ガーナ「港湾修復事業」
＜第三者評価＞

評価報告：1999年3月

現地調査：1998年9月

評価実施者：フランス開発庁（AFD）
コカール氏

事業概要

借　入　人　：　ガーナ共和国政府

実 施 機 関　：　ガーナ港湾庁

交換公文締結　：　1985年6月

借款契約調印　：　1985年10月

貸 付 完 了　：　1990年10月

貸付承諾額　：　5,912百万円

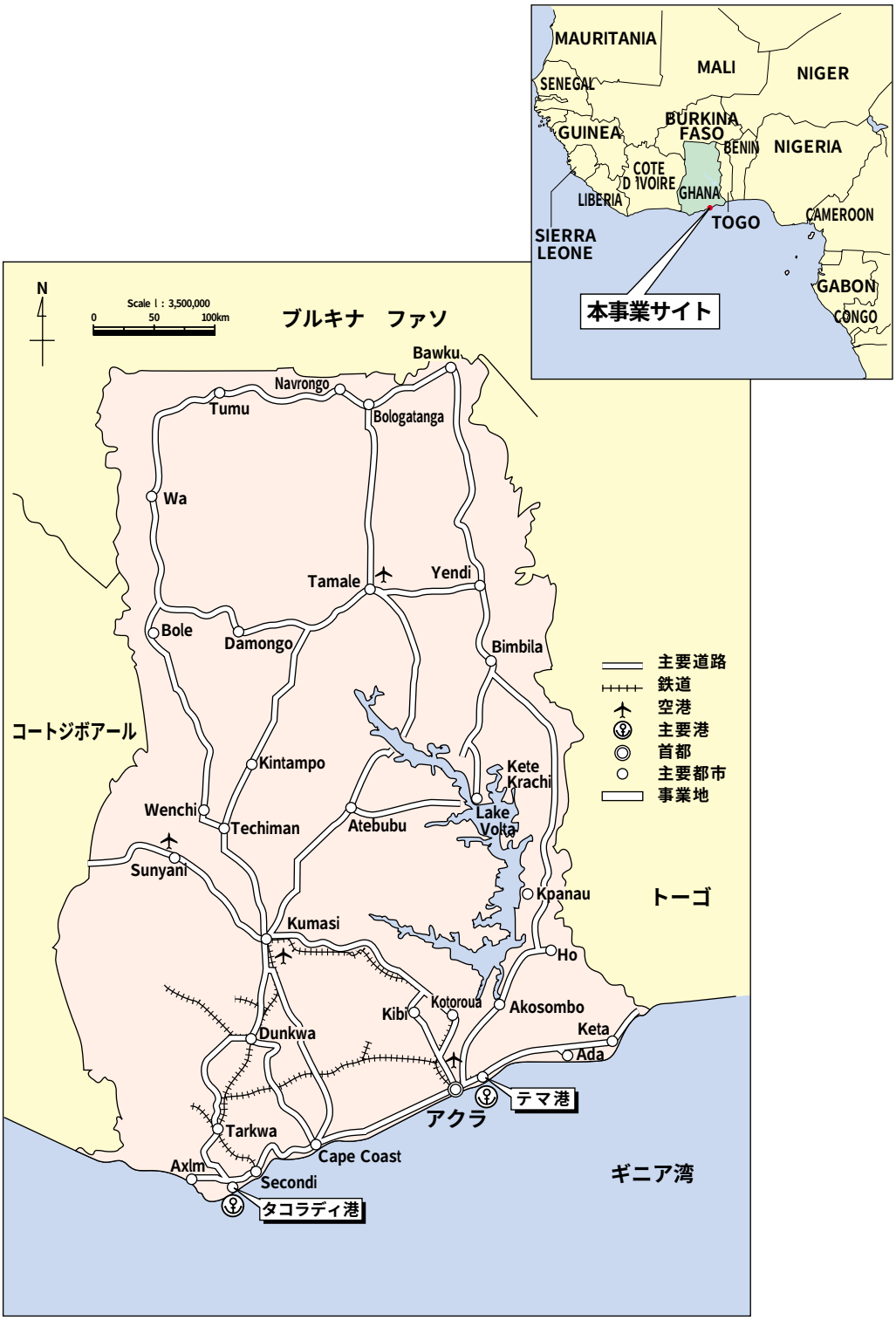
貸付実行額　：　5,912百万円

調 達 条 件　：　一般アンタイド

貸 付 条 件　：　金利 3.5%

償還期間 30年（うち10年据置）

事業地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Kibi
Kotoroua
Akosombo
Keta
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テマ港
アクラ
Tarkwa
Cape Coast
Axim
Secondi
タコラディ港
ギニア湾
主要道路
鉄道
空港
主要港
首都
主要都市
事業地

評価報告書要約

1. 評価の概要

本報告は、海外経済協力基金（以下、「OECF」という）の依頼により、the Agence Française de Developpment**（以下、「AFD」という）が、世銀との協調融資によりOECFが実施したガーナ共和国「港湾修復事業」（以下、「本事業」という）の事業効果について、第三者としての評価結果と所見を述べるものである。**

2. 事業概要

1970年代半ばから1983年にかけての間、ガーナでは、1975年および76年に発生した大干ばつと、当時のさまざまな経済政策の失敗の結果として、国民生産および輸出の継続的減少を経験した。構造調整を受け入れたガーナ政府が実施していた経済再生計画を支援するため、1984年に世銀は93.1百万ドルの「輸出再建事業」を承認し、主にココア（23.9百万ドル）、金（23.6百万ドル）、木材（23.7百万ドル）、港湾（4.8百万ドル）の各セクターに対して支援を行った。

このうち、港湾の改善は、とりわけココアや木材の運搬をより効率的にし、輸送費用を低減させることを目的にしたものであり、国際社会の支援によりガーナ政府が行っていた経済再建計画全体に沿ったものであった。

海外経済協力基金（OECF）は、世銀による本事業計画の一部を担当する形で、船舶、荷役機械、および資材供与を内容とするテマ港とタコラディ港の修復事業を実施することになった。

本事業の第1フェーズの当初計画費用（第2フェーズは世銀、サウジ、EUの協力により後日実施）は、世銀（IDA）の「輸出再生技術支援事業（ERTAP）」の結果を受けて、49.5百万ドルと見積もられた。その内、OECFは24.1百万ドル（事業費全体の49%）、世銀（IDA）は21.9百万ドル（事業費全体の44%）、ガーナ政府は3.5百万ドル（事業費全体の7%）を負担した（以下、OECF担当部分を「OECF事業」という）。

OECFは1985年10月25日に、両港湾が正常に機能するために必要な資機材の外貨分

（5,609百万円）と予備費（303百万円）を合わせて、5,912百万円（当時のレートで24.1百万ドル）を限度とした借款をガーナ政府に供与することに同意した。借款条件は、年利3.5%、返済期間30年（うち据置10年）であった。

3． 事業実施

OECF事業の実施スケジュールは、大幅に遅延した。機器の仕様･入札書類準備は、1986年1月の予定が1987年6月に完了し、機器据え付け完了は1988年2月の予定に対し、実績は1990年9月となった。

事業費は、1986年から88年にかけて円の対ドルレートが急上昇したことから、もともとドル建てで積算されていたOECF事業の費用が円換算で大幅に減少し、借款額との関係からは調達品目を拡大できる余地ができた。これを受け、本事業の実施機関であるガーナ港湾公社（以下、「GPHA」とする）によって、調達品目の変更申請がOECFになされ、借款対象として妥当なものとして認められた。

この結果、OECF事業でのドル建てのディスバース額は42.2百万ドルに達し、当初予定の24.1百万ドルに比して75%増加した。つまり、OECF事業の遅延に付随して、実際のニーズに応じた調達の調整が行われたのである。

OECF借款資金は、クレーン20基、フォークリフト45台、トラクター10台、トレイラー24台、ココアコンベアー32台などの調達に充てられた。ただし、今回の評価では、GPHAの記録が必ずしも十分に整備されていなかったために、OECF借款資金対象となった調達品目を、現地での限られた調査期間では、すべて正確に特定することができなかった。

なお、世銀（IDA）事業は、事業の設計･監理に対するコンサルティング･サービスに資金を供与しただけでなく、いくつかの資機材にも資金を供与し、更に以前は3つに分割されていた港湾組織を、GPHAの1つに統合する等の組織改革をも支援した。その結果、テマ港とタコラディ港には、一部、自主運営権が与えられることになった。

＜OECFによる補足＞

OECF借款による主な調達品目は、正確には以下の通り。

品目	審査時予定	実績
クレーン	23基	21基
フォークリフト	51台	42台
トラクター	19台	24台
トレイラー	42台	32台
ココアコンベアー	－	32台
バス等車両	－	25台
ブイ用バージ	－	2隻
通信機器	－	2式

（出所）：OECF資料

4. 輸送量の増加に対するOECF機材の妥当性

1995年の、GPHAによるテマ港の実際の貨物取扱量（私企業による取り扱い分を除いたもの）は、OECF事業の設計を担当したコンサルタントが予測した取扱量の2.3倍に上った。他方、タコラディ港におけるGPHAの取扱量は、同年のガーナ政府による丸太の輸出禁止措置の影響を受け、コンサルタントの予測値に達しなかった（なお、GPHAが取り扱った輸出量は1994年にピークに達し、1,017,065メートル・トンになった）。テマ港のケースから、コンサルタントによる荷役機器の取扱可能量が、過小見込みであったことがわかる。

両港とも、コンテナ貨物とばら荷の取扱いが大きく伸びた一方、一般貨物や一部の梱包貨物のような貨物は、大きな減少となった。このようなことは、事業前の調査では予想されていなかった。テマ港では、1995年のコンテナ貨物の取扱量予測は、実際の取扱量を51％下回った一方で、一般貨物の取扱量は実際の取扱量より5倍多く見込まれていた。また、タコラディ港では、1995年の時点ではコンテナ化されていないとの予測に対し、実際には、167,500メートル・トンのコンテナ貨物が取り扱われた。

このように、種類別の貨物取扱量予測に不備があったものの、船舶や資機材の選択において間違った判断はなされなかったと思われる。1994年に行われたマスタープラン（港湾修復フェーズ2のもの）やOECFレポート（1998年）においても、船舶や資機材は、両港で取り扱われている貨物の種類に適合しているとみなされている。コンテナ用ガントリークレーンの調達は、緊急な必要性はないと考えられている。

上記の2つのレポートでは、機材の稼働率を改善するためには、適切な維持管理とタイムリーなスペア･パーツの供給が欠如していることが、主要な問題点として指摘されていた。上述のマスタープラン（1994年）では、機器の年間平均故障率は、テマで50％、タコラディで41％であった。その後、OECFのレポート（1998年）では、調査時点での平均故

障率は、（既に廃棄された2機の機材も含めて）テマでは39%、タコラディでは15%に改善していたことが指摘されている。最近、スペア･パーツ調達のためのコンピューター管理が導入されたことから、稼働率は将来的に改善していく見込みである。

OECF事業対象分の車両の維持管理簿をみたところ、一部の機材について定期的な維持管理が行れていないことが明らかになった。修理･維持管理は、平均して2年に１度行われているが、これは十分な水準とは言えない。テマよりもタコラディでの維持管理計画の方がすぐれている。GPHAが策定した開発戦略の5ヶ年計画でも、維持管理の不十分さが問題点として強調されている。

ドナー、すなわち世銀とOECF、特に世銀以上に機材の主要な提供者であったOECFが、港湾運営上のアキレス腱となるおそれのあった機材の維持管理体制に関し、資機材の設置後直ちにこれを強化するためのGPHAに対する指導や支援を十分に与えなかったのではないかとの問題提起はあり得よう。また、上述のマスタープランやOECFのレポートではGPHAスタッフの機器操作技術の不十分さが指摘されており、スタッフに対する初期トレーニングと継続的な再トレーニングがもっと重視されるべきであったと言える。

5. 事業効果

本事業によって、GPHAの貨物取り扱い能力は、1987年との比較で、1997年にはテマで1.6倍（3,286,024メートル・トン）、タコラディで1.2倍（674,140メートル・トン）に増加した。ちなみに、丸太の輸出が停止されるまでは、タコラディ港では、1,017,064メートル・トンの貨物を取り扱っていた。したがって、OECF事業は、両港の貨物需要への対応を可能にしたという点で、成功であったと言えよう。

技術的なパフォーマンスは、本事業の結果、全体的に見てかなり高まった。バースにおける平均停泊時間は、1988年と比べて、テマ港では1990-91年に6%短縮し、1993-94年には約15%短縮した。一方、タコラディ港では1993年以降に改善が実現してきている。この種の指標は、スタッフや機材の生産性の改善と関係があると考えらる。

船舶の停泊1時間あたりの平均取扱量（トン）は、両港とも継続的に増加し、1989年との比較で、1994年にはテマ港で60%、タコラディ港で52%増加した。この改善は、テマでは1995年まで、タコラディでは1996年まで続いた。1ギャング（荷役チーム）1時間あたりの平均取扱量（トン）も、1990年から1996年の間に大幅に増加し、1990年を100とすると、ピーク時にテマでは319に、タコラディでは212に達した。逆にスタッフ数は、1987年から1993年に至るまで継続的に減少し、最も大幅な減少があった1989年には36%減少した。

世銀･OECFによる本事業全体の目的の1つに、港湾管理や事務手続きを合理化し、貨物処理の生産性を高めることによって、GPHAの経常支出を減少させることがあった。1988

年から1990年の間に、この点に関して大きな改善が見られた。すなわち、経常支出は、この期間に実質値で67%減少した。借款関係の負担分を除くと、GPHAの1992年のネットの経常支出は、依然として1987年よりも低い水準にある。

1988年以来、GPHAでは、年間の経常純利益がプラスを記録しており、1988年と1994年の間に極めて順調に増加した。

6. 結論と提言

ガーナにおいてOECFが支援した「港湾修復事業」は、ガーナが1986年以降具現してきている輸出主導の経済的回復を可能にしたという意味において、成功をおさめたと言える。

港湾管理の再構築や1つの機関への組織統合の直後に、OECF事業によってテマ港とタコラディ港に対して新しい荷役機材や船舶を調達したことで、GPHAが、その活動を合理化し、パフォーマンスを改善することが可能になった。このことは、ガーナ当局が、GPHAの人員を削減する強い決定を行うことをも可能にした。

なお、機材の稼働率を高める上では、GPHAに対して、スペア・パーツの調達を含めた維持管理のための体制構築を支援していれば、なお良かったのではないかという点を付記したい。

【OECFの見解】

指摘にあるように、本事業の実施時点では、維持管理体制の構築の支援までは至らなかったかもしれない。しかしながら、その後OECFでは、事後監理の一環として1997年～98年に詳細な調査を実施し、維持管理体制の改善策を提言する等、可能な限りの支援は実施してきている。

EX-POST EVALUATION OF THE GHANA'S PORTS REHABILITATION PROJECT

AFD
Ph. COQUART

PREAMBLE

Ex-Post Evaluation of this OECF-funded project is part of a 1998 OECF-AFD Cooperation Program. It was carried out by Ph. COQUART from AFD (Ex-Post Evaluation Division).

