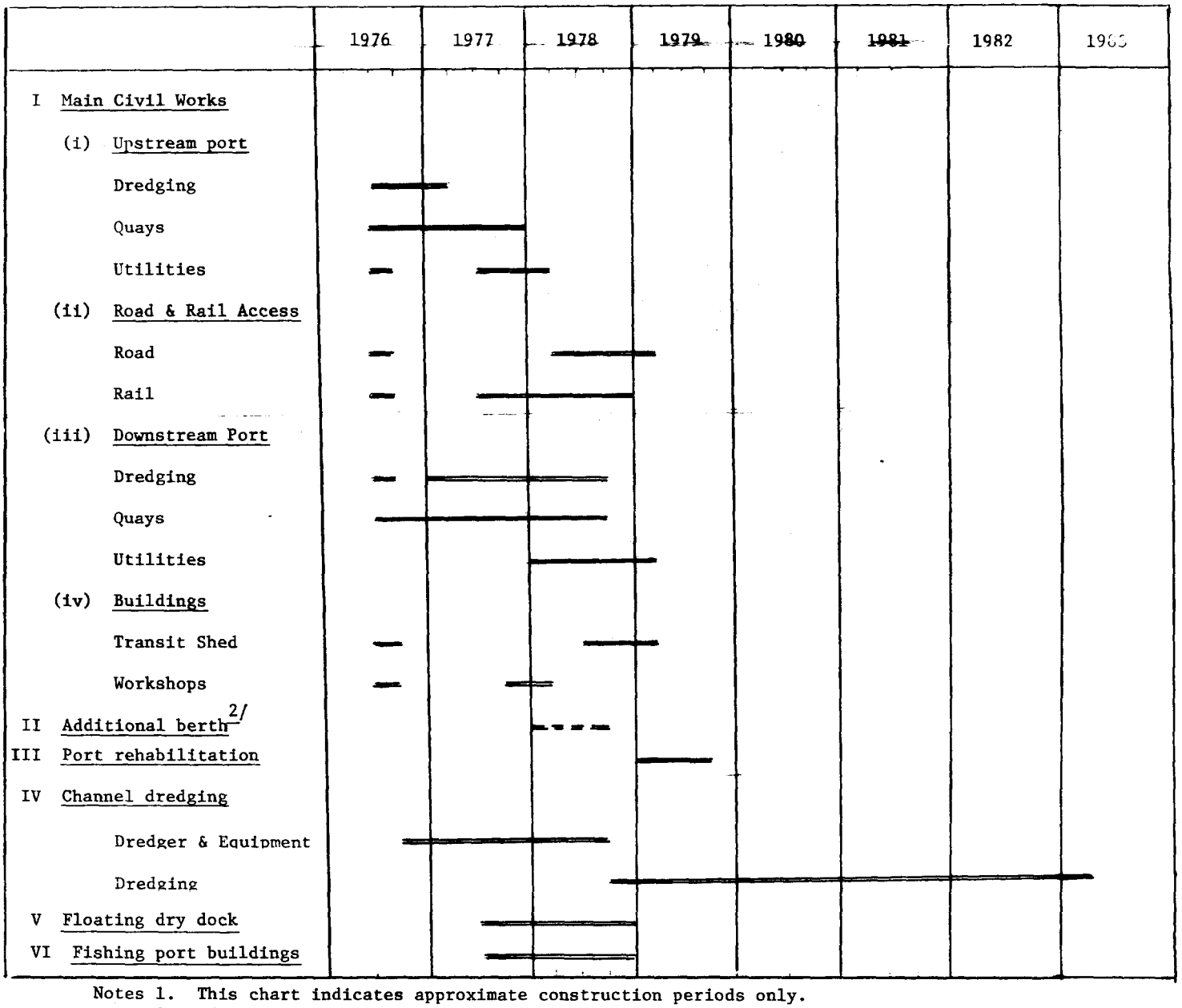
The railway marshalling yard in Douala city is inadequate to handle the volume of log and other traffic expected to pass through the port by rail. Accordingly, a new marshalling yard and railway station are

proposed at Bassa industrial zone outside Douala city; these facilities and the accompanying rail link to the port are planned for financing under Bank Group projects now being processed which would cover both detailed engineering and construction. The timing of proposed studies, including final engineering and project construction works, which are expected to be completed by 1982, will be coordinated with the implementation schedule for the proposed port project.

CAMEROON

Second Douala Port Project

Schematic Implementation Schedule for principal project items



Notes 1. This chart indicates approximate construction periods only.
2. Additional berth subject to Bank approval.

CAMEROON

Second Douala Port Project

National Port Authority

Project Financing Plan

List of Loans and Grants

No.	Donors	Foreign Currency	Foreign Currency Amount	Unit Exchange Rate in CFAF	Amount CFAF Million	Commitment Charge %	Interest % p.a.	Terms of Repayment	Purpose of Loan
	LOANS								
1.	ADB 1st tranche	Units of account	5 million	280	1400	0.50	8	15 yrs. incl. 5 yrs. of grace (equal annuities)	Upstream port
2.	ADB 2nd tranche	" "	5 million	280	1400	0.50	8	" "	Road and rail access utilities
3.	ABEDA	US$	10 million	225	2250	---	6	22 yrs. incl. 3 yrs. of grace (equal annuities)	Road and rail access utilities
4.	CIDA	Can. $	29 million	225	6525	---	-	50 yrs. incl. 10 yrs. of grace (equal repayments)	Dredging of entrance channel; supply of dredger and floating dry dock; fishing port buildings; supervision of construction
5.	CCCE	CFAF	750 million	1	750	---	5.5	10 yrs. incl. 5 yrs. of grace (equal repayments)	Dockyard and workshops
6.	KFW	Deutsch Marks	20 million	85	1800	---	2	20 yrs. incl. 10 yrs. of grace (equal annuities)	Dredging and reclamation; downstream quays; transit shed; port rehabilitation
7.	IBRD	US$	15 million	225	3375	0.75	8.9	20 yrs. incl 4 1/2 yrs. of grace (equal repayments)	" "
	IDA (to Government)	US$	10 million	225	2250	On-lent to NPA under the same conditions as IBRD loan			" "
	GRANTS								
1.	FED	Units of account	4 million	280	1100				" "
2.	FAC	CFAF	750 million	1	750				" "
3.	Cameroon Government	CFAF	4000 million	1	4000				" "

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SECOND DOUALA PORT PROJECT

National Port Authority

Project Financing Plan

	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	Total
LOANS									
ADB 1st tranche	601	744	55						1400
ADB 2nd tranche		438	962						1400
ABEDIA		706	1544						2250
CCCE		750							750
IBRD/IDA	1368	2408	1515	334					5625
KFW	439	773	485	103					1800
CIDA	889	2744	2702	160	30				6525
TOTAL	3297	8563	7263	597	30				19750
GRANTS									
FAC	184	351	199	16					750
FED	258	453	285	104					1150
Government	532	743	447	556	514	554	599	55	4000
TOTAL	974	1547	931	676	554	554	599	55	5850
ONPC	197	275	165	205	190	205	222	33	1492
GRAND TOTAL	4468	10385	8359	1478	734	759	821	88	27092

CAMEROON

SECOND DOUALA PORT PROJECT

Traffic Analysis

A. Commercial Traffic (excluding fishing)

1. Table 4 attached to the main report shows the growth of import and export traffic through Douala port between 1979-74; Table 5 shows the forecast growth to 1986. Certain commodity groups are currently either handled by specialized facilities or at a specific, designated berths and have therefore been excluded from consideration in assessing the need for, and the effects of providing, the new facilities in the proposed project. These commodities are as follows: petroleum, clinker, bananas, alumina and aluminum, and bulk wine.

2. The remaining traffic, which is handled by general cargo methods, is therefore the traffic relevant to the project. The forecasts for this traffic are shown in Table 5, both with and without the project.

3. The forecasts are largely based upon those of consultants OCCR. Their timber forecasts have however been modified to take into consideration the views on Cameroon export prospects contained in the most recent studies of West African forestry potential, and the Congo Second Railway Project Appraisal Report (CRA). Furthermore, the consultants' import traffic forecasts have been adjusted to take into consideration Bank forecasts of GDP growth in Cameroon through 1986, the historical relationships between imports and GDP growth, and possible modifications to those relationships. Comments on the main traffic forecasts are given below.

B. Imports

4. Import traffic is projected by establishing behavioral relationships between growth of imports and growth of GDP. Projections of GDP will then define future import traffic.

5. GDP grew at a rate of 3.5% p.a. from 1969-74. Since 1974, the annual rate of growth has fallen to 3%, primarily as a result of the world economic recession. Recovery has begun, and GDP is expected to increase at an average rate of 5% p.a. between 1974-85.

6. The relationship between the growth of imports and GDP, based on 1967-74 national data, is shown below:

Imports
GDP

	Foodstuffs	Other Imports	Equipment	Total
1969-1974	1.8	1.7	1.2	1.68
1974-1985	1.4	1.35	1.2	1.33

The relative reduction in the foodstuffs/GDP ratio compared with that for other imports results from the fact that greater opportunities exist in the immediate future for import substitution in staple foods such as sugar than in the various manufactures which comprise other imports. Taking the three commodity groups together, an average yearly growth in GDP of 5% will cause an average yearly growth in imports of 6.7% (1.33 x .05).

Fertilizer

7. Fertilizer imports are expected to decline until about 1980 as a result of import substitution by local production. At that time, the capacity of the local plant is expected to be reached. Consequently, there will then be an increase in imports which will return to the current volume by about 1985.

Clinker/Cement

8. Although clinker imports handled at the specilized Bonaberi Berth do not affect the demand for general cargo facilities, those of cement do. The process of substitution of clinker for cement, begun in 1969, is now virtually complete, and cement imports should henceforth be limited to a small annual residual of about 10,000 tons.

C. Exports

Timber

9. The future volumes of timber exported through Douala are critical to the justification of the project, as they currently account for over 30% of general cargo traffic and are expected to comprise about 40% in 1986.

10. The volume of timber exports for Cameroon increased by nearly 10% p.a. over 1969-73, with Douala's share in the total decreasing slightly due to operational constraints. The other timber export ports, accounting for about one-quarter of the total, are Kribi and Campo. Up to 1974, the problem of supply represented an important constraint on exports. This was related primarily to the inadequacy of the transport system to evacuate the quantity of timber potentially exploitable. In 1974 and 1975, the principal constraint was one of declining world demand, which is now recovering as the economic recession in Europe and the U.S. subsides. Given the large

timber potential of Cameroon, the degree to which the port system can be improved so as to permit more rapid evacuation may be the major determinant of the rate of increase of timber exports.