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ACRONYMS

GDP : Gross Domestic Product

GHC : Cedis (Ghana's currency)

GPHA: Ghana Ports and Harbours Authority

GRC : Ghana Railway Company

HPC : Hambourg Port Consulting

IDA : International Development Agency

IMF : International Monetary Fund

JPY : Japanese Yen

MHE : Mechanical Handling Engineering

MPS : Master Plan Study

OECD: : Organization for Economic Corporation and Development

OECF: : (The) Overseas Economic Cooperation Fund (of Japan)

USD : United States Dollar

REPORT'S SYNTHESIS

1. Project description

From the mid 1970s until 1983, Ghana experienced a continuous decline in output and therefore exports as a consequence of a severe drought in 1975 and 1976, and policy-related problems which stunted over the overall economy during that time. In order to support the economic recovery plan carried out by the Government as Ghana was entering an Adjustment Program, in 1984 the World Bank approved an Export Rehabilitation Project amounting to 93.1 USD, which was devoted mainly to cocoa (23.9 M. USD), gold (23.6 M. USD), timber (23.7 M. USD) and port (4.8 M. USD) sectors.

Improvement of the ports was aimed at enabling them to handle, among other commodities, cocoa and timber traffic more efficiently, and lower shipping costs, which put this program in line with the whole recovery effort that Government of Ghana, with the help of the International Community, was undertaking.

The Overseas Economic Cooperation Fund of Japan (OECF) participated in the rehabilitation of the Ports of Tema and Takoradi by providing ships, cargo handling equipment and materials within the framework of the World Bank's project.

The original estimated cost of the first phase (a second phase was undertaken afterward with the participation of the WB, the Saudis and the European Union) was reaching 49.5 M. USD, taking into account the IDA's Export Rehabilitation Technical Assistance Project (ERTAP). OECF's share was 24.1 M. USD (49 % of the global project cost). IDA provided 21.9 M. USD (44 %) and the Ghanaian Government, 3.5 M. USD (7 %).

OECF agreed on October 25, 1985 to lend Ghana an amount not exceeding 5,912 M. JPY as the Foreign Currency Portion of equipment and materials needed for both ports to function correctly (5,609 M.YJ), plus Contingencies (303 M.YJ). The loan was for 20 years, bearing interest at a rate of 3.5 % per annum. At that time, the JPY's loan amount was equivalent to 24.1 M. USD.

2. Project execution

The project implementation time table was far behind schedule, from preparation of Specifications and Tender Documents (which were completed in June 1987 instead of January 1986) up to Site Setting (which took place in September 1990 instead of February 1988).

Due to a soaring JPY's exchange rate against USD in 1986-88, costs that had to be paid in the latter currency decreased greatly when expressed in JPY, room was given to GPHA to globally expand the list of equipment, port ships and materials procurement. A new request by the Port Authority was therefore submitted to OECF which was considered fully justified for funding. Total amount disbursed in USD went up to 42.2 M. USD instead of 24.1 M. USD (+75 %).

Delays experienced by the Project induced changes in the list of equipment to be procured in order to better adjust procurements to real needs.

The OECF financing initially provided twenty cranes, forty-five forklift trucks, ten tractors, twenty-four trailers, thirty-five ships and other equipment and materials, such as thirty-two cocoa conveyors and some communication systems.

In addition to financing the consultancy for designing and controlling the project, the World Bank also funded a few pieces of equipment and supported institutional changes, such as the unification of the three entities which previously made up the Port organization into the Ghana Ports and Harbors Authority. The Ports of Tema and Takoradi were given a semi-autonomous status.

3. OECF equipment relevance to traffic development

- Effective throughputs for the Port of Tema under GPHA's handling responsibility in 1995 (out of private company cargo handling) were 2.25 times over previsions the Consultant in charge of designing the OECF Project established. Port of Takoradi GPHA's activity did not reach the Consultant prevision due to ban of log exports by the Government of Ghana in 1995 (exports handled with GPHA Equipment peaked in 1994 at 1,017,065 metric tons). Such a finding indicates that the Consultant handling equipment capacity forecast was under-evaluated.

  Both Ports have enjoyed high development rates in containerization and dry bulk cargo to the detriment of other type of cargo such as General Cargo and, to a certain extent, Bagged Cargo. Such an evolution was not anticipated by studies prior to the project. Previsions of container cargo traffic for 1995 was 51 % under actual traffic and General Cargo traffic was five times over actual traffic in the Port of Tema. In Takoradi, no containerization was forecast in 1995 but actual container traffic reached 167,500 metric tons.

  It does not seem that these flaws in type of cargo previsions caused wrong decisions to be made in the choosing of ships and equipment. The ships and handling equipment outlined in a Master Plan Study carried out in 1994 and the OECF Report (1998) were found to be adequate to the kind of cargo being handled in both Ports. Procurement of gantry cranes for handling of container is not considered an urgent requirement.

  The main problem those two reports outlined is a lack of good maintenance and a timely provision of spare parts in order for the equipment to have a better availability rate. Average broken down rate per year has been 50 % in Tema and 41 % in Takoradi. The OECF experts point out that when they were in Ghana the rate of broken down equipment was 39 % in Tema (in addition to two handling equipment units already scraped) and 15% in Takoradi. Things are likely to improve in the future because of the recent computerization of spare parts procurement.

- Supervision of some Vehicle Maintenance Control Sheets with regard to OECF Equipment shed light on the fact that all OECF Equipment is not regularly maintained. When average repairs and maintenance interventions take place every other year, it cannot be considered satisfactory. The maintenance schedule in Takoradi seems better than in Tema. The five-year Corporate Plan

which provides GPHA with a development strategy also stresses these points of weakness.

One can wonder if the project donors, namely the WB and OECF and specifically OECF who was the main provider of equipment more than the WB would not be better off providing GPHA with incentives and support to help this organization as soon as equipment was installed to strengthen its maintenance system which seems to be its Achilles' heel. Survey by the Corporate Plan and the OECF Report of the staff equipment's running skill, for example for equipment drivers, shows that it often lacks efficiency, which indicates that training at the beginning should have been more important and from time to time reinforced.

4. Project impact

- The OECF project has increased the GPHA's ability to handle commodities in Tema by 1.6 times (3,286,024 metric tons) in 1997, and in Takoradi by 1.2 times (674,140 metric tons) compared to 1987 traffic. Before terminating log exports, the Port of Takoradi reached a handling volume amounting to 1,017,065 metric tons. It can therefore be said that in this domain the OECF project was a success in facilitating both Ports to respond to the traffic demand.

- Technical performances have from a general point of view increased quite substantially in the wake of the Ports' rehabilitation. The average hours of ships at berth decreased by 6 % in 1990 and 1991 and by about 15 % in 1993 and 1994 in the Port of Tema, as compared to 1988 figures. Improvement in this domain only took place in the Port of Takoradi after 1993. This type of indicator is correlated to staff and equipment productivity improvement.

  The average tons per ship working-hour has continuously increased after 1989 in both Ports: by 60% in Tema and 52 % in Takoradi in 1994, compared to figures in 1989. Improvement continued till 1995 in Tema and 1996 in Takoradi.

  Average tons per gang-hour also sharply increased for both Ports between 1990 and 1996, with a peak in Tema at Index 319 and in Takoradi at Index 212, compared to a 100 Index in 1990. Concurrently, the staff position has decreased constantly from 1987 until 1993, and most significantly in 1989 (-36 %).

- One of the impacts the overall WB/OECF project was aiming at was the decrease of GPHA's Operating Expenditures due to a streamlining of management, procedures and cargo handling productivity. A big improvement in this area took place from 1988 to 1990: the operating expenditures plummeted 67 % in real terms over that period of time. Without Loan Charges, the net Operating Expenditures in 1992 were still smaller than those in 1987.

  Since 1988, GPHA has registered annual positive Operating and Net Profits which have increased on a quite regular basis between 1988 and 1994.

5. General conclusions and recommendations

The Port Rehabilitation project that OECF drove in Ghana was a success in the sense that it allowed for economic recovery in exports and imports that the country enjoyed after 1986.

- Procurement of new equipment, port ships and materials to the Ports of Tema and Takoradi contiguous to reorganization of the Port activity management and unification under a sole authority made it possible for GPHA to streamline its activity and improve its performances. The Ghanaian authorities were also able to make strong decisions in thinning out GPHA staff.

- Nevertheless, support of maintenance organization, which includes spare parts procurement, should have been provided to GPHA in order to help it improve equipment availability.

1. PROJECT BACKGROUND AND MOTIVES

1.1 The Project

The Overseas Economic Cooperation Fund of Japan (OECF) participated in the rehabilitation of the Ports of Tema and Takoradi in Ghana which took place in 1987-1990 by provision of Ships, Cargo Handling Equipment and Material within the framework of an Export Recovery Program that was initiated by the World Bank in 1983.

This project was the first of a list of programs OECF would fund in the transportation sector in Ghana that indicate a strategic approach by the Fund seeking to ease one of the major economic constraints Ghana has been hampered with. These projects were : four Road Rehabilitation Projects in 1987, 1990, 1996 and 1998, plus a fifth one being currently evaluated ; and a Railway Equipment Project aimed at strengthening of the Ghana Railway Company's (GRC) transportation capacity for mining outputs.

1.2 Economic Situation in Ghana prior to the Project

In 1983, the Government of Ghana took a new economic path supported by an adjustment program signed with the International Monetary Fund (IMF) which, among other things, introduced a dramatic devaluation of the Cedi currency and established ambitious rehabilitation and development programs in strategic sectors, most of them export-oriented.

From the mid 1970s until 1983, Ghana experienced a continuous decline in output and therefore exports as a consequence of a severe drought in 1975 and 1976 (having severe consequences over the cocoa production) and policy-related problems which had stunted the overall economy during that time period. Another drought impeded economic development in 1982/1983. The yearly Gross Domestic Product (GDP) trend shrunk at an average annual rate of 3 % from 1979 to 1983. The annual rate of growth over the same period of time was the following :

GDP	1979	1980	1981	1982	1983
Annual real rate of growth (%)	-2.5	1.2	-3.8	-6.1	-2.9

Deterioration of domestic conditions reverberated in export and import figures as presented in this table :

	1980	1981	1982	1983
Exports (%)	4.0	-64.4	-8.5	7.2
Imports (%)	11.3	10.5	-38.3	-3.0

Source : IMF.

The crisis experienced by Ghana in terms of budget structural imbalance and therefore shortage of resources for financing of public equipment entailed a serious deterioration in the country's overall infrastructure and specifically in the transportation infrastructure.

Even if the negative trend in international trading indicated in the above table cannot be fully explained by the malfunctioning of Ports, nevertheless a high rate of breakdown of equipment in the Ports of Tema and Takoradi hampered evacuation of cocoa, timber and minerals ; export figures were the following :

Exports (Metric Tons)	1980	1981	1982	1983
Cocoa Products	23,200	14,200	16,000	15,000
Bauxite	223,000	150,000	36,000	116,161
Manganese	183,000	143,000	130,000	127,000
Timber	185,000	219,000	111,000	103,303

Source: IMF.

In order to support the economic recovery plan carried out by the Government as Ghana was

entering an Adjustment Program, in 1984 the World Bank approved an Export Rehabilitation Project amounting to 93.1 M. USD and which was devoted mainly to cocoa (23.9 M. USD), gold (23.6 M. USD), timber (23.7 M. USD) and port (4.8 M. USD) sectors.

1.3 The Ports of Tema and Takoradi

1.3.1 Port of Tema

Tema Port construction began in 1954 with services being provided beginning in 1962. As shown in Annex 1.1, its layout consists of Quay No 1 which has seven Berths in a line (Berth 6 to Berth 12), Quay No 2 (Berth 1 to Berth 4) and a water basin. A fishing harbor is East of the commercial Port. 350 ha around belong to the Port of which 55 ha are the operational zone.

Berths of Quay 1 are too shallow and only permit small size ships to moor. Berth 11 consists of two level lifting cranes which were funded by OECF for container cargo and general cargo. Berth 12 is used for unloading of clinker. Southern Quay 2's Berths are the deepest and can be used to moor large size container cargo ships. Other berths on this Quay are devoted to general cargo.

Three sheds (7, 9 and 11) out of four remain on Quay 1 : sheds 7 and 9 are used for breaking bulk cargo, shed 11 for export and transit cargo.

1.3.2 Port of Takoradi

The Port of Takoradi is an artificial Port where construction began in the 1920s. Its present framework was completed by the end of the 1950s. (See the Ports' layout in Annex 1.2). Berth 1 on the leebreakwater is made of six Berths : Berth 1 is devoted to Manganese handling, Berths 2 to 6 to general cargo.

In the inner Port area, three shallow water wharves are available: the North lighter wharf is used for clinker, fishing boats and tug and pilot boats ; the West lighter wharf with four portal cranes is used for cocoa exports ; the North log quay is where sawn timber storage sheds are built.

2. PROJECT PREPARATION AND DECISION MAKING

2.1 The World Bank Export Rehabilitation Project

The Port rehabilitation activity was in financial terms a minor part of the Export Rehabilitation Project (cf. Chapter 1.2) but an important one as far as the national economic overhaul is concerned because adequate entrance and exit capacity was essential to the goal of economic recovery based on reviving export sectors. Such a revival was itself dependent on entry of imports at the required level. Moreover, the alternative of using other regional ports such as those in the Ivory Coast was impractical due to the bottleneck presented by inland transport.

The WB report to the Board points up that improvement of the ports was aimed at enabling them to handle cocoa and timber traffic more efficiently and lower shipping costs which put this program in line with the whole recovery effort the Government of Ghana was undertaking, with the help of the International Community.

The Port rehabilitation activity designed by the WB was larger than its own financing and included rehabilitation of cargo handling equipment, provision of floating crafts and improvements to existing port superstructures as shown in the following Table (At that time, three administrative structures were managing Ports activities : the Ghana Ports Authority (GPA), the Ghana Cargo Handling

Company (GCHC) and the Takoradi Lighterage Company (TLC)) :

M. USD	GPA	GCHC	TLC	Total
Cargo Equipment	1,055	2,805		3,860
Marine Equipment	4,370		985	5,355
Civil works	1,000			1,000
Dredging	2,100			2,100
Takoradi dry dock & slipway	1,000			1,000
Contingencies	1,195	365	125	1,685
Total	10,720	3,170	1,110	15,000

Taking into consideration that 4.8 M. USD was provided by the WB, 10 M. USD was to be obtained from other sources, about which OECF was approached.

2.2 The OECF Report (1984)

The OECF report issued on December 1984 appraised material and equipment for handling throughputs of 1.5 Million metric tons in the Port of Tema and 750,000 metric tons in the Port of Takoradi in 1995. These projections came through a feasibility study by Sir William Halcraw & Partner (SWH&P) for the future activity of Ghana's Ports ([1]).

The OECF Report (1984) provides a close description of material and equipment on hand, for usable scrap, for rehabilitation and, finally, to be procured in order to achieve the above throughput objectives. Detailed figures for every category of those materials and equipment in the Ports of Tema and Takoradi are available in Annex 2.1.

It includes a list of specific equipment (specifications) to be funded by the Organization (See Annex 2.2) in contrast to equipment the International Development Agency (IDA) was ready to

[1]/ This report was not available at the GPHA Headquarter.

fund. As evidenced in that Annex 2.2, IDA was going to fund five Forklift Truck, eight Tractors, twenty four Trailers and the Rail Car Shunting.

Handling capacity after completion of the project as estimated by SWH&C is broken down into categories of cargo, as shown in the following Table :

Type of Cargo	Nbr of Moorings	Nbr of Moorings	Port of Tema	Port of Takoradi
Year 1995	Tema	Takoradi	(Tons)	(Tons)
General Cargo	6	3	864,000	432,000
Cocoa	2	1	288,000	144,000
Container	2		360,000	
Lighter				210,000
Total			1,512,000	786,000
Cargo Volume expected in 1995			1,540,000	750,000

Source: OECF Report (1984)

What should be stressed here is that SWH&C dramatically underestimated the containerization of the cargo trend which, for example, amounts for nothing in Takoradi in 1995. Containerization, when the feasibility study was realized in 1983/1984, already was increasing fast on international shipping lines and could have been forecast as the main cargo evolution.

2.3 The Financing of the Project

The OECF Project is part of a global Program of Port rehabilitation which consists of two phases and includes the participation of Ghana, IDA, the Saudi and the European Union. Only the first phase is presented and discussed in this report.

Far higher than figures put in the World Bank ERP (15 M. USD - See Chapter 2.1), the estimated cost of the first phase reached 49.5 M. USD taking into account the Export Rehabilitation Technical Assistance Project (ERTAP) participation by IDA to the Program :

Item	OECF (M.JPY)	OECF (M.USD)	IDA (M.USD)	Government (M.USD)	Total (M.USD)
Spare Parts			4.8		4.8
Cargo Handling Equipment	3,296	13.5			13.5
Marine Equipment	1,768	7.2			7.2
Material and Equipment	545	2.2			2.2
Civil Work				3.5	3.5
Contingency	303	1.2			1.2
Technical Assistance (ERTAP)			17.1		17.1
Total	5,912	24.1	21.9	3.5	49.5
Breaking Down (%)		49%	44%	7%	100%

Source: OECF Project Completion Report

OECF is first in financing the first phase with a loan amounting 5,912 M. JPY (24,1 M. USD in 1985). Technical Assistance to the project through the World Bank ERTAP which is 35 % of the total cost comprised project appraisal and Consultant support to GPHA for project implementation.

ERTAP aside, the estimated cost was 32.4 M. USD and OECF participation 74 %, IDA 15 % and the Government 11 %.

2.4 Project Preparation Time Table

The OECF Preparation Time Table ran from the first Ghanaian Government request for a loan in January 1984, to the signature of a loan agreement in October 1985, thus stretching over a 22 months span. The Report is issued in December 1984. Such a short period of time to finalize a project is remarkable for such a complex project which includes co-financing with another donor, even if OECF was building feasibility studies undertaken by the World Bank (WB). The first request was 10 M. USD and a second request increased in October 1984 the amount up to 24.1 M. USD.

OECF agreed on October 25, 1985 to lend Ghana an amount not exceeding 5,912 M. JPY as the Foreign Currency Portion of equipment and materials needed (5,609 M. YJ) plus Contingencies (303 M. YJ). The 20-year loan bore an interest rate of 3.5 % per annum. At that time, the JPY's amount was equivalent to 24.1 M. USD.

The financing was untied, procurement being open to all member countries of the Organization for Economic Corporation and Development (OECD) and the Developing Countries.

3. PROJECT EXECUTION

3.1 Increased project resources in USD

Due to the soaring Yen exchange rate against USD in 1986-88, costs which had to be paid in the latter currency decreased in a large proportion when expressed in JPY giving the project the opportunity to expand if needed its equipment procurement. The annual average JPY exchange rate to USD produced an increase of 86 % in JPY's value against the USD between 1985 and 1988 as shown below :

	1984	1985	1986	1987	1988	1989
USD/100 JPY	0.42	0.42	0.59	0.69	0.78	0.73

Therefore, a revised program as presented in the OECF Completion Report was set up (specific time for this Revision is unknown) (See Annex 2.2) after GPHA provided its new requirements. Some original lots of equipment appeared too large and were scaled down (overhead cranes, forklift trucks, trailers). Some others were expanded (log loaders, tractors, lighter tugs) and new equipment not previously enlisted, such as personal launches or buoy barges, was considered useful and added to the OECF program financing. The process through which the revised program was drawn up cannot be described.

As a result, the overall program financing evolved from 24.1 M. USD up to 42.2 M. USD as shown

in the following Table :

	1985 Original Foreign Currency Project Scope in M. USD	1985 Original F. C. Project Scope in M. JPY	Revised F. S. Project Scope in M. USD	Revised F. S. Project Scope in M. JPY
Handling Equipment	13.5	3,296	21.2	2,964
Ships	7.2	1,768	12.4	1,733
Material	2.2	545	5.4	756
Communication Systems			1.0	139
Spare Parts			2.3	320
Contingencies	1.2	303		
TOTAL	**24.1**	**5,912**	**42.2**	**5,912**

Source: OECF Final Report (October 1991)

The following Table, which is an outcome of Annex 2.2, presents the equipment and material scope program for both Ports at three different stages of the project's cycle, namely the *appraisal* stage, the original and revised scope. A fourth category is taken into consideration which is the list of items given by the OECF Report, dated February, 1998, which makes a review of the equipment and ships provided through OECF financing (See Annex 3.1 [Tema] and 3.2 [Takoradi]).

TEMA+TAKORADI	Evaluation Report		Project Completion Report		OECF Report (1998)	GHPA's
	Eq. to be procured	Specifi-cations	Original Scope	Revised Scope		Figures (Ex-Post Eval.)
Level Luffing Cranes 40 T	2	2	2	2	2	2
General Cargo Cranes 15 T	0	0	0	2	2	2
Mobile Cranes	3	1	1	4	3	3
Log Handling Cranes	0	0	0	3	3	3
Overhead Cranes	1	20	20	10	10	10
Log Loaders 20 T	3	0	3	0	0	0
Forklift Trucks	57	51	51	42	45	45
Tractors	26	18	18	22	10	10
Trailers	56	24	42	32	24	24
Tug Boats	2	2	2	2	2	2
Pilot Launches	2	2	2	2	2	2
Mooring Launches	2	2	2	4	4	4
Lighters (light loading op.)	37	15	15	14	13	14
Lighter Tugs	9	2	2	3	3	3
Water Supply Barge	1	1	1	1	1	1
Other Barges	0	0	0	0	8	8
Personal Launch	2	0	0	1	1	1
Buoy Barges	0	0	0	2	1	1
Rails (sets)	1	1	1	1	N.M.	1
Lighting System Container (sets)	5	5	5	0	N.M.	0
Rail for rehabilitation in the lot storage area (sets)	1	1	1	0	N.M.	0
Repair of Slipway & Dry-dock (sets)	4	4	4	2	N.M.	2
Fendering Wooden (sets)	1	0	500	490	N.M.	490
Cocoa Conveyors	0	0	0	32	N.M.	32
Bus + cars	0	1	1	20	N.M.	20
Trucks	0	0	0	2	N.M.	2
Outboard Motors	0	0	0	5	N.M.	5
Communication Systems	0	0	0	2	N.M.	2
Total Units Provided by OECF	**215**	**152**	**673**	**700**	**134**	**689**
Revised Completion Report Figures rendered comparable to OECF Report(1998) Figures				146	134	

N.M. = Not Mentioned

The revised program was made for the following items as opposed to the original one: + eight quay side and mobile cranes ; - ten overhead cranes ; - nine forklift trucks ; + four tractors ; - ten trailers ; + two mooring launches ; - one lighter ; + one lighter tug; one personnel launch ; two buoy barges ; - eight sets of material with regard to lighting systems, rails and repairing of slipways and dry-docks ; twenty cocoa conveyors ; twenty cars and buses ; two trucks ; five outboard motors and two communication systems.

3.2 Project Completion

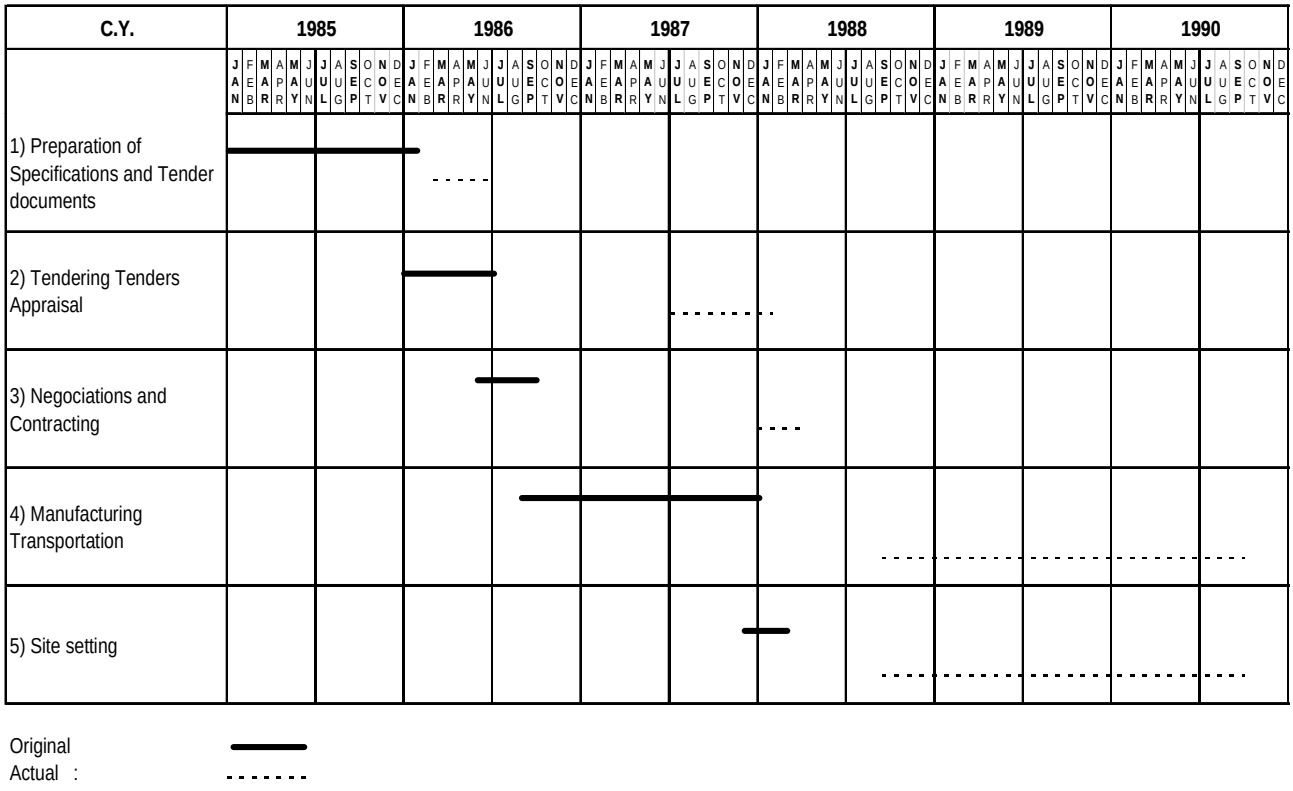
Some discrepancies exist between figures provided in the OECF Report (1998) and Completion Reports as far as forklift trucks, tractors, trailers and some of the ships are concerned as shown in the above Table ([2]). On the other hand, some of the items these Reports take into account are not the same, which makes comparison between the two a bit difficult. Eliminating from the Completion Report items the OECF Report does not reckon, 146 units of equipment (Project Completion Report) against 134 (OECF Report) were funded by OECF. All in all, around 700 units of different pieces of equipment, ships and material were funded by OECF.

OECF program reckons for one fifth in number of cargo handling equipment both Ports are currently using (33 units out from 264 -13 %- in Tema Port, 42 units out of 101 -42 %- in Takoradi Port). Twenty two of the cranes available out of thirty seven (three out of six in Tema Port and seventeen out of thirty one are OECF cranes (See Annex 3.1 and 3.2). It means that as far as heavy equipment is concerned, OECF contribution one to Ghana Ports cargo handling capacity represents more than one-half of the overall handling capacity.

[2]/ Equipment, ships and material listed in the Completion Report are the same as those in the list provided in the OECF Final Report (October 1991). Both reports diverge from the OECF Report as far as Quay Side Cranes are concerned: four cranes were provided through OECF financing instead of two mentioned in the Final and the Completion Report.

3.3 Project implementation

- Project time table



The above time table shows that completion of the project which was forecast for December 1988 actually happened more than thirty months later. But Annex 3.3 shows a revised schedule of the project implementation established by the World Bank in March 1986. This revised time table is in accordance with the above « actual time table ». Specific reasons for the implementation to be postponed is not known by the Evaluator but it is likely that such a rescheduling was related to appreciation of the Yen exchange rate against USD and revision of the whole equipment procurement program, as described in Chapter 3.1.

Another delay in the project implementation was induced in 1988 by a change in provision of overhead cranes as part of the overall Port crane lot (lot 2) from a Japanese to a German Company. Lot 2 bid was accepted in February 1988 and its overhead crane component reallocated in January

1989.

- The WB Program Performance Audit Report (May 1991) indicates that achievements in the area of training were disappointing : there was no early plan, later there were problems with counterparts, and management courses were of limited effectiveness. Corporate Plans as reported in Chapter 5.1 mention as weaknesses a low level of technical training and competence of equipment operators.

3.4 Project disbursements

- The following Table, out of Annex 3.4, page 1, presents contracts and disbursement-related amounts. Annex 3.4 also provides breakdowns of the main three contracts (Lot 1 : Marine Equipment ; Lot 2 : Port Cranes ; Lot 3 : Mobile Cranes, Tractors and Conveyors) into type of equipment and material, training and spare parts.

Contracts	**Contract Approval Date**	**Contract Amount in JPY**	Disbursed Amount		**Comments**
			JPY	%	
C-001	21-apr-88	1,975,844,324	1,975,844,324	33%	Marine Equipment
C-002	21-apr-88	1,513,188,800	1,513,188,800	26%	Port Cranes
C-003	21-apr-88	411,317,184	411,317,181	7%	
C-004	21-apr-88	1,048,950,446	1,048,950,444	18%	Mobile Cranes, Tractors
C-005	21-apr-88	175,872,015	175,872,015	3%	
C-006	21-apr-88	456,693,988	456,693,985	8%	
C-007	21-apr-88	64,849,550	64,849,550	1%	
C-008	21-apr-88	123,467,000	123,467,000	2%	
C-009	21-nov-89	135,866,613	135,866,613	2%	
TOTAL			**5,906,049,912**	100%	

The 5,950,079 JPY balance between the OECF allocation to the project (5,911,999,991 JPY) and disbursed amount (5 906 049 912 JPY) is the 1 % OECF disbursement charge on the project.

More than two-thirds of the contracts were signed with only two providers, namely a Dutch company and a Japanese company for the Port Cranes and Mobile, Tractors & Conveyors Lots.

- 85 to 95 % of the contracts for which the Evaluator got information about are for cost of equipment itself. Training expenditures represent a small portion of contract amounts : Lot 1 (marine equipment) [23 M. JPY, 1 % of lot 1 disbursement], Lot 2 (port cranes) [55 M. JPY, 4 % of lot 2 disbursement] and Lot 4 (mobile cranes, tractors, conveyors) [3,8 M. JPY, 0,4 % of lot 4 disbursement]. Spare parts, on the other hand, which is an important component for sustainability of the equipment (bearing in mind that replenishment of spare parts stock takes time) goes from 14 % of the contract amount (Lot 1) down to 2 % (Lot 4). Spare Parts for Lot 2 talls up to 6 % (See Annex 3.4).