11. World sales of timber grew at 8% per year from 1965-70. Most of the demand for African timber (90%) is in Europe. According to the forestry studies, tropical hardwood entering into world trade should increase at 5.5% per year from 1975-80 and at 4.2% from 1980-85. The same studies predicted the following for Cameroon:

Timber Exports 1985
(millions of m^3)

West African Region		Cameroon	
High estimate	Low estimate	High estimate	Low estimate
18.2	13.0	2.2	1.8

Low estimates assumed only a very modest rise in world prices for timber, as well as only a modest improvement in the transport network. The high projections assumes an increase in world prices of between 35-50% between 1972-80 and 5-10% from 1980-85. It also assumes that supply bottlenecks, such as the inadequate transport network, can be removed.

12. Two sets of forecasts have accordingly been considered; the basis in both cases is the recent studies of West Africa forestry potential already mentioned. The sets can be described as Probable and Minimal. The Probable represents the volume anticipated taking account possible organizational constraints in the forestry sector, and it is employed in the project economic benefit analysis. The Minimal, based on the lower forecasts of the studies, is employed in the sensitivity analysis. The results are shown in the table on page 5 fo this Annex.

Probable

13. The forestry studies made it clear that supply and not demand constraints are likely to determine the regional, and by inference, the national level of exports during the period to 1985. Two sets of forecasts were adopted. The lower assumed transport improvement at only an historical rate. This seems inappropriate as far as Cameroon is concerned, where (a) the Second Railway Project, (b) the Second Douala Port Project, (c) the complementary Third Railway Project, and (d) the forestry feeder road study financed under the Second Highway Project are all designed to substantially improve the transport system, with particular reference to the evacuation of timber.

14. Thus the higher forecast is adopted as the starting point. The overall regional total volume for this is forecast as 18.2 million m^3 in 1985, or 40% above the low forecast of 13.0 million m^3. However, while for the

Central African sub-region (CASR) 1/, the difference is rather in excess, at 45%, of the average (which is understandable in view of the more limited expansion opportunities in the more developed exporting countries of Nigeria, Ivory Coast and Ghana) and expansion of Zaire production is expected largely to account for this. The rationale given is that unless the presently inaccessible interior of Zaire is opened up, the resource capacity of the region and sub-region will be inadequate to meet the demand.

15. This implies that the probable demand for Cameroon timber is higher than forecast. If, in fact, the difference between the low and high estimates were assumed constant for all CASR at +45%, the Cameroon potential would rise to 2.6 million m^3 in 1985.

16. The potential availability of Cameroonian supplies does not seem to be in doubt. The forestry studies note that the Yokadouma and Dja forest reserves have an area of approximately 11 million ha and estimated timber stock of about 100 million m^3 of first class species and 150 million m^3 of lesser known species of marketable size. In the CRA report, it was assumed that blocs 5, 6, and 11 of the Yakadouma reserves which cover an area of about 1.2 million ha would yield about 0.4 million tons (or about 1/2 million m^3) by 1985, which would be evacuated through the Congo ATC system. Thus the implied potential of the remainder of these reserves is clearly considerable; the problem is one of mobilization of resources and transport.

17. The forestry feeder road stydy to be undertaken with funds provided under the Second Highway Project is critical to this mobilization. It is assumed for the purpose of this appraisal that the study will get underway shortly, and that it will recommend development of feeder roads to the Trans-cameroon railway. Furthermore, it is anticipated that such a program of investment will be implemented. (The Bank's Basic Economic Mission Report on Cameroon (Transport Section) foresees that this program will account for about 40% of Bank lending in the highway sector during the Fourth Plan 1976-81.) The average distance to railheads from the Yakadouma and Dja areas (excluding blocs 5, 6 and 11) is about 250 km, and this, combined with the Cameroon Government's policy of encouraging timber exports through low average rail charges, indicates that transport costs will be low enough to make exploitation of secondary as well as primary species commerically viable.

18. Thus the total volume of Cameroon timber exports in 1985 is forecast as 2.6 million m^3 equivalent. Of this, about 0.5 million m3 is assumed to be evacuated via Congo ATC in accordance with the CRA report, leaving 2.1 million m^3 for evacuation via Douala and Kribi. This is equivalent to 1.4 million tons after deduction of wastage in processing sawn timber, and it is forecast that Douala will handle about 920,000 tons of logs and 250,000 tons of sawn timber. This is equivalent to about 8% p.a. increase over 1973-86, somewhat above the 7% p.a. recorded for Douala during 1960-73.

1/ Comprising Cameroon, CAR, Congo, Gabon, and Zaire.

Minimal

19. The minimal forecast employs the pessimistic forestry studies' estimated total for 1985 of 1.8 million m^3 as a base and deducts 410,000 m^3 for evacuation via Congo. This is consistent with the central CRA assumption of 500,000 m^3 from a higher total volume.

Cameroon Timber Export Forecasts 1985 /1

	1973	1985 Probable	1985 Minimal (Sensitivity)
Total production for export (million m^3)		2.6	1.8
Evacuated via Congo ATC (million m^3)		0.5	0.4
		('000 tons)	
Total through Cameroon of which:	670	1,420	950
Kribi	190	250	220
Douala logs	403	920	575
Douala processed	77	250	155
Lost through processing	(77)	(250)	(155)

/1 Wastage in processing is assumed to equal 50%. Quantities were converted from m^3 to tons by the coefficient 0.8 tons per m^3, the average for Cameroonian export species.

20. Other Exports

(a) Coffee. Quantity exported increased at about 9.5% p.a. between 1969-74, reflecting a recovery from a depressed supply and demand situation in the mid-1960's. A more stable situation is assumed in the future, with exports growing at about 1% p.a.

(b) Cocoa and cocoa products. The quantity of cocoa exported is expected to grow at about 4% p.a. until 1980, somewhat above the 3% p.a. growth between 1969-74. This increase in exports will be influenced by a recovery from the recent drop in demand for cocoa products caused by a sharp rise in prices between 1971-74. Demand should be stimulated by the projected decline in current prices. After 1980, it is assumed that a potentially weak demand situation will again restrict export growth.

(c) Other exports. These are expected to grow, on average, appreciably more rapidly than in recent years. This partly reflects new agricultural developments such as rubber plantations in the Kribi region and also the growth of semi-processed exports and of finished goods such as textiles.

D. Traffic Forecasts for the Upstream Facilities

21. Forecast volumes of fish landed at Douala generate the demand for fishing facilities, and servicing of the fishing fleet constitutes the main demand for workshops and ship-repair facilities.

Fish Landings

22. The future demand for fish supplied by the industrial fishing fleet, and thus the demand for port facilities, is based on the following assumptions:

(a) A future population growth of 2.3% p.a.;

(b) A yearly increase in per capita fish consumption of about 3%, resulting from the continued increase in frozen fish consumption per person in the interior (of about 6% p.a.). Consumption per capita in the interior has increased rapidly as a result of the introduction (in 1968) of frozen fish which could be transported to those regions. The demand which remains to be satisfied in the interior is indicated by comparison of average consumption per person (in 1970) between several areas of population concentration:

	(kg per capita)
Douala	59.4
Yaounde	40.8
Ebolowa (South Central)	27.4
Bertoua (East)	20.5
Kubiba (West Cameroon)	5.3
Other towns (avg.)	1.7

(c) 75% of fish landed by the domestic fishing fleet is taken from outside of Cameroon's waters because the coast of Cameroon is not particularly good fishing territory. The best territory exists to the north of 23° north latitude (Mauritania) and south of 23° south latitude (Angola and Namibia). In the Gulf of Guinea there are zones of water

called upwellings which bring nutritive elements up to the depths at which the fish caught for commercial purposes live, hence providing good fishing potential. Such upwellings occur off the coast of Nigeria, and it is here that about 52% of Cameroon's industrial fish are caught, another 27% coming from the waters off the coast of Namibia.

Extension of territorial waters by Nigeria and Namibia would place the grounds now fished by Cameroonian vessels within territorial waters. It is likely that licensing fees would be imposed upon vessels operating out of non-national ports. Since the affected vessels from Douala are foreign-owned, it is possible that they would move to Nigeria. This would imply that Cameroon does not have a comparative advantage in large-scale commercial fishing, and the advantages of operating through new fishing port facilities in Cameroon might be offset by the fees required to fish in foreign waters. This could at worst leave only the smaller boats discharging in Cameroon, but it is most likely to effectively increase the cost of fish landed in Cameroon from distant waters. It is assumed that these additional costs would be largely passed on to the Cameroonian consumer. However, as a result of the uncertainty of supply of fish, projections of fish landings at Douala are substantially lower than projections of demand, at constant prices, the difference made up by both real price increases (thus reducing demand) and imports. The margin of error involved in these projections is quite large in both directions. Cameroon recently concluded a protocol with Gabon permitting Cameroonian fishing boats to again fish in Gabonese waters from which they had been excluded. This will increase the potential catch of the Cameroonian fleet.

(d) The conservative projection of fish landings used in the economic analysis assumes a supply/demand equilibrium in 1985 at a level about 20% above the constant per capita demand level of 63,200 tons of industrial and artisanal fish, or 76,000 tons. The breakdown is shown in Annex 9, Part II, from which it will be seen that this implies full utilization of fresh fish facilities by 1985, with some spare capacity remaining for frozen fish. The forecast growth rate for industrial fish consumption is thus about 6% p.a., which is much lower than the 19% increase over 1966-70, but slightly greater than the constrained growth of about 5% p.a. thereafter.

CAMEROON

SECOND DOUALA PORT PROJECT

Economic Evaluation

1. This annex is in five parts. Part I gives a brief description of the project's background and components. Part II gives the economic rationale of the project. Part III discusses the distribution of benefits between the Cameroonian and foreign agencies, primarily shipping companies. Part IV deals with the sensitivity analysis and Part V with incremental analysis.

PART I - Background

2. The necessity of a Second Douala Port Project was foreseen during the planning for the First Douala Port Project. The first project recognized:

(a) that some immediate provision of log export capacity was required; and

(b) longer-term requirements of the port would require detailed study and would probably necessitate a radical change in physical characteristics of the port.

3. The First Port Project included:

(a) development of an industrial quay on the west side of the Wouri river which provides for the clinker imports requirements of CIMENCAM (Cameroon Cement Company) and the requirements of specialized banana export ships;

(b) alleviation over the short term (eight years) of the problem of congestion of facilities used to handle and load logs by constructing a stacking area for logs, improving access to the river, and by providing mooring buoys for vessels loading timber in mid-stream.

4. Although there were delays in project completion, the First Port Project is expected to generate a satisfactory rate of return until superseded by the proposed second project.