3.5 Other components

Through its Export Rehabilitation Technical Assistance Project, the World Bank financed the Appraisal Report and Implementation consultant and also conducted institutional changes in creating the Ghana Ports and Harbors Authority which unified the three previous organizations under one Board of Directors, making the two Ports of Tema and Takoradi semi-autonomous. Establishment of a new container handling company with majority participation of the private sector was also put forward against the backdrop of privatization of the Ports activity. This company never became active.

3.6 Global appreciation of the way the project was implemented

Delays in completing the project even if bearing an economic cost by the end produced advantages which benefited the project and GPHA. Management by OECF of the financing was efficient.

Based on WB comments (see Chapter 3.4) about effectiveness of the training programs attached to provision of equipment to GPHA (which comments are part neither of the OECF final report nor the Project Completion Report), these programs should have been streamlined and -perhaps- amplified, even if the resources allocated to them were already important but not equivalent in proportion (See Chapter 3.5).

Level of spare parts provision (as indicated in Chapter 3.5) seems too short. Port Specialists consider a 10 to 15 % share of the global contract to be the standard in this domain.

Discrepancies in lists of equipment between different sources poses a question about OECF's control

system. It does not seem that figures provided in the project completion Report by GPHA were compared to lists of equipment OECF funded.

4. OECF EQUIPMENT RELEVANCE AND AVAILABILITY TO TRAFFIC DEVELOPMENT

4.1 Traffic development

- Annexes 4.1 to 4.5 present composition and development of Imports and Exports since 1987 in both the Ports of Tema and Takoradi.

- A major part of the Dry Bulk throughput in Tema is handled with GPHA equipment. Only Alumina is handled through private company's equipment. In Takoradi, clinker, alumine and bauxite cargoes are managed by private companies which use their own equipment.

- First, effective throughputs for the Port of Tema under GPHA's handling responsibility in 1995 ([3]) were 2.25 times over feasibility study's (F/S) previsions by the consultant. Port of Takoradi GPHA's activity did not reach F/S prevision in 1995 due to ban of log exports by the Government (exports handled with GPHA Equipment peaked in 1994 at 1,017,065 metric tons) :

Metric Tons	Tema	Takoradi
F/S previsions 1995	1,540,000	750,000
Import/Export 1995	4,611,444	1,856,914
Import/Export 1995 handled with GPHA's Equipment	3,461,763	684,889

- Second, development of activities from 1987 to 1997 which fall under GPHA's responsibility, measured by the type of cargo's yearly average growth rate as shown in the Table below (See Annex 4.2 (Port of Tema) and Annex 4.4 (Port of Takoradi)) is widely divergent :

[3]/ Private company handling is not included.

	Tema Imports	Tema Exports	Tema Imp+Exp	Takoradi Imports	Takoradi Exports	Takoradi Imp+Exp
Containers	15.84%	14.17%		14.43%	23.47%	
Dry Bulk	12.43%			9.81%		
Bagged Cargo	8.49%	-4.94%		2.53%	-2.76%	
General Cargo	-4.69%	7.65%		-1.87%	-38.36%	
Forest Products		-42.08%			-5.93%	
Liquid Bulk	-10.24%	3.86%				
Total	**4.16%**	**7.07%**	**4.48%**	**7.99%**	**-0.01%**	**2.19%**

Port activity handled by GPHA is driven by imports which have rather efficiently expanded by a 4 % rate per year in Tema and 8 % in Takoradi, the Tema import traffic being twelve times higher than the Takoradi one. Exports, almost one third of import figures, have been subject to ups and downs in relation to national production. Nevertheless, a 7 % rate increase in Tema is very high. Takoradi, because of ending of log export, has not yet offset the reduction with increases in exported sawn timber.

Two cargo activities : Container and Dry Bulk handling have been subject to rapid annual expansion over the period. Containerization of imports and exports in the Port of Tema and imports in the Port of Takoradi have increased annually by 15 % (doubling in five years) and have replaced Bagged Cargo and General Cargo, which have tended to shrink heavily. The figure for Container export increase in Takoradi has been 23 % per year. Dry Bulk, with a yearly growth rate of about 10 %, only concerns import traffic.

4.2 OECF equipment relevance

Relevance is measured through adaptability of the equipment to the type and volume of cargo to be handled. The latter also depends on the equipment productivity and its availability which is examined in chapter 4.3.

4.2.1 Adaptability of the equipment to the type of cargo

- The main observation to be made at this point is that a clear choice was made by project's developers not to equip the Ports with gantry cranes for container handling since productivity was possibly considered too high with regard to future needs.

- The Table below compares traffic volume achievements under GPHA's responsibility against previsions of traffic broken down for both ports into different types of cargo :

Type of Cargo GPHA Equipment (Metric Tons)	Port of Tema Previsions Traffic 1995	Port of Tema Traffic 1995	Port of Tema Traffic 1997	Port of Takoradi Previsions Traffic 1995	Port of Takoradi Traffic 1995	Port of Takoradi Traffic 1997
Container	360,000	735,944	994,537	0	167,497	244,860
General Cargo	864,000	171,210	265,978	432,000	21,601	30,741
Cocoa (Bulk Cargo)	288,000	34,926	20,344	144,000	43,805	57,300
Port Handling Capacity	1,512,000	3,461,763	3,286,024	786,000	684,889	674,140

* In Takoradi, the 1994 GPHA traffic reached 1,017,065 tons.

This Table clearly shows that GPHA has had to deal first in the Port of Tema with a far higher global volume of throughput, second in each Port with a quite different compound of cargo type than expected in 1985. Development of containerization was not viewed as offsetting Bulk and General Cargo traffic and expanding so much.

The Port of Tema has been able to cope with traffic development, handling as much as 2.17 times the capacity of the equipment with which it theorically was equipped (F/S prevision) , without the addition of specific equipment such as gantry cranes. It has been able to accomplish 2,76 times more than expected as far as the loading and unloading of containers is concerned with the same lifting equipment. It is even far better in Takoradi where no container traffic at all was expected in F/S. Therefore, that the Port of Takoradi has been able to deal with 244,860 TEU net weight of container is remarkable.

Three different reasons may explain that traffic handled by GPHA after 1993 was far higher than the traffic projected in 1985 as the basis for the project equipment scope : 1/ underestimation of the capacity of cranes, forklifts, tractors and trailers (such an underestimation is even higher than what the above Table figures give evidence of, taking into account the low rate of utilization of equipment as described in Chapter 4.2.2) ; 2/ underestimation of the Ports capacity to improve its staff productivity ; 3/ the buying of new equipment after 1990 entailing enlargement of the global Ports capacity.

The new equipment the Ports of Tema and Takoradi bought on their own since the end of the OECF project mainly consists in forklift trucks. Only one mobile crane was acquired in 1995 which means that as far as crane handling capacity is concerned, the two Ports still depend on the equipment from the 80's.

The Ghana Port experience shows that specific container equipment is not necessarily required when volumes to be handled remain quite low. In addition to berth cranes, ship cranes also rendered possible handling of large number of containers.

- The Master Plan Study (MPS) and the OECF Report (1998) address the ability of available handling equipment to meet traffic needs.

  - Tema : the MPS recommends the efficiency of the container handling be improved through a program for procurement of sufficient equipment units such as forklift trucks, trailers or spreaders in order to meet the capacity of the calling ships cranes. Nevertheless, the main way to obtain this purpose should be to improve maintenance and repair efficiency. The same remark is made as far as the multi-purpose zone equipment is concerned, See Chapter 4.2.2.

    In 1998, the OECF Report stresses that the number of forklift trucks and trailers is enough to meet the requirements but that there are few quay side and mobile cranes. The same kind of observation is made with regard to the availability rate of equipment.

  - Takoradi : the MPS emphasizes that the equipment seems to be adequate for the cargo handling but that its capacity is insufficient. The OECF Report notes that the cargo handling equipment is

considerable which could be interpreted as it is too important for the traffic to be carried. The mention that lighter and log equipment is not used efficiently comes to no surprise because of the ending of log exportation and also the changes in the handling system from a lighter handling system to ship gear at berth. But the rate of utilization of the equipment is rather low (See Chapter 4.2.2).

4.2.2 4.2.2Availability and Rate of Utilization of the Equipment

- As already mentioned, the MPS and the OECF Report strongly points out that equipment utilization rate in both Ports is quite low :

Equipment	Tema	Takoradi
Portal and Overhead Cranes		Utilization Rate: small
Forklift Trucks	Average Broken Days: 49	Utilization Rate: 30%
Trucks		Utilization Rate: 38%

- OECF Equipment availability in 1998 (OECF Report) is shown in the following Table :

Equipment	Tema	Takoradi
Cargo Handling Equipment: Average Broken Down Rate/Yr	50 %	41 %
Cargo Handling Equipment: Current Condition (Available ; Broken Down ; Scraped Down)	18A (55%), 13B (39%), 2S (6%)	56A (85%), 10B (15%)
Port Service Boats (Good ; Satisfactory)	10G (71%), 4S (29%)	21G (100%)

Source: Annex 3.1 & 3.2.

Generally, Equipment Utilization Rate is low (Specific figures for the Port of Tema are not available in the OECF Report) and the Average Breakdown Rate is high. The referred report underlines that the Maintenance System does not work correctly : there is an insufficient stock of spare parts and the internal procedures for Spare Parts Procurement is complicated and the time required is long.

Two Cargo Handling Equipment Units provided by OECF were scrapped which must be noted and is particularly sad because of the relative newness of this equipment. On the other hand, the Port Service Boats' record in Takoradi in 1998 is good, but slightly worse in Tema where 29 % of the boats only are in a satisfactory condition.

It is worth acknowledging that GPHA in 1998 improved dramatically Spare Parts Procurement services by computerizing its management and shortening the process to get an order shipped to providers, which is said by heads of Procurement services in every Port to have significantly reduced delays in ordering and receiving ordered pieces of equipment.

The Evaluator was given the Vehicle Maintenance Control Sheets from some units of the OECF Equipment, as listed in the Table on the next page. It can be stated that not all OECF Equipment is regularly maintained. When average Repairs and Maintenance Interventions take place every other year (cf. the Mobile Crane in Tema), it cannot be considered satisfactory. From this point of view, it seems that the maintenance schedule in Takoradi is better, but less Repairs and Maintenance

Interventions sheets have been collected in Tema.

The problem of maintenance is not recent. The MPS already brought up that question in 1994. It therefore means that GPHA and to a certain extent the donors have not paid enough attention to giving GPHA's Technical Services efficient procedures and tools to have the equipment available at an improved standard rate.

	First Record's Time	Last Record's Time	Period Time (Months)	Number of Repairs and Maintenance Interventions	Average Number/ Month
T E M A					
Mobile Crane	mar-90	jun-96	75	38	0.5
Boss Forklift	apr-89	sep-97	101	65	0.6
Boss Forklift Truck	aug-89	jun-97	94	35	0.4
T A K O R A D I					
Metalna General Cargo Crane	mar-95	sep-98	42	38	0.9
Metalna Log Handling Crane	jul-96	jul-98	24	20	0.8
Mobile Crane	feb-89	jun-98	112	344	3.1
Demag 90 T Mobile Crane	feb-89	apr-98	110	359	3.3
Demag Overhead Crane	jul-96	jun-98	23	17	0.7
Boss 5 Toner Forklift	feb-89	sep-98	115	586	5.1
Mat 1 RoRo Tractor	may-89	oct-92	41	189	4.6
Mat 1 RoRo Tractor	nov-92	sep-97	58	264	4.6
Mati Tractor	sep-97	sep-98	12	170	14.2

Source: GPHA

4.3 Appreciation of OECF Equipment relevance

- Choice of type of equipment provided can be seen as universally relevant. As already mentioned, it was a good choice not to procure GPHA with gantry cranes, about which the OECF Report (1998) says that it will have to be installed in the not too near future.

  It cannot be considered a mistake to have provided the Port of Takoradi with log handling equipment not used anymore because of the Government decision in that area. Nevertheless, the failure not to have anticipated the big traffic shift toward containerization has had the effect of making some units funded through OECF aid underutilized, such as the cocoa belt conveyors. Port technicians think that if that trend had been taken into account the type of cranes would have been a bit different.

- One can wonder if the project donors, namely the WB and OECF -in particular OECF who provided more equipment than the WB- would not have been better off providing GPHA with incentives and support to help it as soon as equipment was set up in order to strengthen its maintenance system. This system, as evidenced in the above chapters, has been GPHA's Achilles' heel. In effect, the Broken Down Rate of OECF Equipment is too high and therefore not satisfactory.

  Maintenance is a condition for sustainability of equipment and it is a well-known point in developing countries where inefficiency is generally high. Therefore, the Evaluator is of the opinion that along with the provision of equipment there should be workshops' rehabilitation and Spare Parts procurement procedures.

- It should be mentioned that the restructuring of the Port institutional framework into one Authority, undertaken under the WB financing, was a very useful tool for the coherent implementation of the overall rehabilitation project. Therefore, the OECF project deeply benefited from the WB-ERTAP.

  ERTAP also rendered possible hiring of consultants for preparation of specifications and tender documents for equipment, materials and spare parts and for technical assistance to the whole

project, including the OECF component.

5. OECF PROJECT IMPACT

The project's impact can be measured through: 1/ capability of GPHA to respond to commodity handling demand ; and 2/ increase in its technical and financial performances. These two indicators meet the objectives the project was focused upon (cf. Chapter 2.1). Before addressing these specific points, a presentation of what GPHA currently looks like is outlined in Chapter 5.1.

5.1 GPHA in 1997

Organization charts of the Port Authority and of the Port of Tema (the organization chart of the Port of Takoradi is quite similar to the latter) are presented in Annex 5.1. The overall organization seems correct but some overlapping is indicated in functions such as Human Resource Management and Internal Auditing which certainly could be streamlined.

One must stress the importance of the Corporate Planning Unit at the Headquarters level which, since 1989, establishes sliding five-year Corporate Plans and then provides GPHA with objectives and strategies in such domains as profitability, efficiency, productivity. What is interesting is that the last two, namely 1996-2000 and 1997-2001 ([4]) provide lists of strengths, weaknesses, opportunities and threats which shed light on the Port Authority's true situation.

[4]/ The Evaluator was not given the opportunity to look up to prior Corporate Plans.

Strengths :	• Financially viable, • Major part of the GPHA's revenue in USD, • Improvement of information on costs and revenues through an Ongoing Financial and Management Account Project, • Favorable position of the Port of Tema for transit and transshipment, • Appreciable amounts of expenditures committed to training the staff, • On-going Project of job description.
Weaknesses :	• Share handling rates in GNC not responsive to cost charges, • High stocks, • Financial and Accounting Systems not integrated, • Financial Reporting not timely produced, • Budgeting and budgetary control inadequate, • Credit Control System and Treasury management ineffective, • Lack of appreciation of financial issues by managers, • Low level of technical training and competence of equipment operators, • Absence of integrated engineering management information, • Inadequate cargo handling equipment with low availability, • Present layout of Port facilities not conducive to throughput container operations, • Absence of incentive scheme for workers, • Absence of Human Resource Plan and of career plan, • Lack of pro-active organizational culture, • Lack of market intelligence.
Opportunities :	• Serious attempt at development transport infrastructures, • Increasing cooperation with Ghana Railways Corporation, • Growing cooperation between Ghana and Burkina Faso, • Growing cooperation between GPHA and Shipping Lines/Port Users.
Threats :	• Frequent changes in the Director General, • Government interference in financial administration of GPHA, • Stiffer competition, • Increasing size of ships, • Slow pace of introduction of multi-modal transport in Ghana, • Lack of National Transport Strategy, • Unwieldy custom clearing procedures.

Financial weaknesses seem to remain very high and are made even stronger by the fact that Strategic Business Units, which were supposed to encompass four to five sectors and pave the way for analytic accountancy, are still limited to the experimenting of the Fishing Port Business Unit.

What is more related to OECF project are points of weakness which consist of the low level of technical training of equipment operators, absence of integrated engineering management information, inadequate cargo handling equipment, unsystematic program of replacement for broken

down equipment and limited availability of this equipment, and the fact that the present layout of Port facilities is not conducive to container operations.

Insufficient training programs included in the project were already stressed by the WB (See Chapter 3.7) and are acknowledged by GPHA itself. Inadequate cargo handling equipment was put under close scrutiny in Chapter 3 and, in fact, is not likely to be too much of a priority, not to mention possible lack of equipment replacement. Other considerations stress that the Port Authority urgently needs to set up programs aimed at improving the whole engineering and maintenance management.

5.2 Responding to the demand

No major investment by GPHA in the area of equipment has been undertaken since this evaluated project was implemented, which means that OECF equipment, material and harbor ships are still one of the main elements for cargo handling in the Ports of Tema and Takoradi in 1998.

The OECF project has brought about the capability of GPHA to increase handling of commodities in Tema up to 1.6 times (3,286,024 metric tons) and in Takoradi up to 1.2 times (674,140 metric tons) in 1997 compared to 1987 ([5]). These figures do not include private handling cargo. Before ending of log exports, the Port of Takoradi reached a handling volume amounting to 1,017,065 metric tons (See Annexes 4.1 to 4.5). Whatever the weaknesses mentioned in this report with regard to the way the OECF equipment was set up (staff training) and maintained, without provision of this equipment Ghana would not have been able to deal with the import/export trade increase - so important to economic recovery - the country enjoyed over this period of time.

5.3 Increase its technical and financial Performance

5.3.1 Technical Performances

Annex 5.3 provides a Table with Productivity Performance Indicators over the 1988-1997 period which provides measurement of the improvement GPHA has registered. Indicator evolution after the OECF project was completed gives information on the project effectiveness in this domain.

[5]/ These figures do not comprise private company handling cargo.

In page 2 of Annex 5.3 is the indicator evolution which shows after 1989 a significant improvement of the Ports Performances. The Table hereafter presents the most significant indicator indexes (100 =1989) :

PORT OF TEMA	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
A. SHIP TURNAROUND TIME										
NO. OF SHIPS CALLED	103	100	129	130		121	110	120	139	104
AVER. HOURS AT BERTH	98	100	94	94		81	77	76	73	95
B. SHIP PRODUCTIVITY										
AVER. TONES IMP/EXPORT	82	100	93	97		139	143	165	153	158
AVER. TONES PER SHIP WORKING-HOUR	78	100	103	113		145	160	181	167	154
C. LABOUR PRODUCTIVITY										
AVER. TONES PER GANG-HOUR NET	71	100	71	143		205	260	306	319	278
D. LABOUR TOT. NET MAN-HOURS	118	100	102	80		82	68	73	76	63
E. BERTH OCCUPANCY (%)										
OCCUPIED WORKING	139	100	98	83	100	119	98	121		152

PORT OF TAKORADI	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
A. SHIP TURNAROUND TIME										
NO. OF SHIPS CALLED	106	100	93	105		128	130	121	127	103
AVER. HOURS AT BERTH	114	100	112	103		105	99	72	44	43
B. SHIP PRODUCTIVITY										
AVER. TONES PER SHIP WORKING-HOUR	81	100	115	122		127	152	149	212	206
C. LABOUR PRODUCTIVITY										
AVER. TONES PER GANG-HOUR NET	77	100	117	131		140	147	124	193	232
D. LABOUR										
TOT. NET MAN-HOURS	130	100	86	74		92	104	76	40	28
E. BERTH OCCUPANCY (%)										
OCCUPIED WORKING	148	100	79	90	103	116	110	82	53	58

These figures do not comprise private company handling cargo.

- Apart from the year 1997 which seems to have experienced a sharp decrease in the number of ships called and plummeting of other indicators such as the average hours at berth, achievement of the OECF project (associated to the WB project) provided GPHA with quite a big impetus in most of the port performances.

- If calling of ships does not have to do with performance per se but simply provides evidence of the cargo traffic demand, the ship turnaround time as given by the average hours of ships at berth decreased by 6 % in 1990 and 1991 and by about 15 % in 1993 and 1994 in the Port of Tema.

Improvement in this domain only took place in the Port of Takoradi after 1993. This type of indicator is related to staff and equipment productivity improvement. Nevertheless, the major impact is likely to have been brought about by equipment and staff training for using of the equipment.

- The average tons per ship working-hour indicator has continuously increased after 1989 in both Ports : by 60 % in Tema and 52 % in Takoradi in 1994 compared to 1989. Improvement continued till 1995 in Tema (Index 181) and 1996 in Takoradi (Index 212).

- Average tons per gang-hour net grew sharply for both Ports between 1990 and 1996, with a peak in Tema at Index 319 and in Takoradi at Index 212. Concurrently, the staff position as shown in the following Table has decreased constantly since 1987 until 1993 and mostly in 1989 (-36 %) :

(Unit:persons)

Years	Headquarters	Fishing Harbour Tema	Tema	Takoradi	Total	Annual Increase rate
1987	157		2,792	1,994	4,943	
1988	150		2,697	1,930	4,777	-3%
1989	125		1,677	1,249	3,051	-36%
1990	108		1,618	1,188	2,914	-4%
1991	103		1,599	1,164	2,866	-2%
1992	105		1,582	1,142	2,829	-1%
1993	103		1,556	1,117	2,776	-2%
1994	119	31	1,570	1,218	2,938	6%
1995	116	32	1,628	1,226	3,002	2%

Source: GPHA

- Berth occupancy shows an important decrease in Takoradi after 1994, likely to be linked to the sharp decrease in the cargo handling volume beginning in 1995. Until 1991, this indicator in Tema was not good, but experienced an improvement up to 1997 with ups and downs.

The OECF project must be credited with improvement of Port performances as evidenced above

and therefore constitutes a resounding success. It would have been even more important were the donors to provide some means toward managing the Port Authority and the Ports of Tema and Takoradi.

5.3.2 Financial performances

Financial performances of GPHA are presented in Annex 5.4 which provides the Port Authority Income Statements from 1987 to 1995. The Table below gives the three main Income Statement elements :

Current M. GHC	1987	1988	1989	1990	1991	1992	1993	1994	1995
Revenue	4,290	7,205	10,660	16,649	18,086	24,370	36,401	48,891	60,173
Operating Expenditure	5,784	6,826	7,726	8,702	11,110	18,961	30,560	36,244	49,125
Net Profit			375	3,087	7,109	4,414	9,038	13,258	14,604

The last time GPHA ran a negative Operating Profit was in 1987. Afterward, positive annual Operating and Net Profits became permanent.

Annex 5.5 gives GPHA's deflated Revenue, Operating Expenditure and Operating Profit (Cedi 1987). Variance of Revenue and Operating Expenditures are presented below :

% (Cedi 1987)	1988	1989	1990	1991	1992	1993	1994	1995
Revenue	26%	15%	19%	-9%	21%	20%	4%	-14%
Operating Expenditures	-12%	-12%	-14%	6%	54%	29%	-8%	-5%

One of the impacts of the overall WB/OECF project should have been a decrease of GPHA's Operating Expenditures because of streamlining of management, procedures and cargo handling's productivity. A big improvement in this area took place from 1988 to 1990: the operating expenditures plummeted 67 % in real terms over that period of time. Without Loan Charges, the net Operating Expenditures in 1992 were still smaller than those in 1987 (See Annex 5.5).

In 1987 Cedi price without Loan Charges, the Operating Profit reached quite a high level as shown below following a deficit in 1987 :

This important and lengthy financial overhaul is due to the improvement of general conditions in which GPHA and the functioning of the Ports of Tema and Takoradi was subject to during implementation of the OECF and WB project. From this point of view, the OECF project can be considered an important success.

6. GENERAL CONCLUSIONS AND RECOMMENDATIONS

The Port Rehabilitation project that OECF drove in Ghana was a success in the sense that it allowed for economic recovery in exports and imports that the country enjoyed after 1986.

- Procurement of new equipment, port ships and material to the Ports of Tema and Takoradi contiguous to reorganization of the Port activity management and unification under a sole authority made it possible for GPHA to streamline its activity and improve its performances. The Ghanaian authorities were also able to make strong decisions in thinning out GPHA staff.

- Nevertheless, support of maintenance organization, which includes spare parts procurement, should have been provided to GPHA in order to help it improve equipment availability. Training of equipment drivers should also have been a priority.

PORT REHABILITATION
PROJECT IN GHANA

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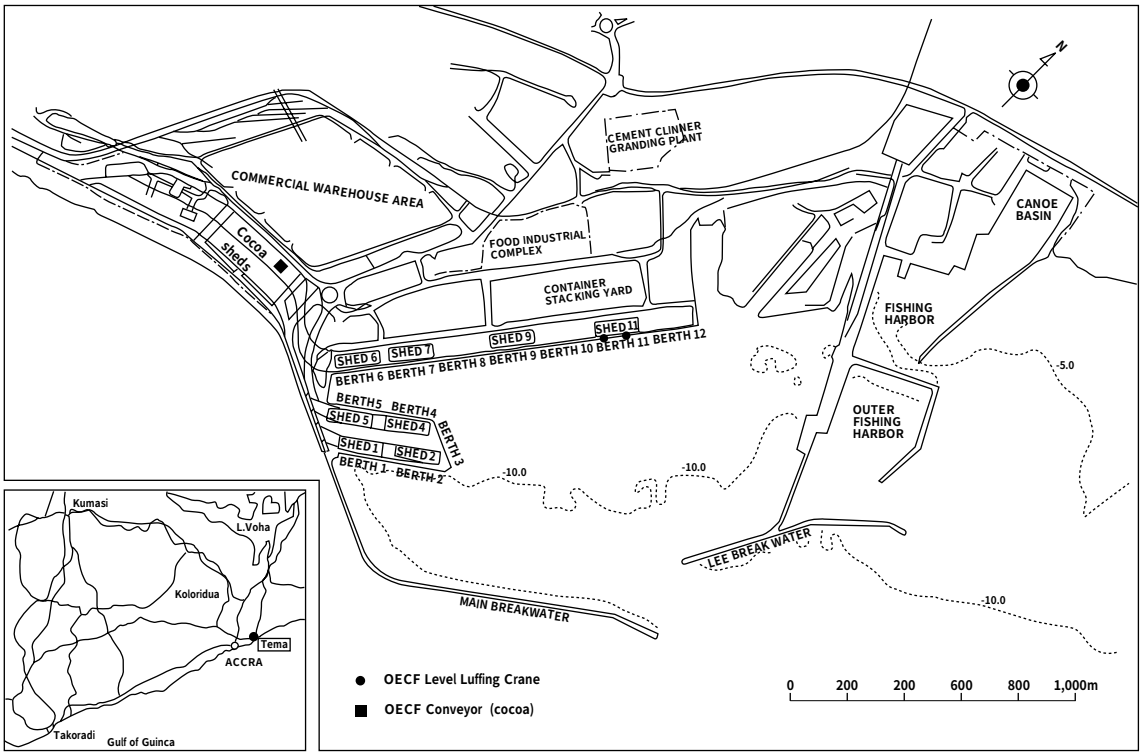
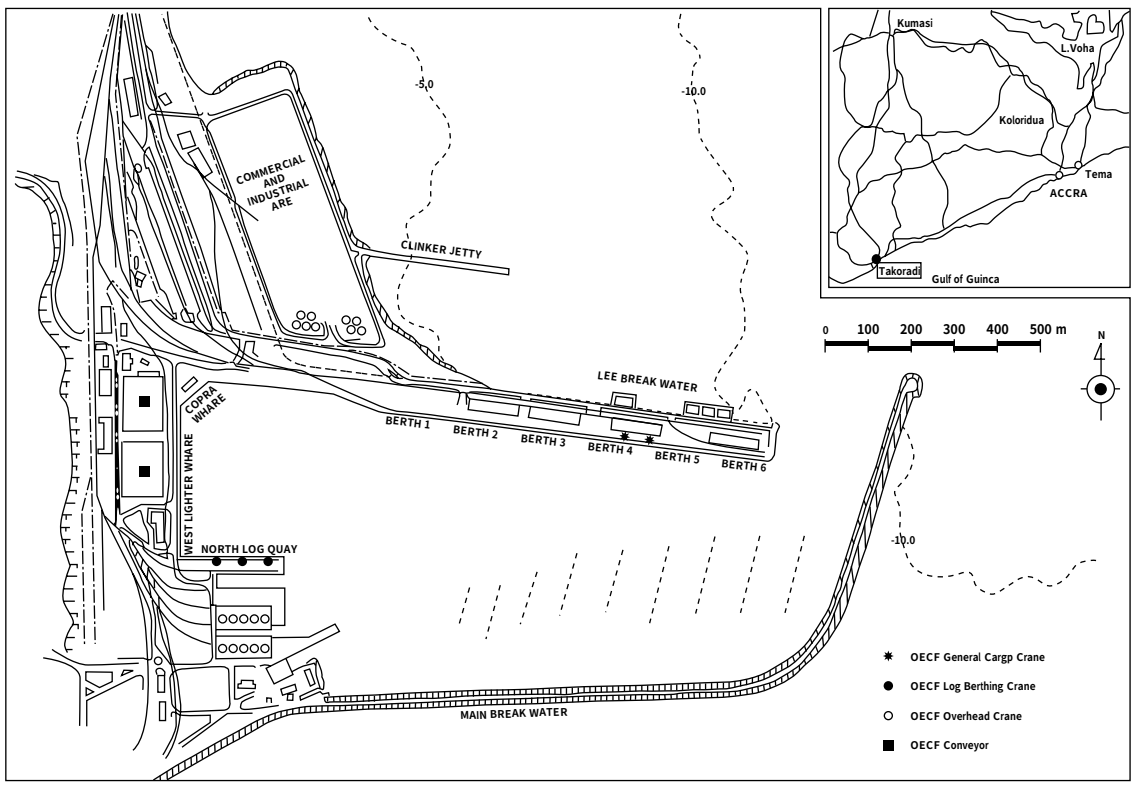
Grand ~ Layout of Port of Tema Annex 1.1



Grand ~ Layout of Port of Tema Annex 1.2



CURRENT AVAILABLE EQUIPMENT BEFORE PROJECT

TEMA : BEFORE THE PROGRAM

	Needed	On Hand	For Scrap	Usable	For Rehab.	To be procu-red	Observations
General Cargo Handling							
Share Cranes (Overhead Cranes) 3-10 Tons	6	21	15	3	2	1	Provision of Spare Parts Repairing of rails and Lighting System Container Dismantling of other cranes
Mobile Cranes	6	10	2		6		
6 Tons		*2*	*2*				
10 Tons		*8*			*6*		*2 reassembled in Takoradi*
Small Size Forklift	52			21		31	
M. S.Forklift Truck					5		Spare Parts needed
8 Tons					*2*		*Sawn Timber, Bulk Cargo Handling*
15 Tons					*3*		*Bulk Cargo Handling*
Tractors	2	12	10	2			
Trailers	15	22	7	15			
Cocoa Handling							
Tractors	8					8	
Trailers	24					24	
Container Handling Equipment							
Level Luffing Cranes 40 T.	2					2	In order not to use Forklift Trucks anymore
Tractors	8					8	
Trailers (40 T.)	8					8	
Forklift Truck	8			3		5	
40 T.	*5*			*2*		*3*	*The Evaluation Report says 2 have to be procured*
15 T	*3*			*1*		*2*	
Material and Equipment							
Rails	1 set						
Lighting System Container							
Storage Yard	*1 set*						
Port Area	*1 set*						
Storage Shods	*1 set*						