5. Facilities included in the Second Port Project:

(a) Downstream Port. An additional port complex downstream of the existing general cargo facilities, which would comprise the equivalent of one general cargo/container berth, with provision for a second berth if justified by a separate analysis to be undertaken in 1977, and an enclosed log basin together with the necessary stacking and back-up areas. The log basin is designed to serve specialized log-carrying ships which are expected to grow in importance as log export volumes increase. The gradual substitution of specialized log carriers would in turn release general cargo capacity for other traffic, which by 1985/6 would be the equivalent of about one general cargo berth.

(b) Channel Dredging. This is a necessary complement to both the introduction of specialized log carriers, which are of larger capacity and deeper draft than the normal run of general cargo vessels, and to the eventual introduction of specialized container vessels. This project component is economically independent of the others, since the economic benefits result from: (i) reduction or elimination of costly delay in awaiting favorable tide conditions for entry to and exit from the port; (ii) avoidance of suboptimal routing; and (iii) scale economies in specialized vessel usage. The costs associated with dredging material and utilizing it in contruction of the downstream facilities have been distributed between the two project elements in accordance with consultants' estimates.

(c) Upstream Port. This will accommodate the dockyard and workshops removed from their present development constraining location, as well as an expanded fishing port to accommodate future traffic growth and located close to fish-processing activities.

(d) Road and Rail Access. This is a necessary complement to the investments noted above, principally (a) and (c). In effect, without the improved transport within the port which this access would provide, the increased volume of traffic forecast, particularly of timber, could not be efficiently moved between the quayside and the transport links outside the port boundaries. Associated with this access provision are external road and rail developments which are not part of the project.

PART II - Economic Analysis of the Proposed Project

Project Capacity Provision

A. Downstream facilities

6. The project will have to accommodate an increase of about 1.6 million tons or an increase of 125% in traffic. It will do so through (a) provision of specialized log-loading facilities; (b) increased general cargo berth productivity; and (c) provision of an additional berth for container/general cargo handling.

(a) Log exports, which are currently handled in one of three ways (from shore directly to ships at berth, from shore via water to ships at berth, and from shore via water to ships at anchorage), will gradually concentrate on loading to specialized vessels via the proposed log basin. It is assumed, in accordance with the OCCR analysis, that 73% of log exports will be transported by these specialized vessels by 1986, and in addition, floatable timber exported on general cargo vessels will be handled through the log basin, giving a total of 85% of log traffic thus accommodated. In the first year of operation of the log basin (1980), it is expected to handle about 50% of log traffic. The existing specialized log-handling facilities, the paved stacking area at the northern end of the port, and the buoys in the channel will be phased out concurrently with the transfer described above. The area released will thereafter accommodate both the shipping interests displaced by the demolition accompanying the construction of road and rail access and the warehouses which are a necessary complement to the project. The transfer of traffic to the log basin will release some capacity for general cargo use. This will be limited to about 200,000 tons by 1985 (compared with 1973) due to the continued passage of some timber traffic over the general cargo berths.

(b) The increase in general cargo traffic will be met firstly by a slow increase in productivity at existing general cargo berths which is expected to average about 2% p.a. between 1974 and 1985/86, as compared with a relatively rapid increase of about 3% p.a. between 1969-74. The 1969-74 increase resulted principally from improvements in log-handling operations and the introduction of larger ships to West African operations by SNCDV, the major operator through Douala. The effects of these innovations have now largely been exhausted, and benefits from improvements by other smaller shipping companies are likely to be much slower in appearing.

(c) The growth in general cargo will be partly met by an increase in containerization which is expected to be handled mainly at a new deep-water berth. Container traffic is expected to reach about 360,000 tons by 1986. This is somewhat above the likely berth capacity, and consequently it is highly probable that a second berth will be required. Construction could theoretically be postponed until about 1984, but the economies of scale in port construction make continuous construction of the two berths preferable. An option for construction of a second berth has accordingly been built into the overall project, but a decision whether or not to exercise it does not need to be taken until mid-1977, by which time NPA is expected to produce an updated analysis of the economic justification for a second berth.

Operational Characteristics without the Project

7. The forecast volumes of traffic will place demands upon the port with which the existing facilities could not cope without a very high level of congestion and long delays to ships. The optimum level of general cargo berth utilization for a port of this size is about 75%. It is assumed that in the absence of the port project, part of the excess demand would be met by increasing berth utilization to 90%; beyond that level, the costs of congestion begin to increase very sharply, and it is theoretically less expensive to divert cargo. (Experience in Nigeria suggests that a very high incidence of delay will be tolerated before diversion takes place if international frontiers (e.g. between Nigeria and Dahomey or Ghana) have to be crossed by the diverted traffic, but the diversion from Douala would be to other ports in Cameroon so this question does not arise.) The benefits from avoidance of ship delays and diversion to other ports constitute the benefits attributable to the project.

8. The provision for excess demand in the absence of the port project therefore has two components: (a) increased berth utilization to 90%; and (b) diversion to other ports.

(a) The calculation of the effect of berth occupancy upon ship-waiting time employed in this annex is based upon Erlang's formula assuming non-uniform ship service times. It is assumed that occupancy for a port of Douala's present size can rise to about 90%, after which ship delays will cause the shipping companies to impose surcharges. The volume of traffic handled under the assumption of 90% utilization takes into account the approximately 50% greater productivity of timber loading compared to that of other general cargo which will affect aggregate productivity, since the ratio of timber handled as general cargo to other general cargo will decline as the log-basin operations increase in importance. Account is also taken of the probable decline in productivity as berth occupancy increases to 90%, causing increased congestion.

The benefit from ship-waiting time avoidance is based upon the daily costs to ships in port and, in the case of container and general cargo ships in particular, the cost of delay in the delivery of cargo which is involved. This latter clearly requires a knowledge of the unit value of general cargo, information which is not readily available for Douala. However, there is no reason to believe that it differs substantially from that of other ports, and estimates have been made in the case of UK trade 1/ which provide a basis for assessment of the relationship between ship and cargo delay costs. The former are based upon examination of Bank data (based upon Westinform), updated ship "shadow" prices, world-scale freight indices, and the consultants' estimates, which all give roughly the same results. The resultant costs, including allowance for cargo (and container) values are shown below. The increasing value placed upon general cargo vessel time assumes that these vessels will increase in size over time. The reference case container vessel is assumed to have a capacity of 500 standard 20' ISO containers.

Cost of Ship Waiting Time ($'000/day)

General Cargo	Bulk (Timber)	Container
6.2 - 7.5	5.0	11.0

The distribution of waiting time between vessel types is assumed to be in accordance with the relative volumes of traffic forecast. This therefore supposes no priority accorded to vessel classes. This approach could introduce a distortion if, for example, container vessels were given priority in berth allocation, and thus the weighted average value per day of ship-waiting time would decline. However, it is also probable that this type of preferential treatment would induce the non-preferred general cargo and timber ships to divert to other ports (Victoria and the hypothetical Manoka) to a disproportionate extent. Thus the weighted ship-day value average of vessel types subject to delay at Douala would increase, and the two sets of effects are offsetting.

(b) The table on the following page shows the volume of traffic which would need to be diverted, and the tentative allocation to different ports. The assessment of benefits from diversion

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1/ "The Cost of Ship's Time," R.O. Goss, Department of Trade and Industry, London.

avoidance is based upon the assumption that Tiko/Victoria would essentially handle general cargo traffic, Kribi could receive diverted timber traffic and some general cargo, and Manoka would cater exclusively to timber exports. The benefits of diversion avoidance equal the additional transport costs which would be incurred by such diversion.

The capacity of Tiko/Victora was based upon the maximum traffic handled (in 1966) minus the minuscule volume now passing through the port. In effect, diversion to Tiko/Victoria would be a reverse process to that which has occurred in recent years with traffic increasingly concentrating on Douala. For Kribi, a total capacity estimate of about 400,000 tons p.a., when the works underway are completed, has been adopted. This is somewhat higher than NPA's assessment, but it is based upon the quay length and storage space which will become available and is consistent with experience at other ports. Surplus capacity at Kribi will be reduced to zero by 1985 due to growth of local demand.

Provision of log-exporting capacity through an operation involving unloading of logs at the Japoma Bridge, transport by raft, and loading to ocean-going vessels at Manoka near the confluence of the Wouri and Dibamba rivers, was considered in a study financed under the First Douala Port Project. This showed that while total unit operational costs for a log-handling project at Douala (similar to that now proposed as part of the Second Project) were similar to those at Manoka, the capital cost of the latter would be about two-thirds higher. The costs have now been updated and expressed in terms of annual costs attributable to the appropriate volumes of log traffic.

(in '000 tons)

	1980	1981	1982	1983	1984	1985	1986
Total diverted traffic	-	5	130	268	439	592	790
Allocation:							
Tiko/Victoria	-	5	70	190	190	190	190
Kribi	-	-	60	40	20	-	-
Manoka	-	-	-	30	229	402	600

9. Table 1 of this Annex shows the resulting cost and benefit streams for the downstream facilities. The economic rate of return is estimated at 18%.

B. Channel Dredging

10. The project includes dredging the Wouri Channel to 7.5 m below low water datum and the outer bar to a slightly greater depth. The objective is to reduce the costs associated with:

(a) the present necessity either to wait for high tides to enter or exit from the port, or in the case of large vessels, to enter or exit with cargo volumes constrained by available water depth. Benefits equal the reduction in the average waiting time per ship entering/exiting the port, multiplied by the average cost per day of ships' time, multiplied by the number of ships of various categories projected to be delayed. The projections of number of ships delayed are shown in Table 2 of this Annex.

(b) the existing sub-optimal routing of deeper drafted shipping on the West African route, necessitated by draft limitations at Douala. The cost saving resulting from a more optimal routing permitted by channel dredging at Douala is added as a benefit.

(c) the inability of bulk log carriers to use the port at the existing channel depth. They will be able to use the port at the projected depth of 7.5 m, with a consequent benefit consisting of cost savings resulting from the substitution of specialized vessels for the present system of transporting logs by mainline general cargo vessels. Specialized container vessels were not examined in the same way, mainly because at the time of the study, they were not thought likely to be of major importance. Since then, however, it has become evident that they may play a more significant role than anticipated, and to the extent that the benefits for their use are not subsumed in the higher berth productivity of container operations compared with general cargo, this higher productivity represents a benefit of the channel dredging. The calculation of benefits resulting from channel dredging shown in Table 3 of this Annex can therefore be considered a minimum. The economic return on this project item is estimated at 19%.

C. Upstream Facilities (fishing port and repair facilities)

The Fishing Port

11. The existing fishing berth is shallow and has a restricted backup area which is about 0.75-km downstream from the fish-processing facilities. The movement of landed fish from the berthing area to the processing facilities,

and out of the port, is impeded by timber traffic. In order to avoid congestion, restrictions have been placed upon the evacuation of fish by truck from the port to the town.