CURRENT AVAILABLE EQUIPMENT BEFORE PROJECT

TAKORADI : BEFORE THE PROGRAM

	Needed	On Hand	For Scrap	Usable	For Rehab.	To be procu-red	Observations
General Cargo Handling							
Share Cranes	3	20	17	3			
Mobile Cranes	5	8	2	2		3	
6 Tons	*3*	*3*	*2*	*1*		*2*	*2 reassembled from Tema*
10 Tons	*1*	*1*		*1*			
36 Tons	*1*					*1*	
Small Size Forklift	25			10		15	
Tractors	2	2	2			2	
Cocoa Handling							
Tractors	4					4	
Trailers	12					12	
Forklift Truck	1					1	
Sawn Timber Handling							
Tractors	4					4	4 Gangs
Trailers	12					12	4 Gangs
Light Log Handling from Storage to Quay							**Light Logs**
Log Loaders	5				2	3	
10 T.	*2*	*6*	*4*		*2*		Replacement of Rails
20 T.	*3*					*3*	In Replacement of the 10 T. Scraped Log Loaders
Heavy Log Handling							Mooring of a ship and transportation to the ship
Lighter Loading Operations							
Lighters	*32*	*17*				*15*	*Discrepancy between the global figure and reckoning of each item*
Tag Boats	*5*				*3*	*2*	*1 Lighter reserved*
1. Cocoa							
Overhead Cranes	*20*	*20*			*20*		
Lighters	*10*					*10*	*Cocoa : Four Ship's Gears used. Sawn Timber : objective = 1 200 T./day*
Tug Boats	*2*					*2*	
Forklift Truck 8 T.	*5*					*5*	
2. Sawn Timber							
Lighters	*8*					*8*	
Tag Boats	*2*					*2*	
3. Sim King Log							
Lighters	*4*					*4*	*Two Ship's Gear serviced*
Tug Boats	1					1	
Material and Equipment							
Lighting System Container							
Port Area	*1 set*						
Storage Shods	*1 set*						
Rail for rehabilitation in the lot storage area	1 set						
Repair of Slipway & Drydock							
Slipway Cradle	*1 set*						
Slipway Winch	*1 set*						
Slipway Rail	*1 set*						
Drydock Pump	*1 set*						
Fender & Accessory	*1 set*						

CURRENT AVAILABLE EQUIPMENT BEFORE PROJECT

TEMA + TAKORADI : Port Management

	Needed	On Hand	For Scrap	Usable	For Rehab.	To be procu-red	Observations
Tug Boat	5	7	4	1	2	2	Plus one shared between Tema & Takoradi
Pilot Launch	5	3		3		2	
Motor Launch for Stevedore's	2	2	2			2	Longshoremen Transportation
Ferry							
Water Supply Barge	1	1	1			1	

EQUIPMENT PROGRAMS COMPARISON

	OECF Financing												OECF' s Report (1998)			IDA Financing
	Equipment to be procured			Specifications			Completion Report : Original Scope			Compl. Report : Revised Program						
	Tema	Takoradi	Total	Tema	Takoradi	Total	Tema	Takoradi	Total	Tema	Takoradi	Total	Tema	Takoradi	Total	
Cargo Handling Equipment																
Quay Side Cranes (40 T & 15 T)	2		2	2		2	2		2	2		2	2	2	4	
Mobile Cranes		3	3		1	1		1	1	1	1	2	1	2	3	
Overhead Cranes	1		1		20	20		20	20		10	10		10	10	
Log Loader 20 T		3	3					3	3			0			0	
Forklift Truck																
40 T	3		3	1	1	2	1	1	2	3		3	6		6	
15 T	2	6	8	2	1	3	2	1	3	3		3	2	1	3	5 / IDA loan
3 T - 8 T	31	15	46	31	15	46	31	15	46	10	10	20	10	14	24	
RoRo Tractor	16	10	26	15	3	18	13	5	18	13	5	18		10	10	8 / IDA loan
Trailer	32	24	56	9	15	24	27	15	42	8	24	32		24	24	24 / IDA loan
Rail Car Shunting			0		1	1		1	1		2	2			0	1 / IDA loan
Marine Equipment																
Tug Boat	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	
Pilot Launch	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	
Mooring Launch		2	2		2	2		2	2	2	2	4	2	2	4	
Lighter (light loading op.)		37	37		15	15		15	15		14	14			0	
Lighter Tug		7	7		2	2		2	2		2	2		2	2	
Water Supply Barge		1	1		1	1		1	1		1	1		1	1	1 / IDA loan
Material & Equipment																
Rails (sets)	1		1	1		1	1		1	1		1			0	
Lighting System Container (sets)																
Storage Yard	*1*		*1*	*1*		*1*	*1*		*1*			*0*			0	
Port Area	*1*	*1*	*2*	*1*	*1*	*2*	*1*	*1*	*2*			*0*			0	
Storage Shods	*1*	*1*	*2*	*1*	*1*	*2*	*1*	*1*	*2*			*0*			0	
Rail for rehabilitation in the lot storage area (sets)		1	1		1	1		1	1			0			0	
Repair of Slipway & Drydock (sets)																
Slipway Cradle		*1*	*1*		*1*	*1*		*1*	*1*		*1*	*1*			0	
Slipway Winch		*1*	*1*		*1*	*1*		*1*	*1*			*0*			0	
Slipway Rail		*1*	*1*		*1*	*1*		*1*	*1*			*0*			0	
Drydock Pump		*1*	*1*		*1*	*1*		*1*	*1*		*1*	*1*			0	
Fendering Wooden (sets)		1	1				500		500	343	147	490			0	
Lighter Tug	1	1	2								1	1		1	1	
Personal Launch	1	1	2								1	1		1	1	
Buoy Barge										1	1	2	1		1	
Dive Boat														1	1	
Flat Barges														1	1	
Harbour Lighters														1	1	
General Cargo Crane 15 T											2	2			0	
Log Handling Crane 15 T											3	3		3	3	
Forklift Trucks 8 T										4	1	5	4		4	
Forklift Trucks 3 T										8	3	11	8		8	
Tow Tractor										4		4				
Mobile Crane 120 T										1		1				
Cocoa Conveyor										16	16	32				
Hydraulic Mobile Crane 15 T											1	1				
Bus 65 seats										5	3	8				
Bus 35 seats										3	2	5				
Saloon Car 5 seats										3	2	5				
Water Tank Truck											1	1				
Cesspit Emptier Truck											1	1				
Outboard Motor											5	5				
Communication Systems (sets)										1	1	2				
Total Unit Provision	95	120	215	66	86	152	582	91	673	434	266	700				
Revised Completion Report Figures rendered comparable to OECF Report Figures										62	84	146	38	78	116	

n.m. = Not Mentioned

CARGO HANDLING EQUIPMENT AND PORT SERVICE BOATS, TEMA

CARGO HANDLING EQUIPMENT

		Location	Capacity (tons)	Units	Country Manufactured for Equipment (OECF)	Year Manu-factured	Age (Years)	Operatio-nal Condition
Cranes								
1	Quay Side	B. 9 & 11	40	2	Yugoslavia	1989	9	2A
2	Mobile	B. 7	10	1		1979	19	
3	Mobile		100	1	Germany	1995	3	A
4	Mobile		25	1		1988	10	
5	Mobile		25	2		1985	13	
Forklift Truck								
6	Forklift Truck		20	3		1995	3	
7	Forklift Truck		45	2		1997	1	
8	Forklift Truck		42	3		1996	2	
9	Forklift Truck		42	3		1993	5	
10	Forklift Truck		42	3	U.K.	1990	8	3A
11	Forklift Truck		42	2	U.K.	1989	9	2A
12	Forklift Truck		42	1	U.K.	1988	10	1B
13	Forklift Truck		42	1		1974	24	
14	Forklift Truck		36	3		1997	1	
15	Forklift Truck		28	4		1993	5	
16	Forklift Truck		28	1		1975	23	
17	Forklift Truck		16	3		1996	2	
18	Forklift Truck		16	3		1993	5	
19	Forklift Truck		15	2	U.K.	1989	9	2A
20	Forklift Truck		12	2		1976	22	
21	Forklift Truck		8	4		1997	1	
22	Forklift Truck		8	5		1993	5	
23	Forklift Truck		8	4	U.K.	1988	10	4A
24	Forklift Truck		8	1		1985	13	
25	Forklift Truck		5	17		1997	1	
26	Forklift Truck		5	16		1993	5	
27	Forklift Truck		5	10		1988	10	6A,3B,1S
28	Forklift Truck		5	4		1974	24	
29	Forklift Truck		4	2		1974	24	
30	Forklift Truck		3	7		1997	1	
31	Forklift Truck		3	5		1996	2	
32	Forklift Truck		3	2		1996	2	
33	Forklift Truck		3	6		1995	3	
34	Forklift Truck		3	3		1994	4	
35	Forklift Truck		3	3		1993	5	
36	Forklift Truck		3	8	U.K.	1988	10	1A, 6B,1S
37	Forklift Truck		3	6		1984	14	
38	Forklift Truck		2	2		1996	2	
Tractors and trailers								
39	Tractor			34				
40	Trailer			82				
OECF Equipment				33				21A, 10B, 2S
Available								64%
Broken Down								30%
Scraped Down								6%

A : Available ; B : Broken Down ; Scr : Scraped Down.

CARGO HANDLING EQUIPMENT AND PORT SERVICE BOATS, TEMA

CONDITION OF THE CARGO HANDLING EQUIPMENT PROCURED BY OECF

	Capacity	Average Broken Down Days 1994-1996	Current Condition
Multi-purpose	40	1	A
Multi-purpose	40	21	A
Mobile Crane	100		A
Forklift Truck	42	249	A
Forklift Truck	42		A
Forklift Truck	42	118	A
Forklift Truck	42	63	A
Forklift Truck	42	71	A
Forklift Truck	42	35	B
Forklift Truck	15	24	A
Forklift Truck	15	31	A
Forklift Truck	8	34	B
Forklift Truck	8	24	B
Forklift Truck	8	37	B
Forklift Truck	8	117	B
Forklift Truck	5	28	A
Forklift Truck	5	15	A
Forklift Truck	5	11	A
Forklift Truck	5	32	A
Forklift Truck	5	75	B
Forklift Truck	5	154	A
Forklift Truck	5	19	B
Forklift Truck	5	16	A
Forklift Truck	5	10	Scr
Forklift Truck	5	16	B
Forklift Truck	3		Scr
Forklift Truck	3	34	B
Forklift Truck	3	78	A
Forklift Truck	3	39	A
Forklift Truck	3	22	B
Forklift Truck	3	23	B
Forklift Truck	3	47	B
Forklift Truck	3	14	B
Average Broken Down Rate		50	18A, 13B, 2S

PORT SERVICE BOATS

Name	Type	Gross Tonnage	Country Built	Year Built	Age (Years)	Operational
YENDI	Tug Boat	150		1969	29	S
ANLOGA	Tug Boat	150		1969	29	S
SARBAN	Tug Boat	157		1985	13	G
QUIST	Tug Boat	209	Netherlands	1989	9	G
AMU	Tug Boat	209		1995	3	G
MANHEAN	Tug Boat	209		1995	3	G
DIVING POT	Buoy Mainten.	254	Netherlands	1989	9	G
MANDELA	Speed Boat	6		1986	12	G
AKOSONBO	Pilot Boat	21	Netherlands	1989	9	G
PL3	Pilot Boat	13		1981	17	S
BRAVO	Patrol Launch	45		1994	4	G
PB2	Patrol Launch	5		1980	18	S
ML3	M. Lanch	7	Netherlands	1989	9	G
ML4	M. Lanch	7	Netherlands	1989	9	G
OECF			5			10G, 4S
Good						71%
Satisfactory						29%

G : Good ; S : Satisfactory.

CARGO HANDLING EQUIPMENT AND PORT SERVICE BOATS, TEMA

COMPARISON BETWEEN THE EVALUATION REPORT AND EFFECTIVE PROCUREMENT

		Location	Capacity (tons)	Units	Country Manufactured for Equipment (OECF)	Age (Years)	Operational Condition	Project Original Objective	Discre-pencies	Additional Objectives	Global Objec-tive	Global Discre-pencies
Cranes								**Cranes**				
1	Quay Side	B. 9 & 11	40	2	Yugoslavia	9	2A	1	1			
3	Mobile		100	1	Germany	3	A	0	1			
Forklift Truck								**Forklift Truck**				
Container Handling Eq.								Container Handling Eq.				
10	Forklift Truck		42	3	U.K.	8	3A					
11	Forklift Truck		42	2	U.K.	9	2A					
12	Forklift Truck		42	1	U.K.	10	1B	*3*	*3*			
19	Forklift Truck		15	2	U.K.	9	2A	2				
				8				5	3			
General Cargo Eq. (?)								General Cargo Eq.				
23	Forklift Truck		8	4	U.K.	10	4A					
27	Forklift Truck		5	10	U.K.	10	6A,3B,1S					
36	Forklift Truck		3	8	U.K.	10	1A, 6B,1S					
				22				31	-9			
Tractors and trailers												
Container Handling Eq.				16				0	-16			
Cocoa Handling				32				0	-32			

CARGO HANDLING EQUIPMENT AND PORT SERVICE BOATS, TAKORADI

CARGO HANDLING EQUIPMENT

		Location	Capacity t. x m.	Units	Country manufactured (OECF Equip.)	Year Manufac-tured	Operational Condition
1	Quay Side Crane	Berth 4-5	15 x 20	2	Yugoslavia	1989	1A, 1B
2	Quay Side Crane	Log Berth	15 x 15	3	Yugoslavia	1989	3A
3	Quay Side Crane	Cocoa	3	4		1953	
4	Overhead Crane	Log Shed	3	10		1953	
5	Overhead Crane	Log Shed	3	10	Germany	1989	10A
6	Mobile Crane		90	1	Germany	1988	A
7	Mobile Crane		14	1	Germany	1988	A
8	Log Staker		27	3		1987	
9	Forklift Truck		42	2		1993	
10	Forklift Truck		42	1		1990	
11	Forklift Truck		28	1		1996	
12	Forklift Truck		28	1		1993	
13	Forklift Truck		16	3		1993	
14	Forklift Truck		15	1	UK	1988	A
15	Forklift Truck		8	1		1993	
16	Forklift Truck		8	1	UK	1988	A
17	Forklift Truck		5	3		1997	
18	Forklift Truck		5	4		1997	
19	Forklift Truck		5	5		1994	
20	Forklift Truck		5	3		1993	
21	Forklift Truck		5	9	UK	1988	6A, 3B
22	Forklift Truck		5	1	UK	1986	A
23	Forklift Truck		5	1		1990	
24	Forklift Truck		4	1		1992	
25	Forklift Truck		3	3		1997	
26	Forklift Truck		3	6		1994	
27	Forklift Truck		3	3		1993	
28	Forklift Truck		3	3	UK	1988	1A, 2B
29	Forklift Truck		3	2		1985	
30	Tractor			2	(OECF)	1988	2A
31	Tractor			2		1995	
32	Tractor			5	(OECF)	1988	5A
33	Tractor			3	(OECF)	1988	2A, 1B
OECF				42			35A, 7B
Available							83%
Broken Down							17%

A : Available ; B : Broken Down.