12. The view of NPA and the consultants is that maintenance of even the existing traffic through the present facilities would be very difficult if demand and thus congestion increased, and that this could have a significant effect on the efficiency of fishing port operations. The movement of log operations to the downstream port facilities would not improve the situation, since the shipping company premises displaced by this move would have to be relocated in the existing log park area.

13. The new facilities would have positive economic benefits by permitting increased fish landings. The fishing berth occupancy rate is calculated at about 85%. However, this is an underestimate because it excludes the deeper draft fishing vessels which presently discharge at commercial berths. Their transfer to the existing fishing berths would lead to a significant increase in congestion. An increased volume of fish landings is improbable if handling must occur through the existing facilities. Thus the primary benefit from the new facilities results from an increase in capacity. A secondary benefit is that the inefficiency costs associated with the present congestion, where vessels are often banked four deep, would be avoided.

Benefits

14. The alternative to the local supply of fish to Cameroonian consumers (plus some exports) is the importation of fish. The economic benefit of the fishing port is thus the difference between local value added at world prices generated with the proposed fishing port and that generated in the absence of the proposed fishing port.

15. Local value added in world prices, as a percentage of sales, was computed for the fishing industry from data found in the "Recensement General des Entreprises," Cameroon, 1967/68. From value added at world prices is subtracted salaries paid to expatriates, the opportunity cost of Cameroonian labor (assumed to equal 50% of their salaries), and profits. Profits are deducted since they accrue to the foreign companies which own the fishing boats and are considered a capital cost to Cameroon. This is conservative since some of these profits are likely to remain in Cameroon. The result is a ratio of economic benefits to sales value accruing to Cameroon of about 20%.

Workshops and Repair Facilities

16. The proposed workshop/repair facilities comprise a building for repairs, the necessary machinery, and a 500-ton floating dock. There will be a transfer of facilities from the existing location, which would be incompatible with development of the downstream facilities. The benefits

from transfer are ignored, since the alternative is a comparatively inexpensive demolition of existing facilities and use of private repair facilities. The benefits attributable depend upon the increment in local value added generated by future repair operations. Since the market for repair services will be relatively competitive, the unit sales value can be employed as a surrogate for the gross economic benefit from operations of the facilities. Local value added to sales (again based on Census data) equals 26%, after deducting expatriate salaries and the opportunity cost of Cameroonian labor but no deduction of profits since these will accrue to NPA. The resulting values were related to consultants' forecasts of the number of ship repair operations, which in turn were determined by the number of fishing boats based at the port plus miscellaneous customers such as petroleum exploration ships.

17. There is no equivalent alternative to the proposed fishing port and repair facility. Douala is the main market for fish, and provision of facilities elsewhere would not only be equally expensive but would involve heavy investment in refrigerated transport. Thus the benefits from the upstream facilities are measurable only in terms of the local value added generated (see Table 4 of this Annex). The limitations to the rate of growth of fish landings at Douala (analyzed in Annex 7, para. 22), combined with the scale of construction necessitated by need for a new upstream port complex, limit the rate of return on the upstream facilities to 10%.

Employment Generation

18. The project is expected to take over three years to complete and to employ local labor, largely unskilled or semi-skilled, for a total of 1,500-2,000 man-years. Assuming 1,750 man-years and a 50-hour week, this is equal to 4.4 million man-hours.

19. There is a strong seasonal pattern in marginal employment in Cameroon with a comparatively high level of employment during the main agricultural season of about six months. The project labor force is expected to be drawn from this seasonal labor particularly in the off-season plus the itinerant unemployed. The average wage of unskilled labor in Douala is about CFAF 50/hr., and thus on the basis of six months per year involuntary unemployment, the shadow wage rate is CFAF 25/hr. The project costs, including labor, have been assessed in financial terms. The difference between the financial and shadow wage rate therefore constitutes a benefit to the Cameroon economy.

20. It is assumed that project employment will be at the average wage, and that therefore the net increment per head will be CFAF 25/hr. This may exaggerate the benefits from employment of the seasonal labor force on a full year basis but understates the benefit for employment of the itinerant unemployed. It can therefore be taken as an approximate average benefit and, applied to 4.4 million man-hours, yields a benefit attributable to the project of CFAF 110 million spread over the project execution period as shown below:

Employment Benefits (CFAF million)

1976	1977	1978	1979	1980
11.9	35.5	39.8	21.0	1.8

This benefit does not include that due to the long-term skill improvements which can be expected to flow from participation in the project.

PART III - Benefit Distribution

A. Downstream Facilities

21. If it is assumed that all the benefits accrue to Cameroon, the rate of return from the downstream facilities to Cameroon equals 18%. However, it is possible that part of the cost-saving to the shipping companies resulting from avoidance of ship-waiting time will not be passed on to Cameroon through lower charges for carrying goods into and out of Douala. Similarly, it is possible that much of the reduction in transport costs permitted by avoidance of diversion to other ports will accrue to the logging companies and other exporters or importers. Taking each of the three benefit streams shown in Table 1 of this Annex, it is clear that benefits (b) (avoidance of transport costs resulting from traffic diversion to other existing ports) and (c) (avoidance of log facility construction at Manoka) represent economic benefits to Cameroon. This leaves benefits (a) (avoidance of ship-waiting time).

22. Calculation of the distribution of benefits arising from the avoidance of ship-waiting between the shipping companies and Cameroon presents certain difficulties. At one extreme, it can be argued that only that part which is directly extracted through an increase in real tariffs benefits the country (though even this is an over-simplification when changing long term cross-elasticities of demand for transport against other goods and services is taken into account).

23. NPA will increase its tariffs in 1976 by an average of 14%, and additional increases will be made approximately every two years with an effect equivalent to a 10% annual increase until completion of the main project elements by 1980/1. (See Table 5 of this Annex.) Some of this merely offsets expected inflation, but Cameroon recovers economic benefits equal to the increment in tariffs resulting from the real tariff increase (after inflation adjustment). Real tariff increases are calculated to account for over 70% of the present value of the benefits of ship-waiting time avoidance, and if none of the residual 30% accrued to Cameroon, the rate of return to the country would still be about 19%.

24. The extent to which that part of the benefit not directly extracted is passed on depends upon a number of factors, of which the most important are: (a) the long-run degree of competition in shipping, which is partly a function of the importance of cartels; (b) the extent to which there is cross-subsiziation of shipping charges within a given shipping route (such as Europe-West Africa), so that goods passing through high-cost ports (in terms of port charges and the quality of service provided) are not subject to proportionately higher charges, and the stability of the situation; and (c) the extent to which the relative disadvantage of using one port as against another changes over time.

25. In the case of Douala, shipping conferences dominate traffic movements, and Cameroon has no domestic shipping line which might introduce potential competition. There is therefore little reason to believe that rates would be reduced to reflect non-directly extracted benefits. However, as Douala port charges are already slightly above average for West Africa, and the port has the disadvantage of being located up a long channel, there is a clearly implied element of cross-subsidization in Cameroon's favor. This situation is by definition an equilibrium one at a given point in time, but in the long term, this equilibrium could be expected to be unstable. This is particularly the case without the proposed project, where the divergence between the physical characteristics of Douala and other major West African ports is likely to become more important as the optimum ship size increases and as developments at other ports occur. Thus within the forecast period, shipping charges to Douala are likely to increase in relation to those to other West African ports. Avoidance of these increases constitutes a benefit to Cameroon and are estimated to be equivalent to half the non-tariff extracted benefits for the project element.

26. The rate of return to Cameroon from the downstream port facilities, assuming full benefit from traffic diversion avoidance, real increases in tariffs, and 50% of non-directly extracted waiting time avoidance benefit amounts to over 16%, or about 90% of the total benefit.

B. Channel Dredging

27. The rate of return to Cameroon on this project item, assuming that all economic benefits accrue to Cameroon, is 19%. As in the case of the downstream facilities, it is likely that some project benefits will go to the international shipping companies, the logging companies, and foreign importers and exporters. The cost economies from the use of specialized log carriers accrue directly to the logging and shipping companies. The extent to which this will benefit Cameroon depends on the Government's taxation policy and what the logging companies do with the increment of after-tax profits so generated. The analysis conducted in the forestry studies indicates that currently about 30% of this increment is retained in Cameroon; with revised tax policies now under discussion, this proportion could increase substantially.

28. With respect to benefits from reduced ship-waiting time and routing optimization, the increment in tariff charges recovers about 40% of the benefits (Table 5). The analysis of the probable distribution of benefits from ship-waiting time avoidance not extracted by real tariff increases from the downstream facilities applies equally to that relating to channel dredging. Additionally, a similar rationalization can be made with respect to elimination of sub-optimization of routing. As the disparity between the draft limitations at Douala and other West African ports is very substantial, it is probable that long-run shipping rate adjustment would account for the greater proportion of non-tariff extracted benefits. However, assuming only half those indirect benefits accrue to Cameroon, the total rate of return to the economy from the three benefit streams amounts to just under 13%, which is satisfactory.

C. Risk Analysis

29. Table 6 of this Annex shows the estimated economic returns on the various project items. A risk analysis was undertaken in order to incorporate judgements in regard to possible errors in cost and benefit estimates. Possible errors were specified along with the probability of their occurrence for each benefit and cost stream, on the basis of judgements about probable cost overruns, errors in traffic projections, and other errors in estimating benefits. The result indicates that there is a 90% probability that the overall rate of return to the project will fall between 13.5% and 15.5% and a 95% probability that it will fall between 12.5% and 16.5%.

PART IV - Sensitivity Analysis

30. Risk analysis is preferable to sensitivity analysis in assessing the possibility of poor project performance. However, the rate of return calculated under a combination of the worst possible assumptions is shown here, although the probability of its occurrence is very small (less than 2% according to the risk analysis).

A. Commercial Traffic

31. The following assumptions were employed:

(a) Timber traffic reduced 35%, consistent with the low estimate found in the WAFS, with 340,000 tons p.a. evacuated via Congo ATC.

(b) Import traffic flowing through Douala reduced in accordance with the assumption that GDP would grow by only 3% p.a. to 1985, but that the historical import/GDP coefficients (described in Annex 8, Section B) would result. This is equivalent to a reduction in import traffic of 20%. The resulting traffic volumes are shown in Table 7 of this Annex.

Costs

32. Cost streams not subject to the accepted bid (for the main civil works) were increased by 50%.

Benefits

33. Benefits flowing from the downstream facilities were reduced in line with the reduction in traffic. This reduction results from postponement of both the need for alternative capacity provision and for traffic diversion.

34. Benefits from channel dredging were reduced in line with the following:

(a) A reduction in the number of ship calls, and thus the benefits from delay avoidance. This reduction is slightly less than proportional to the traffic reduction due to the economies of scale in ship operation.

(b) Sub-optimal routing avoidance benefit is reduced. In the absence of more detailed information, this reduction is assumed to parallel that in ship calls.

(c) A reduction in the benefits from substitution of specialized timber vessels for general cargo timber movements. This reduction is assumed proportional to the reduction in log traffic.

Results

35. Assuming that benefits of avoidance of ship-waiting time, etc. are recovered by Cameroon through reduced shipping charges, the sensitivity analysis reduces the rates of return from 18% to 12% for the downstream facilities and from 19% to 9% for channel dredging.

B. Fishing and Ship-Repair Traffic

36. The fishing traffic forecasts have already been severely constrained, in comparison with those of the consultants, by the doubts expressed on the future landings of frozen fish. Nevertheless, the revised forecasts still indicated a growth of 85% between the estimated 1974 and forecast 1985 landings.

37. For the sensitivity analysis, this forecast growth was restricted even more severely, and it is assumed that frozen fish landings will in fact increase in line with those of other fish, i.e., that there will be no overall growth in per capita consumption. This gives a reduction in total commercial landings of 25% and an implicit reduction, assuming artisanal fishing production is as forecast, of about 17%, compared with the base forecasts.

38. The use of the repair facility is decreased by the slower rate of growth in the number of refrigerated fishing boats resulting from the slower growth of frozen fish landings. The higher forecasts require 16 additional refrigerated fishing boats by 1985. The low forecast requires one additional boat. The reduction in the expected number of refrigerated fishing boats using the facility would result in an 11% overall decline in use of the facility.

Costs

39. Capital and maintenance costs not subject to the accepted bid (for the main civil works) were increased by 50%.

Benefits

40. No change was made in the assumptions relating to benefit per unit of traffic. The variables affecting the net local value added, such as expatriate payments, opportunity costs of local labor, and the proportion of value added attributable to shipping, could as well vary in one direction as the other, and the values chosen were based upon the best information currently available.

Results

41. The effect of a much reduced rate of growth of frozen fish landings on the overall return to the upstream port development, combined with the capital cost increase, reduces the rate of return from 10% to 5%.

C. Total Project Sensitivity Analysis

42. The overall rate of return would decline from nearly 18% to 9.5%, which is still considered satisfactory. The rate of return to Cameroon would be about 8%.

PART V - Incremental Analysis

A. First General Cargo/Container Berth

43. The transfer of 85% of log exports to the log basin by 1985 represents the maximum proportion considered physically feasible. Therefore, the additional pressure on the existing general cargo facilities, which would result if the proposed general cargo/container berth were not built, could not be accommodated by further transfer of log traffic; neither could additional traffic be diverted to other ports. The effect would be to increase utilization of existing berths to beyond the optimum; the economic benefit from avoiding this is estimated as representing a rate of return on the new berth of 17%, fully justifying its inclusion in the project.

Second General Cargo/Container Berth

44. Provision of a second berth is included in the project as an option upon which a decision will not be required until mid-1977. The reason a final decision is not proposed now is that the physical necessity for the berth will not occur until the end of the forecasting period in 1985, and thus supplementary information on the longer term demand for port facilities as a result of ongoing studies (notably the railway Douala-Yaounde corridor study) should be significant in establishing with more precision the potential demand for the berth. A preliminary evaluation, based upon the assumption that container traffic will grow at 7% p.a. after 1986 (the rate of growth forecast for total project-related traffic 1975-86, and substantially below the forecast growth rate of container traffic during that period), gives a rate of return of 21% on the second berth at the price quoted for 1979 construction. Provision for construction is made in the project, rather than as a possible subsequent project, because of the economies of scale resulting from avoidance of remobilization. It is estimated that separate, subsequent construction in 1984 would be more than twice as costly (in constant prices) as under continuous construction. The "saving" on continuous construction would be the equivalent of a 20 percent rate of return on the bid price of 650,000 CFAF, which compares very favorably with the opportunity cost of capital in Cameroon, estimated as 9 percent.

B. Channel Dredging

45. The proposed channel depth of 7.5 meters is expected to accommodate all but a small number of ships at all tidal conditions (Table 2); the remainder would have to await more favorable conditions, up to high tide. It is difficult to be precise, but it is improbable that a significant number of ships would have to enter or exit with less than normal cargo, if advantage were taken of tidal conditions.

46. The benefit from deepening the channel below 7.5 meters would be, therefore, a further reduction in delay costs. The original NPA proposal was

for dredging to 8.4 meters: if this occurred, there would be virtually no delay to shipping. Thus the benefits from this incremental dredging are elimination of the delay costs applicable to ships which would suffer delay with a 7.5 meter channel. These benefits are small, and the incremental deepening would require both additional capital and maintenance dredging. It may be that if operational characteristics permitted, this could be done at lower unit costs than for the proposed channel: however, even if a 50% reduction were achieved, which is the maximum feasible, the costs would exceed the benefits, and the incremental economic rate of return would be negative (Table 9).

C. Upstream Facilities

47. The ship repair facilities are discrete in size, and marginal variation is therefore not feasible. However, the fishing berths could be reduced in length by 80 meters (from 530 meters) without a radical alteration in the layout. Beyond that reduction, the hydrology would be affected and studies supplementary to those already conducted would be required to determine the costs involved. The incremental analysis is therefore confined to the effect of an 80 m reduction, which would be limited to quay construction and would thus only afford a possible 4% reduction in overall upstream construction costs.

48. As the fishing berths will not be fully utilized at 1986 forecast volumes, the potential benefit is probably greater than that actually forecast for the marginal 80 m. Nevertheless the rate of return on the marginal quay is nearly 10%, thus justifying its inclusion in the project.

Annex 8
Table 1

CAMEROON

SECOND DOUALA PORT PROJECT

Cost and Benefit Streams for the Downstream Facilities

(in CFAF million)

		Benefits			
Year	Costs	a/	b/	c/	Total
1976	1590.00	0.00	0.00	0.00	-1590
1977	3770.00	0.00	0.00	0.00	-3770
1978	3570.00	0.00	0.00	0.00	-3570
1979	1390.00	0.00	0.00	0.00	-1390
1980	0.00	110.00	0.00	0.00	110
1981	0.00	2200.00	0.00	0.00	2200
1982	0.00	2260.00	10.00	0.00	2270
1983	0.00	2320.00	20.00	580.00	2920
1984	0.00	2380.00	20.00	580.00	2980
1985-2000	0.00	2440.00	10.00	580.00	3030

---

a/ Avoidance of ship waiting

b/ Reduction of transport costs resulting from traffic diversion to other existing ports

c/ Avoidance of log facility construction at Manoka. Theoretically the facility would be required in 1982, but the first year volume would be so small that postponement to 1983 of capacity provision would be justified. The benefit represents the opportunity cost of capital in Cameroon (9%) applied to the construction costs of the Manoka facility.

CAMEROON

Annex 8
Table 2

SECOND DOUALA PORT PROJECT

Number of ships requiring high tide for entry/exit to/from Douala

		1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Existing channel 1/	in	1196	1194	1191	1244	1271	1333	1421	1514	1601	1703
	out	1146	1146	1141	1185	1214	1279	1372	1420	1510	1662
	Total	2342	2340	2332	2429	2485	2612	2793	2934	3111	3365
Of which log carriers		0	0	0	0	0	0	0	0	0	0
Proposed channel 2/	in	9	9	12	14	17	19	20	25	31	40
	out	0	1	8	13	18	19	24	27	30	33
	Total	9	10	20	27	35	38	44	52	61	73
of which log carriers	in	0	0	2	3	4	5	6	7	7	8
	out	0	1	7	12	17	19	22	24	26	27
	Total	0	1	9	15	21	24	28	31	33	35

1/ 1088 ships discharged/loaded at Douala in 1973.

2/ Log carriers are not able to use the port with the existing channel. With the proposed channel depth, 20,000 dwt vessels which are the maximum size likely, will be able to enter at high water fully laden.

CAMEROON

Annex 8
Table 3

SECOND DOUALA PORT PROJECT

Costs and Benefits of Channel Dredging

(CFAF millions)

Year	Costs		Benefits			Total
	a/	b/	c/	d/	e/	
1977	1045.00	0.00	0.00	0.00	0.00	-1045
1978	1550.00	0.00	0.00	0.00	0.00	-1550
1979	1110.00	0.00	0.00	0.00	0.00	-1110
1980	1030.00	0.00	420.00	0.00	0,00	-610
1981	990.00	0.00	600.00	160.00	255.00	25
1982	810.00	0.00	680.00	320.00	620.00	810
1983	170.00	400.00	710.00	330.00	750.00	1220
1984	0.00	400.00	760.00	330.00	920.00	1610
1985-2000	0.00	400.00	810.00	330.00	1100.00	1840

---

a/ Capital dredging costs have two elements (a) the cost of the dredger and (b) the cost of dredging. The former is accepted as estimated by CIDA, but CIDA estimates of the latter appear low and accordingly for economic analysis their figures have been doubled. The residual value of the dredger after completion of its capital dredging program is reflected in the maintenance dredging costs.

b/ Maintenance dredging costs.

c/ Benefits from reduced ship waiting time for tides.

d/ Benefit from increased optimization of routing.

e/ Benefit from cost economies from use of specialized log carriers.

Annex 8
Table 4

CAMEROON

SECOND DOUALA PORT PROJECT

Cost and Benefit Streams of the Upstream Facilities

(CFAF millions)

Year	Costs		Benefits		Total
	a/	b/	c/	d/	
1976	890.00	0.00	0.00	0.00	- 890
1977	2020.00	0.00	57.00	0.00	-1963
1978	1780.00	0.00	91.00	120.00	-1569
1979	480.00	42.00	170.00	275.00	-77
1980	0.00	48.00	183.00	275.00	410
1981	0.00	49.00	198.00	310.00	459
1982	0.00	49.00	205.00	340.00	496
1983	0.00	49.00	213.00	380.00	544
1984	0.00	49.00	221.00	420.00	592
1985	0.00	49.00	230.00	435.00	616
1986-2000	0.00	49.00	238.00	460.00	649

a/ Investment costs

b/ Upkeep of fishing port

c/ Local value added generated by repair facilities

d/ Local value added generated by fishing port

Annex 8
Table 5

CAMEROON

SECOND DOUALA PORT PROJECT

Current Price and Real Tariff Changes Proposed

Year	GDP deflator 2/	Downstream Facilities		Channel Dredging	
		Increment in tariffs due to tariff rate increase 1/	Real increment in tariffs	Increment in tariff charges caused by the rate increase 1/	Real increment in tariff charges
		(million CFAF)	(million CFAF)	(million CFAF) (a)	(million CFAF) (c)
	1971 = 100 2/	1/		61	50
1976	123	242	197	110	83
1977	133	417	314	171	120
1978	143	628	440	220	144
1979	153	899	590	404	250
1980	163	1676	1030	435	252
1981	173	1887	1091	461	252
1982	183	2014	1100	486	251
1983	194	2158	1112	622	300
1984-2000	206	2843	1380	655	300

1/ Including tariffs levied on vessels for berthing and mooring, and charges against merchandise loaded and unloaded. The increment is measured as the increase in tariffs over that which would have been collected had tariff rate not been changed, expressed as annual equivalents of the biennial tariff adjustment proposed by NPA.