		Location	Capacity t. x m.	Units	Country manufactured (OECF Equip.)	Year Manufac-tured	Operational Condition
1	Quay Side Crane	Berth 4-5	15 x 20	2	Yugoslavia	1989	1A, 1B
2	Quay Side Crane	Log Berth	15 x 15	3	Yugoslavia	1989	3A
5	Overhead Crane	Log Shed	3	10	Germany	1989	10A
6	Mobile Crane		90	1	Germany	1988	A
7	Mobile Crane		14	1	Germany	1988	A
14	Forklift Truck		15	1	UK	1988	A
16	Forklift Truck		8	1	UK	1988	A
21	Forklift Truck		5	9	UK	1988	6A, 3B
22	Forklift Truck		5	1	UK	1986	A
28	Forklift Truck		3	3	UK	1988	1A, 2B
30	Tractor			2	(OECF)	1988	2A
32	Tractor			5	(OECF)	1988	5A
33	Tractor			3	(OECF)	1988	2A, 1B

CARGO HANDLING EQUIPMENT AND PORT SERVICE BOATS, TAKORADI

CONDITION OF CARGO HANDLING EQUIPMENT (OECF)

	Capacity	Condition	Average Broken
Portal Crane DLLC	15	B	
Portal Crane DLLC	15	A	
Portal Crane Jib	15	A	
Portal Crane Jib	15	A	
Portal Crane Jib	15	A	
Overhead Crane	3	A	
Overhead Crane	3	A	
Overhead Crane	3	A	
Overhead Crane	3	A	
Overhead Crane	3	A	
Overhead Crane	3	A	
Overhead Crane	3	A	
Overhead Crane	3	A	
Overhead Crane	3	A	
Mobile Crane	90	A	36
Mobile Crane	14	A	16
Forklift Truck	15	A	16
Forklift Truck	8	A	89
Forklift Truck	5	B	28
Forklift Truck	5	A	23
Forklift Truck	5	A	16
Forklift Truck	5	A	16
Forklift Truck	5	B	31
Forklift Truck	5	A	41
Forklift Truck	5	B	44
Forklift Truck	5	A	22
Forklift Truck	5	A	43
Forklift Truck	5	A	213
Forklift Truck	3	B	59
Forklift Truck	3	A	16
Forklift Truck	3	B	61
Tractor TRA		A	31
Tractor TRA		A	60
Tractor RTR		A	171
Tractor RTR		A	33
Tractor RTR		A	18
Tractor RTR		A	41
Tractor RTR		A	153
Tractor RTR		A	163
Tractor RTR		B	40
Tractor RTR		A	27
Trailers		A	17
Trailers		A	16
Trailers		A	16
Trailers		A	16
Trailers		A	16
Trailers		A	137
Trailers		A	38
Trailers		A	16
Trailers		A	16
Trailers		A	16
Trailers		A	16
Trailers		A	23
Trailers		A	16
Trailers		A	20
Trailers		A	16
Trailers		B	16
Trailers		A	19
Trailers		A	18

	Capacity	Condition	Average Broken
Trailers		A	16
Trailers		A	16
Trailers		A	16
Trailers		B	19
Trailers		B	16
Trailers		A	18
Average Broken Down Days			***41***
OECF		56A, 10B	
Available		85%	
Broken Down		15%	

CARGO HANDLING EQUIPMENT AND PORT SERVICE BOATS, TAKORADI

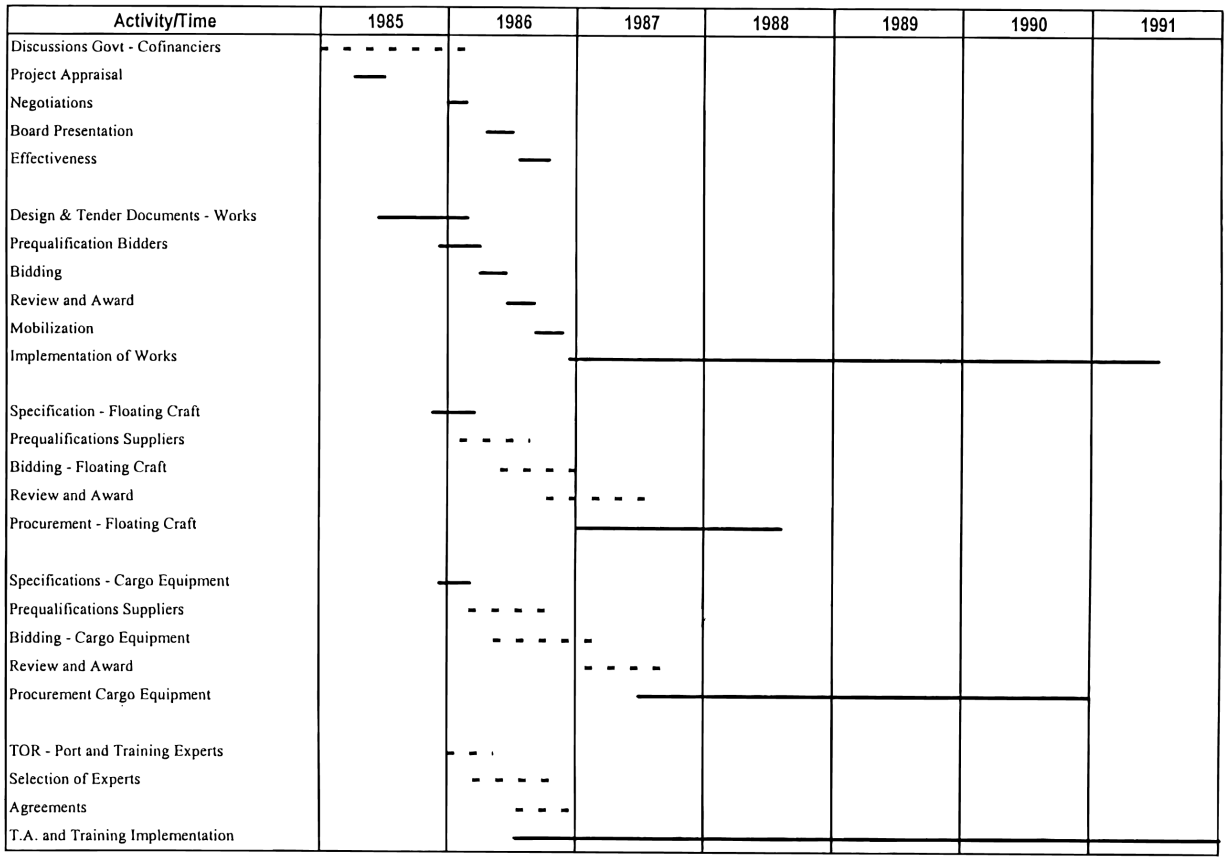
PORT SERVICE BOATS

	Type	Units	Gross Tonnage	Country Built (OECF)	Year Built	Age	Operational Condition	Working Days in 1996
Nana Anaisie IV	Tug Boat	1	156		1977	21	A	
Yaa Asentewa	Tug Boat	1	156		1977	21	A	
Amannful	Tug Boat	1	209	Netherland	1988	10	A	200
Nana Kobina Nkietsa	Tug Boat	1	209		1995	3	A	
CDR J F Sugden	Diver Boat	1	254	Netherland	1988	10	A	100
Alpha	Speed Boat				1993	5	A	
Georges Otoo		1	16	Netherland	1988	10	A	250
John Nimo	Lighter Tug	1	16	Netherland	1988	10	A	250
Thomson	Lighter Tug	1	7	Netherland	1988	10	A	250
Egya Ammissah		1			1984	14	A	
Yankum					1984	14	A	
Ken Wilson					1984	14	A	
Nana Kobine Nketsia	Passenger Boat	1	14	Netherland	1989	9	A	100
Nana Badu Bontsu	Pilot Boat		21	Netherland	1988	10	A	360
Kweku Asamoah	Mooring	1	4	Netherland	1988	10	A	360
Kweku Otoo	Mooring	1	4	Netherland	1988	10	A	360
N° 2 Pilot Launch	Pilot Boat	1			1978	20	A	
N° 3 Pilot Launch	Pilot Boat	1			1978	20	A	
JR Ansah		1	90	Netherland	1989	9	A	360
Pontoun 1-8	Flat Barge	7	86	Netherland	1989	9	A	10
Lither 1-17	Harbour Lighter	13	79	Netherland	1988	10	A	150
Average						*12*	*A = 100%*	*229*

PORT REHABILITATION
PROJECT IN GHANA

Annex 3.3

REVISED PROJECT TIME TABLE (1986)



Source : Bank Staff
WAPTI
MARCH 1986

PROJECT FINANCIAL EXECUTION

Contracts	Contract Approval Date	Contract Amount in JPY	Disbursed Amount		Comments
			JPY	%	
C-001	21-avr-88	1 975 844 324	1 975 844 324	33%	Marine Equipment
C-002	21-avr-88	1 513 188 800	1 513 188 800	26%	Port Cranes
C-003	21-avr-88	411 317 184	411 317 181	7%	
C-004	21-avr-88	1 048 950 446	1 048 950 444	18%	Mobile Cranes, Tractors
C-005	21-avr-88	175 872 015	175 872 015	3%	
C-006	21-avr-88	456 693 988	456 693 985	8%	
C-007	21-avr-88	64 849 550	64 849 550	1%	
C-008	21-avr-88	123 467 000	123 467 000	2%	
C-009	21-nov-89	135 866 613	135 866 613	2%	
Total			**5 906 049 912**	100%	

LOT 1: MARINE EQUIPMENT

	Duration	Quantity	Disbursed	
			Amount JPY	%
Equipment			**1 673 448 960**	85%
Tug Boat		2	545 727 552	
Pilot Launch		2	92 003 778	
Lighter Tug 220 kw		2	64 807 692	
Lighter Tug 90 kw		1	16 984 614	
Mooring Launch		4	45 586 572	
Harbour Lighter open		6	101 450 346	
Harbour Lighter flat		8	155 557 192	
Personnel Launch		1	25 732 938	
Water Barges		1	27 491 608	
Buoy Barge		2	451 510 490	
Drydock and Shipway Equipment			146 596 178	
Training			**23 299 280**	1%
Overseas			17 010 985	
Marine Engineers	*3 months*	*5*	*10 989 100*	
Electrician	*3 months*	*2*	*6 021 885*	
Ghana			6 288 295	
Marine Engineers/Technicians	*1 month*	*17*	*2 633 030*	
Electrician	*1 month*	*4*	*2 633 030*	
Masters/Shippers	*1 month*	*17*	*1 022 235*	
Spare Parts			**279 096 084**	14%
Total			**1 975 844 324**	100%

PROJECT FINANCIAL EXECUTION

LOT 2: PORT CRANES

	Duration	Quantity	Disbursed	
			Amount JPY	%
Equipment			**1 465 972 800**	94%
Multi-purpose Cranes		2	612 127 000	
General Cargo Cranes		2	278 498 000	
Log Handling Cranes		3	416 533 000	
Overhead Cranes		10	99 692 600	
Crane Rails			59 122 200	
Training			**55 346 000**	4%
Oversea			6 090 000	
Engineers		*4*	*1 360 000*	
Electricians		*2*	*860 000*	
Operators		*21*	*3 870 000*	
Ghana			49 256 000	
Mechanical Systems Technicians		*10*	*2 040 000*	
Electrical Systems Technicians		*10*	*10 170 000*	
Spare Parts			**37 046 000**	2%
Total			**1 558 364 800**	100%

LOT 4: MOBILE CRANES, TRACTORS, CONVEYORS

Equipment			**983 712 000**	93,78%
Tow Tractors		4	40 984 000	
Ro-Ro Tractors		18	230 184 000	
Rail Shunters		2	41 034 000	
240 T/M Mobile Cranes		2	202 646 000	
120 T/M Mobile Cranes		1	65 558 000	
Cocoa Conveyors		32	378 048 000	
15 T Hydraulic Mobile Crane		1	25 258 000	
Training			**3 850 000**	0,37%
Oversea			2 966 000	
Engineers for Tractors and Shunters		*2*	800 000	
Engineers for Mobile Cranes		*2*	1 242 000	
Operators for Ro-Ro Tractors		*20*	74 000	
Operators for Mobile Cranes		*7*	850 000	
Domestic			884 000	
Maintenance Training		10	884 000	
Spare Parts			**61 388 446**	5,85%
Total			**1 048 950 446**	100%