2/ From the Draft 1975 Bank Economic Report on Cameroon.

Annex 8
Table 6

CAMEROON

SECOND DOUALA PORT PROJECT

Summary of Economic Rates of Return

		Downstream facilities	Channel dredging	Upstream facilities	Employment generation	Total Project
(a)	Rate of return[1/] (total recovery of benefits)	18 %	19 %	10 %	0.6	17.0%
(b)	Rate of return[2/] (recovery of benefits through proposed higher tariffs plus 50% of residual	15.7	11.4	10	0.6	13.6
(c)	Percentage of project costs	46	30	24		100.0
(d)	Contribution to Total project rate of return if all benefits recovered	8.3	5.7	2.4	0.6	17.0
(e)	Contribution if benefits recovered as in (b) above	7.2	3.4	2.4	0.6	13.6

1/ Assuming that the benefits of avoidance of ship waiting time, optimization of routing, and cost economies resulting from the use of specialized log carriers accrue to Cameroon through reduced charges.

2/ Assumes that the benefits listed in 1/ are principally recovered through an increase in real tariffs, but that 50% of the residual benefits also accrue to Cameroon through avoidance of long term changes in shipping company tariffs.

Annex 8
Table 7

CAMEROON

SECOND DOUALA PORT PROJECT

Traffic Volumes used for Sensitivity Analysis

	(1974)	1980	1981	1982	1983	1984	1985	1986
Traffic								
Imports	568	629	673	718	767	820	870	925
Exports	751	1003	1053	1105	1160	1217	1277	1339
(of which logs)	319	429	450	473	496	522	548	575
Total	1319	1632	1726	1823	1927	2037	2147	2264

Annex 8
Table 8

Downstream Facilities
Incremental Cost/Benefits
(CFAF millions)

Year	Container/General Cargo Berth		Second Container/General Cargo Berth			
	Costs	Benefits	Costs		Benefits	
	C_1		C_2	C_3	B_1 (000 tons)	B_2
1976	70					
1977	950					
1978	1200					
1979	1000		650			
1980		50				
1981		340				
1982		700				
1983		800				
1984		800		1600		
1985-2000		900			22	35

Cost C_1 = based upon best estimates of the distinction of costs in the main civil works contract, between log basin and general cargo facilities.

C_2 = construction cost without remobilization.

C_3 = estimated construction cost with remobilization.

Benefit B_1 = capacity provision benefit. This relates to 1985/6 forecast traffic volumes. In calculations the rate of return of the second berth, the highly conservative assumption that container traffic would increase at 7% per annum thereafter was adopted.

Annex 8
Table 9

Channel Dredging
Incremental Cost/Benefits
from dredging between 7.5 and 8.5 meters (inner channel)

(CFAF millions)

Year	Costs				Benefit	Total$_1$	Total$_2$
	a_1	a_2	b_1	b_2			
1981	1950	975	0	0	0	-1950	-975
1982	0	0	0	0	8.3	8.3	8.3
1983	0	0	150	75	19.9	-130.1	-55.1
1984	0	0	150	75	23.8	-126.2	-51.2
1985-2000	0	0	150	75	27.7	-122.3	-47.3

Costs a_1 and Total$_1$ assume dredging costs of \$2.3/m^3; Costs a_2 and Total$_2$ assume \$1.1/m^3. The former is the best estimate; the latter represents the marginal cost under the most favorable assumptions about dredger capacity and operating costs.

Annex 8
Table 10

Upstream Facilities

Incremental Costs/Benefits from marginal 80 meters of fishing quay (CFAF millions)

Year	Costs	Benefit	
		Fish volume (000 tons)	Value Added Benefit
1976	-	-	-
1977	-	-	-
1978	150	-	-
1979	50	-	-
1980	-	-	-
1981	-	-	-
1982	-	-	-
1983	-	-	-
1984	-	2	35
1985-2000	-	4	37

CAMEROON

SECOND DOUALA PORT PROJECT

National Port Authority
Assumptions Used in the Financial Statements

A. Basic Assumptions

1. The financial forecasts are based on a financial study carried out by NPA's consultants. The consultants' estimates have however been slightly adjusted, resulting in a more conservative forecast of NPA's financial position.

2. In order to give a better understanding of the effects of inflation and of the proposed tariff increases on NPA's finances, the forecast income statements (Tables 8-10) have been prepared both in constant 1975 prices and in current prices.

3. The constant 1975 prices are shown under Case "A". In this case, revenues are projected at present tariffs and operating expenditures are projected based upon traffic increases making due allowance for possible efficiency improvements. Depreciation has been calculated by applying average depreciation rates to the various fixed asset categories valued at 1975 prices. The investment costs used for the project are the Bank's cost estimates excluding price contingencies (Table 1 of the main report).

4. The forecast balance sheet is shown in current prices, while the forecast income and sources and application of funds statements show the current prices under Case "B". Under the assumption of current prices, revenues are projected based upon the proposed tariff increases. All operating expenditures are adjusted for inflation, and the investment costs of the project include price contingencies. Fixed assets are assumed revalued in 1978 and in 1985, which resulted in higher annual depreciation as compared with Case "A". The annual inflation rates are assumed as follows:

	1975/76	1976/77	1977/78	1978/79	1979/80 and onwards
Civil Works	16%	14%	12%	12%	10%
Equipment	12%	10%	8%	8%	7%
Land	10%	10%	10%	10%	10%
Salaries and Wages	7%	7%	7%	7%	7%
Other Operating Costs	9%	8%	8%	8%	7%

B. Tariffs

5. In order for NPA to obtain the agreed rate of return on its net fixed assets in use including the project on its completion, substantial tariff increases will be required. In addition to an average 13% increase in rates implemented by NPA in May 1976 it has been assumed that NPA would further increase its tariffs by 30% in 1977/78, 25% in 1979/80, 8% in 1982/83 and 5% in 1984/85.

6. An attempt has been made to show how tariffs could be restructured to arrive at a better cost coverage for the various services provided by the port (Annex 11). The proposed overall tariff increases correspond to an average annual increase in tariffs of 13% over the six-year period 1975/76-1980/81. This tariff increase is distributed as follows:

	Average 1975/76-1980/81
Log Port	25%
Fishing Port	12%
Workshops	18%
Channel	22%
Cargo and Container Berths	6%

CAMEROON

SECOND DOUALA PORT PROJECT

Summary of Tariffs

Tariffs at Douala are levied under two broad categories: (a) on vessels using the port of Douala; and (b) on goods passing through the port. A selected summary of tariffs is given below, all costs being assessed in CFAF.

A. Tariffs on Vessels	CFAF
On entry	
a) on entry to the port per decimeter of actual draft	430
b) per GRT if berthing at a quay	9
c) per GRT if at moorings	6
d) for foreign vessels per vessel	3,450
On pilotage	
a) on entry and departure per GRT	10
b) on entry to port per vessel	3,450
c) per hour of pilot waiting time	2,000
d) on night movement per vessel	6,000
At quays	
(i) vessels 501 to 8,000 GRT	
a) per GRT per day	9
b) per ton of cargo moved	30
(ii) vessels 8,000 GRT and over	
a) per GRT per day	6
b) per ton of cargo moved	30
c) per voyage per vessel	1,000
d) for fishing boats per kg of fish unloaded	3

For using port water area

a) per GRT per day	2
b) per GRT per day for vessels if at buoy moorings	3

For vessels registered at Douala

a) for vessels between 1,001 and 3,000 GRT per year	150,000
b) for vessels between 100 and 1,000 GRT per year	75,000
c) for others	50,000

B. Tariffs on Merchandise

On cargo loaded

per ton or fraction

cocoa	700
coffee	600
tobacco & rubber	500
groundnuts	300
palm oil	200
cement & palm kernels	150
bananas, cattle-cake, logs, sawn wood, minerals, scrap iron & bitumen	100
other	400

On cargo unloaded

All cargo classified under Series A, B, C and 1 to 5.

per ton

wine	1,900
products lighter than petrol	800
products heavier than petrol	500
railway classification 1	805
2	500
3	310
4	210
5	120
6	110

CAMEROON

SECOND DOUALA PORT PROJECT

Sensitivity Analysis of Financial Forecasts

1. A sensitivity analysis of the financial forecasts was conducted to test the impact of a possible decrease in NPA's cash generation and/or an increase in the cost of capital investments on NPA's ability to: (a) finance its operating costs; (b) maintain its working capital at an adequate level; (c) service its debt; and (d) finance its capital investments and renewals. The analysis was carried out assuming: (a) 20% decrease in NPA' gross operating revenue, (b) 10% increase in working expenditures, and (c) 10% increase in the cost of the Project excluding the main civil works contract, whose cost is based on firm bid prices increased by physical and price contingencies.

2. The table attached to this annex shows the yearly impact of the most pessimistic sensitivity assumption on NPA's projected income account and cash position assuming NPA is granted the same external financial support as in the main analysis (Table 2 of Annex 6). Two periods are considered, namely, 1976-77 to 1981-82 covering the construction period of the Project and 1982-83 to 1985-6 assuming full utilization of the additional capacity provided to the Douala Port under the Project. The following summarizes the attached table and compares the results of the sensitivity and basic assumptions.

CFAF billion

Cumulated Income Account

Assumption	1976-77/1981-82 Basic	1976-77/1981-82 Sensitivity	1982-83/1985-86 Basic	1982-83/1985-86 Sensitivity
Gross operating revenue	26.4	21.1	35.2	28.2
Working expenses	14.3	15.0	19.2	19.9
Depreciation	6.2	6.5	9.0	9.3
Net operating revenue	5.9	(0.4)	7.0	(1.0)
Interest charges	3.9	3.9	3.1	3.1
Net surplus	2.0	(4.3)	3.9	(4.1)
Source and application of funds				
SOURCES				
Cash generated from operations	12.1	6.1	16.0	8.3
Grants	5.2	5.2	0.7	0.7
Loans	19.8	19.8	-	-
Total Sources	37.1	31.1	16.7	9.0
APPLICATIONS				
Capital investments	27.6	29.1	2.1	2.2
Debt service	5.4	5.4	6.8	6.8
Increase (decrease) in working capital	0.1	0.1	0.6	0.6
Total Applications	33.1	34.6	9.5	9.6
Increase (decrease) in cash during period	4.0	(3.5)	7.2	(0.6)
Cash brought forward from year preceeding period	1.6	1.1	5.6	(2.4)
Cash at the end of period	5.6	(2.4)	12.8	(3.0)

3. The table shows that, should all three sensitivity assumptions materialize simultaneously, NPA would suffer a slight net operating loss during both periods under consideration, instead of achieving the agreed rate of return on average net fixed assets in use of 3% through fiscal year 1980 and 5% thereafter. Under the same sensitivity assumption, NPA would generate enough funds to finance its working expenses, maintain its working capital at an adequate level and pay for its share of capital investments but would be short CFAF 3.0 billion to pay for its debt service. Additional resources would be needed to overcome the shortage of funds.

4. Although the Government has agreed to compensate for any shortage of funds of NPA for implementing the Project and/or servicing its debts, it is presumable that it would not provide further funds to NPA beyond its already heavy commitments in project financing. Should any of the assumptions of the sensitivity analysis materialize, NPA would have to find additional funds to pay for its investment and service its debt. This could be done by increasing its tariffs above those assumed for the main analysis or, in case the ceiling of such increases is attained, to have recourse to additional borrowing. Both alternatives can be considered, bearing in mind that (a) tariff increases projected under the basic assumption after 1978/79 are relatively modest, and (b) NPA's projected debt service can easily be increased without jeopardizing its future financial position. However, the three sensitivity assumptions are unlikely to materialize at the same time.

CAMEROON

SECOND DOUALA PORT PROJECT

National Port Authority

Financial Sensitivity Analysis: Summarized Income Statement and Table

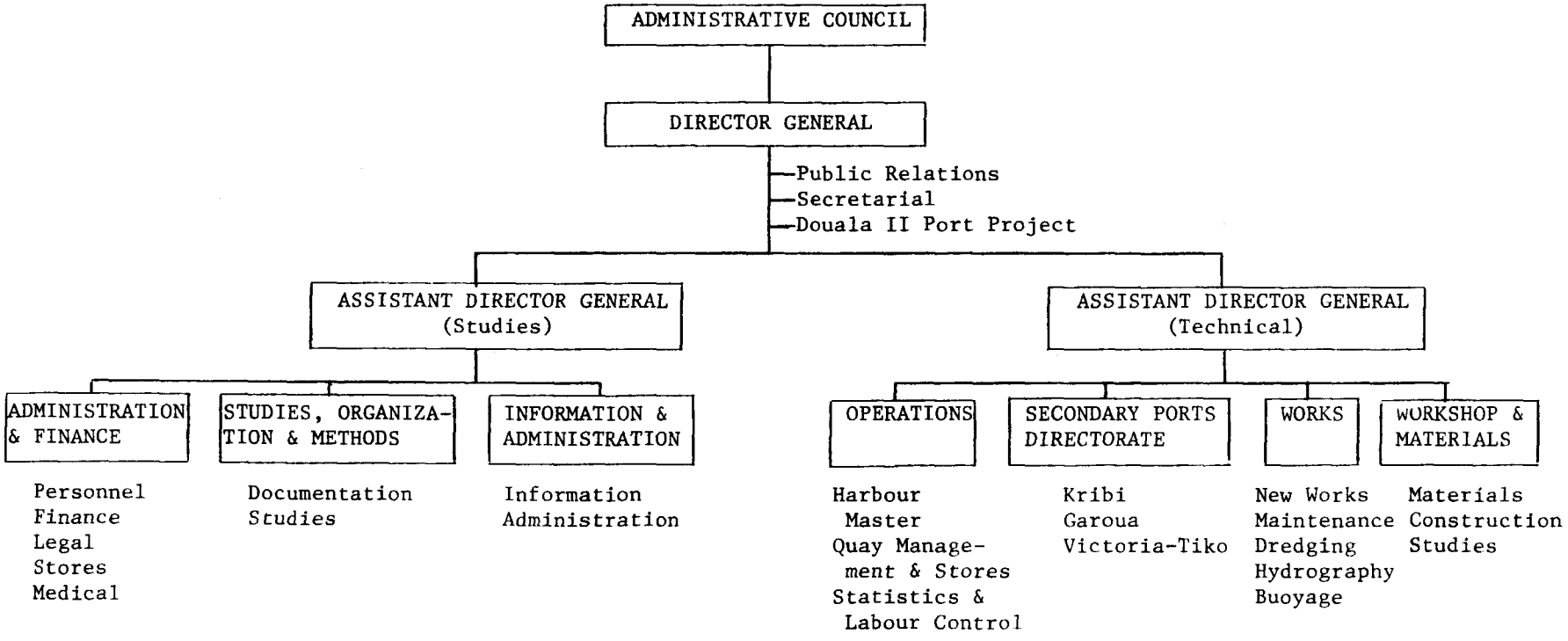
For Source and Application of Funds under Most Pessimistic Sensitivity Assumptions

(In Millions of CFAF)

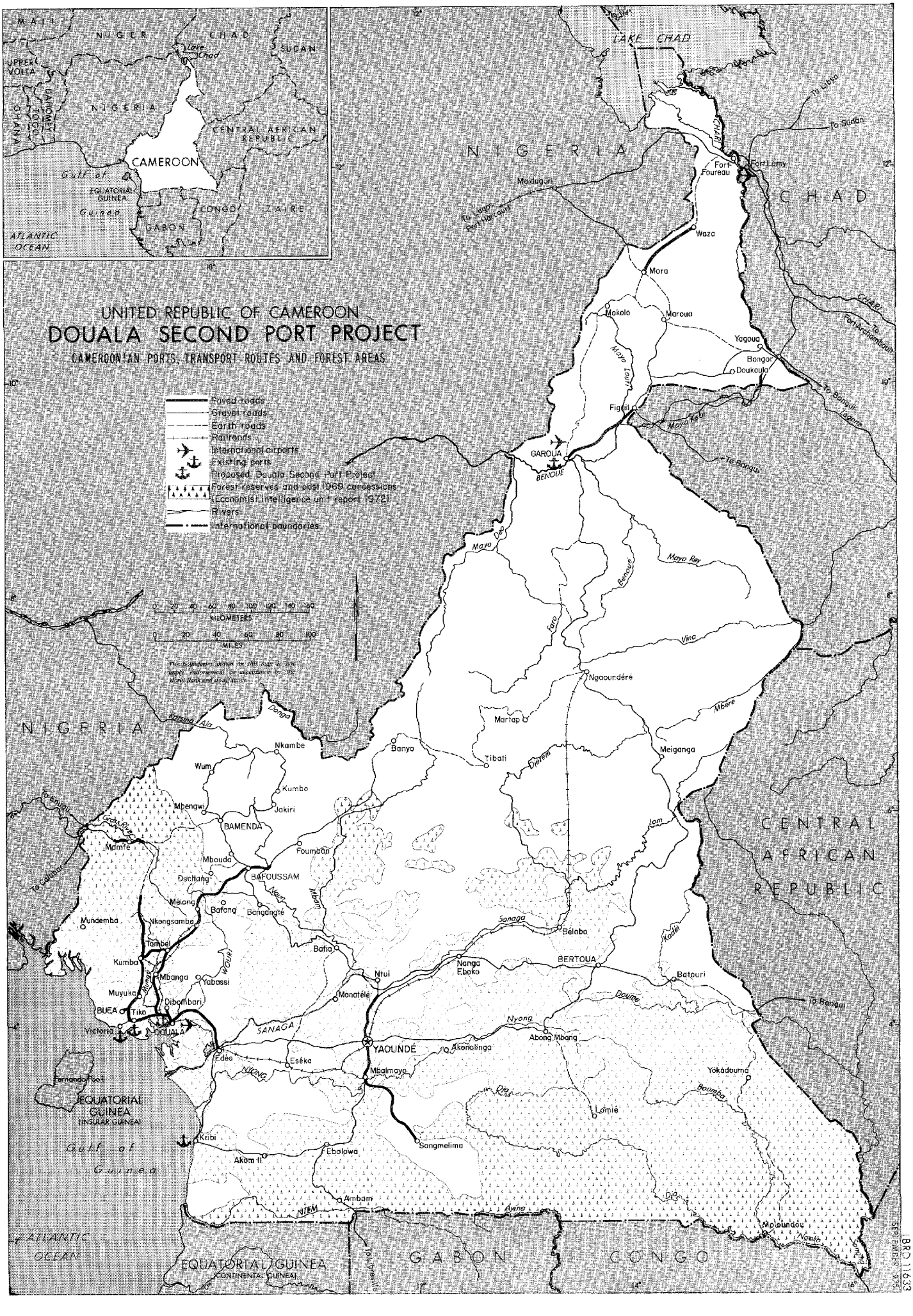
Income Account	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	Total 1976/77 1981/82	1982/83	1983/84	1984/85	1985/86	Total 1982/83 1985/86
Minimal gross revenue	1487	1858	2176	3204	3757	4916	5222	21133	6257	6640	7411	7869	28177
Maximal working expenses	1394	1646	1956	2317	2582	3152	3350	15003	4287	4712	5149	5701	19849
Minimal cash generation	93	212	220	887	1175	1764	1872	6130	1970	1928	2262	2169	8329
Maximal depreciation	490	522	565	743	1353	564	1775	6522	2053	2070	2590	2605	9318
Maximal operating expenditure	1884	2168	2521	3060	3935	4716	5125	21525	6340	6782	7739	8306	29167
Minimal net operating revenue	(397)	(310)	(345)	144	(178)	200	97	(392)	(83)	(142)	(328)	(437)	(990)
Interest charges	-	84	408	639	922	937	917	3906	873	812	750	686	3121
Net surplus	(397)	(394)	(753)	(495)	(1099)	(737)	(820)	(4298)	(956)	(954)	(1078)	(1123)	(4111)
Source and application for funds													
SOURCE: Cash generation	93	212	220	887	1175	1764	1872	6130	1970	1928	2262	2169	8329
Grants		974	1547	931	676	514	554	5196	599	55			654
Loans		3297	8563	7263	597	30		19750					-
Total Source	93	4483	10330	9081	2448	2308	2426	31076	2569	1983	2262	2169	8983
APPLICATIONS: Investments	300	4856	11095	9109	1759	1107	1135	29061	1203	397	300	300	2200
Debt service	-	84	408	639	1169	1468	1706	5474	1683	644	1605	1861	6793
Increase (decrease) in working capital	(52)	98	76	223	(149)	(71)	(127)	50	129	89	541	(162)	597
Total Applications	248	5038	11579	9971	2779	2504	2714	34585	3015	2130	2446	1999	9590
Cash increase (decrease) in year	(155)	(555)	(1249)	(890)	(331)	(196)	(288)	(3509)	(446)	(147)	(184)	170	(607)
Cash brought forward from previous year	1284	1129	574	(675)	(1565)	(1896)	(2092)	1129	(2380)	(2826)	(2973)	(3187)	(2380)
Cash at the end of the year	1129	574	(675)	(1565)	(1896)	(2092)	(2380)	(2380)	(2826)	(2973)	(3157)	(2987)	(2987)

ANNEX 11
Table 1

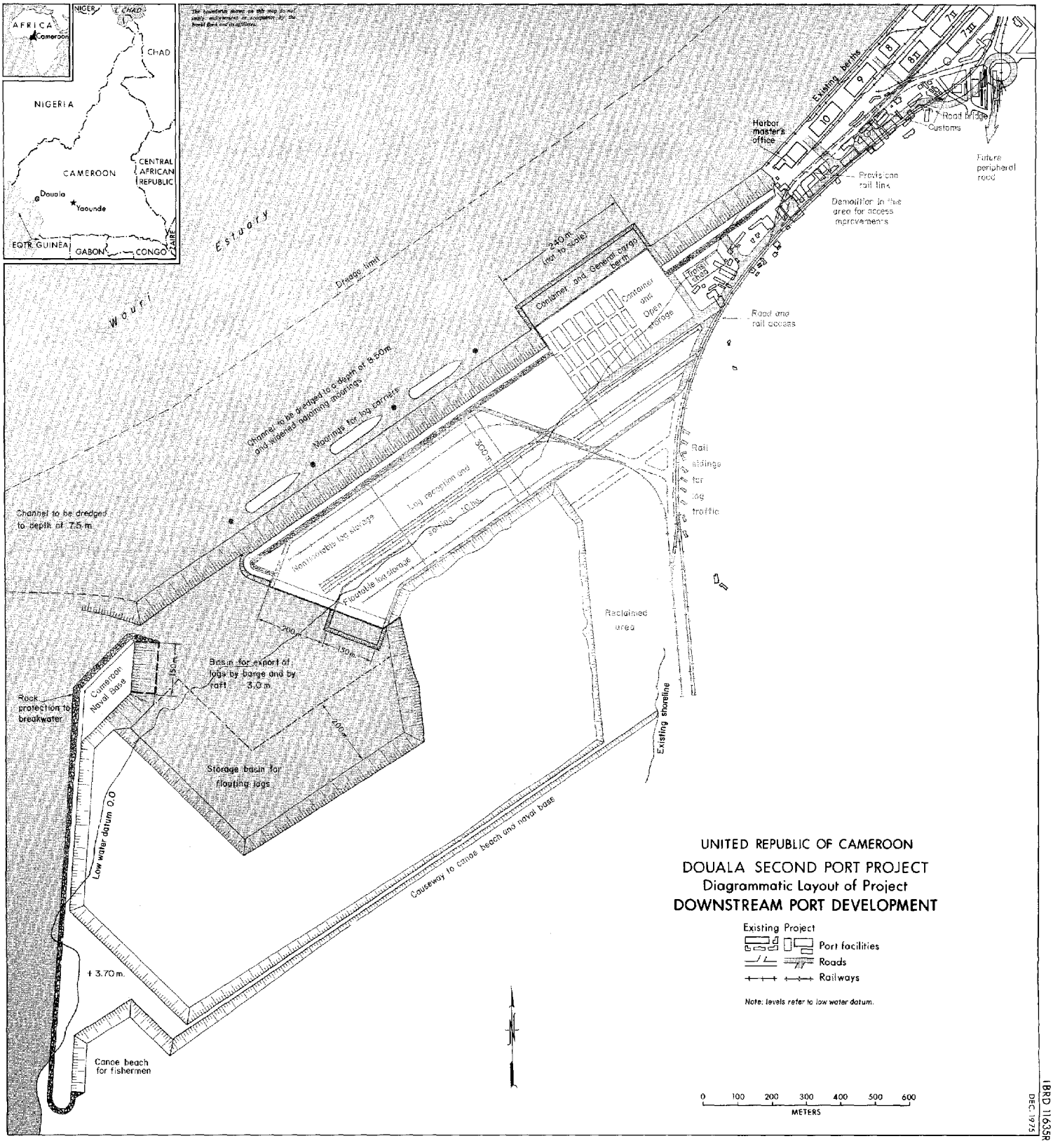
CAMEROON
SECOND DOUALA PORT PROJECT
National Port Authority
ORGANIZATION CHART



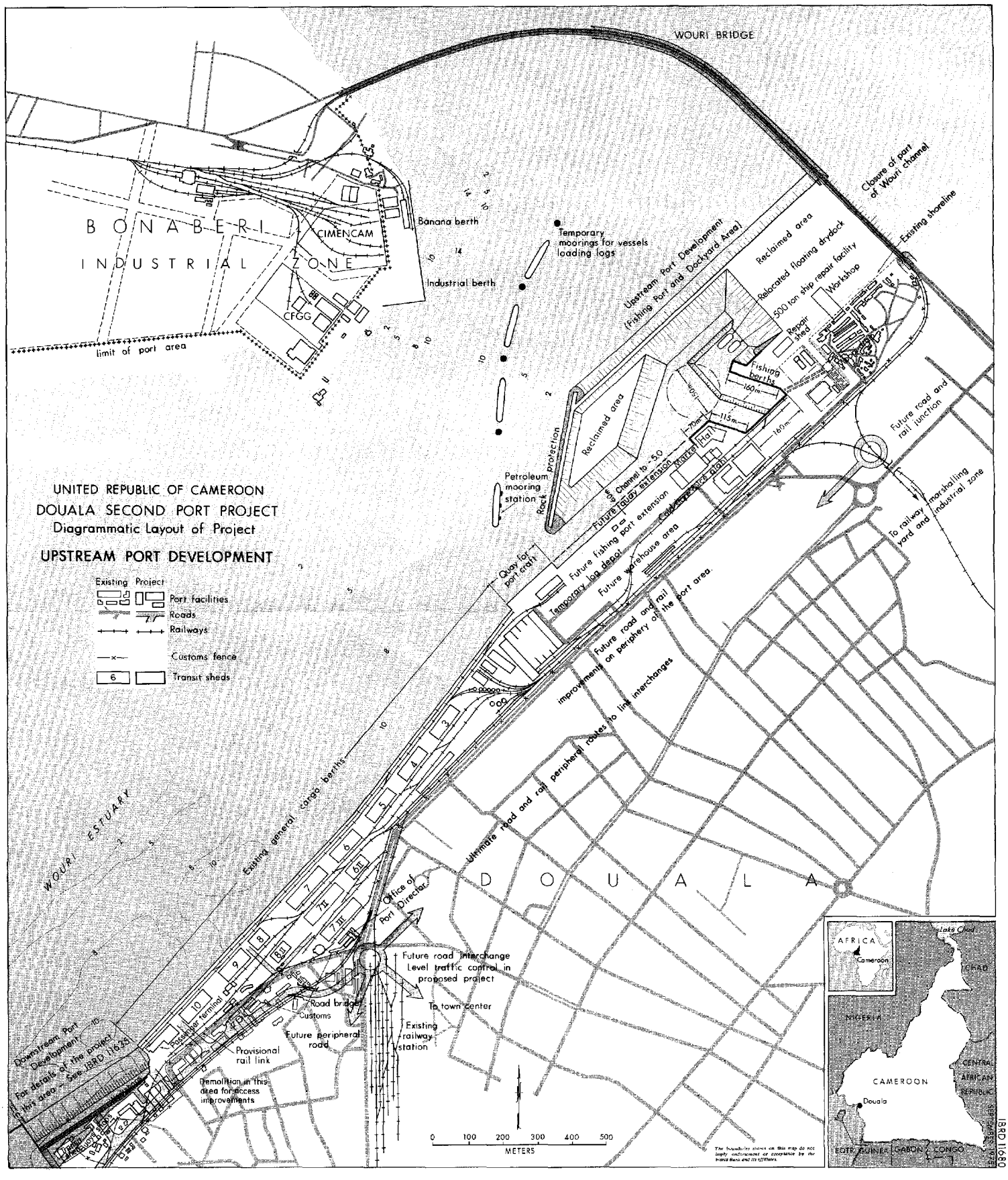
CHART



IBRD 11633
SEPTEMBER 1975



IBRD 11635R
DEC. 1975


WOURI BRIDGE
BONABERI INDUSTRIAL ZONE
CIMENCAM
CFGG
limit of port area
Banana berth
Industrial berth
Temporary moorings for vessels loading logs
Closure of part of Wouri channel
Existing shoreline
Upstream Port Development (Fishing Port and Dockyard Area)
Reclaimed area
Relocated floating drydock
500 ton ship repair facility
Workshop
Repair shed
Fishing berths
160m
115m
70m
100m
Reclaimed area
Rock protection
Future road and rail junction
Petroleum mooring station
-5.0 Channel to -5.0
Future quay extension
Future fishing port extension
Future warehouse area
Future road and rail improvements on periphery of the port area
To railway yard and marshalling industrial zone
Quay for port craft
Temporary log depot
Ultimate road and rail peripheral routes to link interchanges
Existing general cargo berths
WOURI ESTUARY
D O U A L A
Office of Port Director
Future road interchange Level traffic control in proposed project
To town center
Existing railway station
Road bridge
Customs
Future peripheral road
Provisional rail link
Demolition in this area for access improvements
Passenger terminal
Downstream Port Development
For details of the project in this area - See IBRD 11635
UNITED REPUBLIC OF CAMEROON
DOUALA SECOND PORT PROJECT
Diagrammatic Layout of Project
UPSTREAM PORT DEVELOPMENT
Existing Project
Port facilities
Roads
Railways
Customs fence
Transit sheds
0 100 200 300 400 500
METERS
AFRICA
Cameroon
Lake Chad
CHAD
NIGERIA
CENTRAL AFRICAN REPUBLIC
CAMEROON
Douala
EQTR. GUINEA
GABON
CONGO
IBRD 11680
SEPTEMBER 1973

IBRD 3030R
SEPTEMBER 1975

UNITED REPUBLIC OF CAMEROON
DOUALA SECOND PORT PROJECT
CHANNEL APPROACH TO DOUALA

NOTE: THE PROPOSED DOUALA DREDGED ENTRANCE CHANNEL EXTENDS AND DEEPENS THE EXISTING DREDGED CHANNEL.