Commodities (Tons)	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
IMPORTS											
Total TEU Stuffed	15 039	20 527									
TEU net weight	161 274	248 955	259 099	396 346	397 663	441 871	446 968	405 640	514 800	625 353	701 945
Alumina	322 057	292 962	353 159	333 666	365 906	330 024	368 856	275 222	258 228	253 761	323 285
Clinker	226 847	229 807	354 798	431 927	470 277	626 227	767 163	794 735	1 032 074	981 033	977 691
Grain	31 731		1 562			11 974	8 023		8 950		22 981
Coke	64 139	58 422	50 133	97 836	63 123	78 149	67 298	55 264	52 516	53 480	61 078
Pitch	12 006	17 875	24 775	12 458	18 647	18 502	18 289	22 484	15 494	17 674	18 017
Wheat	56 342	78 125	84 802	65 295	146 853	72 002	146 184	110 257	177 228	134 344	151 789
Other			5 950						21 491	28 281	31 038
Lime products											
Cement	42 736	19 578	51 875	49 314	9 125	2 268	10 315	300	1 377	3 072	240
Grain	23 067	27 943	1 819	2 569	2 028	1 975	612		2 507	1 975	36 229
Fertilizer	38 601	40 697	70 893	46 962	2 904	33 547	13 866	15 249	26 068	39 270	33 426
Soya Meal	2 211	4 829	317	2 801	2 283	2 303	847	3 165	1 776	1 482	425
Sugar	26 282	56 775	51 692	66 039	86 032	92 069	109 493	100 130	111 244	127 321	99 425
Malt			8 515	7 658	3 075	3 312	2 502	2 422	2 915	4 784	2 595
Gypsum		5 000		6 195		16 229	31 963	32 000		49 416	44 800
Rice	44 892	54 168	62 472	119 297	165 112	224 527	244 365	154 046	175 031	192 137	186 290
Other	4 264	20 509	12 175	10 552	27 573	13 580	15 925	4 947	5 927	1 577	8 324
Cars/Vehicles	64 186	32 848	25 199	29 880	23 307	38 875	39 764	38 745	38 654	52 689	58 382
Plates/Rods	22 187	11 028	11 691	21 444	27 683	21 761	36 583	21 695	28 725	30 643	31 915
Chemicals	1 755	13 339	14 527	13 801	12 557	19 435	30 926	16 729	23 261	21 589	19 254
Rods/Pipes	1 099	4 492	16 496	13 113	8 970	19 500	11 562	6 147	16 072	22 975	23 034
Machinery/Equipment	98	3 154	4 820	12 838	12 101	4 281	6 077	7 600	7 732	8 137	11 120
Steel/Wire Coils	1 625	18 994	17 201	11 223	18 519	18 735	10 746	21 216	17 791	13 638	16 240
VALCO	8 148	1 000	5 306	9 299	44 519	55 271	36 887	29 490	21 672	27 232	27 813
Other	224 273	56 606	82 300	54 544	43 803	46 328	67 359	34 557	72 152	88 775	80 508
Paper reels			13 664	14 039	10 439	26 615	13 677	18 514	20 589	23 232	20 095
Crude Oil	840 964	880 701	846 109	830 150	923 318	755 371	519 976	979 643	832 775	942 298	265 467
Petroleum Products	177 466	183 418	299 293	196 634	168 901	133 524	488 943	297 496	414 120	427 145	1 150 535
Chemicals (lever)	7 102	7 914	16 442	7 951	14 117	10 194	14 162	13 877	28 568	17 377	22 571
Other									90		
Total Imports	**2 405 552**	**2 369 139**	**2 747 084**	**2 863 831**	**3 068 835**	**3 118 449**	**3 529 331**	**3 461 570**	**3 929 827**	**4 190 690**	**4 426 512**
EXPORTS											
Total TEU Stuffed	2 607	4 712									
TEU net weight			77 724	118 720	103 904	152 625	137 136	189 033	221 144	272 797	292 592
Cocoa Beans	93 296	94 902	88 842	66 619	74 901	48 092	69 507	60 226	34 926	50 227	20 344
Coffee	256										
Sheanuts	1 402	12 326	585	3 870	3 197	4 655	3 443	2 135	4 038	10 342	16 878
Other	615	2 846	6 899	22 031	5 994	9 449	11 714	22 130	5 787	8 932	20 336
Bauxite											
Manganèse											
Cars/vehicles			455	237	565	210	192	364	79	148	155
Aluminium	139 321	151 778	157 158	178 881	177 369	73 119		94 351	111 499	111 051	88 395
Cocoa Products	10 390	3 595	2 645	1 616		1 200	3 619	1 687	3 140	952	2 723
Food Stuff	1 384	970	150						6 061	28 990	20 571
VALCO						145 727	162 715	31 926	9 633		22 450
Other	19 798	3 342	7 765	61 117	14 175	8 976	17 022	33 080	17 148	18 454	20 113
Sawn Timber	84 108	71 381	8 680	94				172	1 346	222	305
Logs	1 763	31									
Other (e.g. Curls)			1			2 189	5 754	8 554	11 382		60
Chemicals (Lever)			1 370	1 888	988	1 544	2 000		1 099	4 342	5 200
Petroleum Products	240 611	315 815	211 463	157 783	197 082	343 426	187 771	185 017	254 335	182 786	231 951
Other											
Palm Oil											
Total Exports	**592 944**	**656 986**	**563 737**	**612 856**	**578 175**	**791 212**	**600 873**	**628 675**	**681 617**	**689 243**	**742 073**
Total Imports+Exports	**2 998 496**	**3 026 125**	**3 310 821**	**3 476 687**	**3 647 010**	**3 909 661**	**4 130 204**	**4 090 245**	**4 611 444**	**4 879 933**	**5 168 585**

Type of Cargo	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
IMPORTS											
Containers	161 274	248 955	259 099	396 346	397 663	441 871	446 968	405 640	514 800	625 353	701 945
Dry Bulk	713 122	677 191	875 179	941 182	1 064 806	1 136 878	1 375 813	1 257 962	1 565 981	1 468 573	1 585 879
Bagged Cargo	182 253	229 499	259 758	311 387	298 132	389 810	429 888	312 259	326 845	421 034	411 754
General Cargo	323 371	141 461	191 204	180 181	201 898	250 801	253 581	194 693	246 648	288 910	288 361
Liquid Bulk	1 025 532	1 072 033	1 161 844	1 034 735	1 106 336	899 089	1 023 081	1 291 016	1 275 553	1 386 820	1 438 573
Total Imports	2 405 552	2 369 139	2 747 084	2 863 831	3 068 835	3 118 449	3 529 331	3 461 570	3 929 827	4 190 690	4 426 512
EXPORTS											
Containers	0	0	77 724	118 720	103 904	152 625	137 136	189 033	221 144	272 797	292 592
Bagged Cargo	95 569	110 074	96 326	92 520	84 092	62 196	84 664	84 491	44 751	69 501	57 558
General Cargo	170 893	159 685	168 173	241 851	192 109	229 232	183 548	161 408	147 560	159 595	154 407
Forest Products	85 871	71 412	8 681	94	0	2 189	5 754	8 726	12 728	222	365
Liquid Bulk	240 611	315 815	212 833	159 671	198 070	344 970	189 771	185 017	255 434	187 128	237 151
Total Exports	592 944	656 986	563 737	612 856	578 175	791 212	600 873	628 675	681 617	689 243	742 073
Total Imports+Exports	2 998 496	3 026 125	3 310 821	3 476 687	3 647 010	3 909 661	4 130 204	4 090 245	4 611 444	4 879 933	5 168 585

Cargo handled by GPHA's Equipment

Type of Cargo	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
IMPORTS											
Containers	161 274	248 955	259 099	396 346	397 663	441 871	446 968	405 640	514 800	625 353	701 945
Dry Bulk	391 065	384 229	522 020	607 516	698 900	806 854	1 006 957	982 740	1 307 753	1 214 812	1 262 594
Bagged Cargo	182 253	229 499	259 758	311 387	298 132	389 810	429 888	312 259	326 845	421 034	411 754
General Cargo	323 371	-10 317	34 046	1 300	24 529	177 682	253 581	100 342	135 149	177 859	199 966
Liquid Bulk	848 066	888 615	862 551	838 101	937 435	765 565	534 138	993 520	861 433	959 675	288 038
Total Imports	1 906 029	1 740 981	1 937 474	2 154 650	2 356 659	2 581 782	2 671 532	2 794 501	3 145 980	3 398 733	2 864 297
EXPORTS											
Containers	0	0	77 724	118 720	103 904	152 625	137 136	189 033	221 144	272 797	292 592
Bagged Cargo	95 569	110 074	96 326	92 520	84 092	62 196	84 664	84 491	44 751	69 501	57 558
General Cargo	31 572	7 907	11 015	62 970	14 740	156 113	183 548	67 057	36 061	48 544	66 012
Forest Products	85 871	71 412	8 681	94	0	2 189	5 754	8 726	12 728	222	365
Liquid Bulk	0	0	1 370	1 888	988	1 544	2 000	0	1 099	4 342	5 200
Total Exports	213 012	189 393	195 116	276 192	203 724	374 667	413 102	349 307	315 783	395 406	421 727
Total Imports+Exports	2 119 041	1 930 374	2 132 590	2 430 842	2 560 383	2 956 449	3 084 634	3 143 808	3 461 763	3 794 139	3 286 024

IMPORT-EXPORT COMMODITY TREND
TEMA
(1987/1997)

	Rate Increase (%)										Multiplier		Yearly Average Rate
Commodities	1988/1987	1989/1988	1990/198	1991/1990	1992/199	1993/1992	1994/199	1995/1994	1996/199	1997/1996	1995/1987	1997/1987	1997/1987
IMPORTS													
TEU net weight	54%	4%	53%	0%	11%	1%	-9%	27%	21%	12%	3,2	4,4	15,84%
Alumina	-9%	21%	-6%	10%	-10%	12%	-25%	-6%	-2%	27%	0,8	1,0	0,04%
Clinker	1%	54%	22%	9%	33%	23%	4%	30%	-5%	0%	4,5	4,3	15,73%
Grain	-100%		-100%			-33%	-100%		-100%		0,3	0,7	-3,17%
Coke	-9%	-14%	95%	-35%	24%	-14%	-18%	-5%	2%	14%	0,8	1,0	-0,49%
Pitch	49%	39%	-50%	50%	-1%	-1%	23%	-31%	14%	2%	1,3	1,5	4,14%
Wheat	39%	9%	-23%	125%	-51%	103%	-25%	61%	-24%	13%	3,1	2,7	10,42%
Other			-100%						32%	10%			
Lime products													
Cement	-54%	165%	-5%	-81%	-75%	355%	-97%	359%	123%	-92%	0,0	0,0	-40,44%
Grain	21%	-93%	41%	-21%	-3%	-69%	-100%		-21%	1734%	0,1	1,6	4,62%
Fertilizer	5%	74%	-34%	-94%	1055%	-59%	10%	71%	51%	-15%	0,7	0,9	-1,48%
Soya Meal	118%	-93%	784%	-18%	1%	-63%	274%	-44%	-17%	-71%	0,8	0,2	-15,20%
Sugar	116%	-9%	28%	30%	7%	19%	-9%	11%	14%	-22%	4,2	3,8	14,23%
Malt			-10%	-60%	8%	-24%	-3%	20%	64%	-46%			
Gypsum		-100%		-100%		97%	0%	-100%		-9%			
Rice	21%	15%	91%	38%	36%	9%	-37%	14%	10%	-3%	3,9	4,1	15,29%
Other	381%	-41%	-13%	161%	-51%	17%	-69%	20%	-73%	428%	1,4	2,0	6,92%
Cars/Vehicles	-49%	-23%	19%	-22%	67%	2%	-3%	0%	36%	11%	0,6	0,9	-0,94%
Plates/Rods	-50%	6%	83%	29%	-21%	-68%	-41%	32%	7%	4%	1,3	1,4	3,70%
Chemicals	660%	9%	-5%	-9%	55%	59%	-46%	39%	-7%	-11%	13,3	11,0	27,06%
Rods/Pipes	309%	267%	-21%	-32%	117%	-41%	-47%	161%	43%	0%	14,6	21,0	35,56%
Machinery/Equipment*	3118%	53%	166%	-6%	-65%	42%	25%	2%	5%	37%	2,5	3,5	60,50%
Steel/Wire Coils	1069%	-9%	-35%	65%	1%	-43%	97%	-16%	-23%	19%	10,9	10,0	25,88%
VALCO	-88%	431%	75%	379%	24%	-33%	-20%	-27%	26%	2%	2,7	3,4	13,06%
Other	-75%	45%	-34%	-20%	6%	45%	-49%	109%	23%	-9%	0,3	0,4	-9,74%
Paper reels			3%	-26%	155%	-49%	35%	11%	13%	-14%			
Crude Oil	5%	-4%	-2%	11%	-18%	-31%	88%	-15%	13%	-72%	1,0	0,3	-10,89%
Petroleum Products	3%	63%	-34%	-14%	-21%	266%	-39%	39%	3%	169%	2,3	6,5	20,55%
Chemicals (lever)	11%	108%	-52%	78%	-28%	39%	-2%	106%	-39%	30%	4,0	3,2	12,26%
Other													
Total Imports	-2%	16%	4%	7%	2%	13%	-2%	14%	7%	6%	1,6	1,8	6,29%
EXPORTS													
Total TEU Stuffed	4.712												
TEU net weight**			53%	-12%	47%	-10%	38%	17%	23%	7%	2,8	3,8	14,17%
Cocoa Beans	2%	-6%	-25%	12%	-36%	45%	-13%	-42%	44%	-59%	0,4	0,2	-14,13%
Coffee	-100%										0,0	0,0	
Sheanuts	779%	-95%	562%	-17%	46%	-26%	-38%	89%	156%	63%	2,9	12,0	28,25%
Other	363%	142%	219%	-73%	58%	24%	89%	-74%	54%	128%	9,4	33,1	41,89%
Bauxite													
Manganèse													
Cars/vehicles			-48%	138%	-63%	-9%	90%	-78%	87%	5%			-10,21%
Aluminium	9%	4%	14%	-1%	-59%	-100%		18%	0%	-20%	0,8	0,6	-4,45%
Cocoa Products	-65%	-26%	-39%	-100%		202%	-53%	86%	-70%	186%	0,3	0,3	-12,53%
Food Stuff	-30%	-85%	-100%						378%	-29%	4,4	14,9	30,98%
VALCO						12%	-80%	-70%	-100%				-17,06%
Other	-83%	132%	687%	-77%	-37%	90%	94%	-48%	8%	9%	0,9	1,0	0,16%
Sawn Timber	-15%	-88%	-99%	-100%				683%	-84%	37%	0,0	0,0	-42,99%
Logs	-98%	-100%									0,0	0,0	
Other (e.g. Curls)			-100%			163%	49%	33%	-100%				
Chemicals (Lever)			38%	-48%	56%	30%	-100%		295%	20%			14,27%
Petroleum Products	31%	-33%	-25%	25%	74%	-45%	-1%	37%	-28%	27%	1,1	1,0	-0,37%
Other													
Palm Oil													
Total Exports	11%	-14%	9%	-6%	37%	-24%	5%	8%	1%	8%	1,1	1,3	2,27%
Total Imports+Exports	1%	9%	5%	5%	7%	6%	-1%	13%	6%	6%	1,5	1,7	5,60%

*Multiplier's Denominator = 1988 instead of 1987. ** Multiplier's Denominator = 1989.

IMPORT-EXPORT COMMODITY TREND
TEMA
(1987/1997)

Type of Cargo	1988/1987	1989/1988	1990/198	1991/1990	1992/199	1993/1992	1994/199	1995/1994	1996/199	1997/1996	1995/1987	1997/1987	Yly Avge Rat
IMPORTS													
Containers	54%	4%	53%	0%	11%	1%	-9%	27%	21%	12%	3,2	4,4	15,84%
Dry Bulk	-5%	29%	8%	13%	7%	21%	-9%	24%	-6%	8%	2,2	2,2	8,32%
Bagged Cargo	26%	13%	20%	-4%	31%	10%	-27%	5%	29%	-2%	1,8	2,3	8,49%
General Cargo	-56%	35%	-6%	12%	24%	1%	-23%	27%	17%	0%	0,8	0,9	-1,14%
Liquid Bulk	5%	8%	-11%	7%	-19%	14%	26%	-1%	9%	4%	1,2	1,4	3,44%
Total Imports	-2%	16%	4%	7%	2%	13%	-2%	14%	7%	6%	1,6	1,8	6,29%
EXPORTS													
Containers			53%	-12%	47%	-10%	38%	17%	23%	7%	2,8	3,8	14,17%
Bagged Cargo	15%	-12%	-4%	-9%	-26%	36%	0%	-47%	55%	-17%	0,5	0,6	-4,94%
General Cargo	-7%	5%	44%	-21%	19%	-20%	-12%	-9%	8%	-3%	0,9	0,9	-1,01%
Forest Products	-17%	-88%	-99%	-100%		163%	52%	46%	-98%	64%	0,1	0,0	-42,08%
Liquid Bulk	31%	-33%	-25%	24%	74%	-45%	-3%	38%	-27%	27%	1,1	1,0	-0,14%
Total Exports	11%	-14%	9%	-6%	37%	-24%	5%	8%	1%	8%	1,1	1,3	2,27%
Total Imports+Exports	1%	9%	5%	5%	7%	6%	-1%	13%	6%	6%	1,5	1,7	5,60%

Cargo handled by GPHA's Equipment

Type of Cargo	1988/1987	1989/1988	1990/198	1991/1990	1992/199	1993/1992	1994/199	1995/1994	1996/199	1997/1996	1995/1987	1997/1987	Yly Avge Rat
IMPORTS													
Containers	54%	4%	53%	0%	11%	1%	-9%	27%	21%	12%	3,2	4,4	15,84%
Dry Bulk	-2%	36%	16%	15%	15%	25%	-2%	33%	-7%	4%	3,3	3,2	12,43%
Bagged Cargo	26%	13%	20%	-4%	31%	10%	-27%	5%	29%	-2%	1,8	2,3	8,49%
General Cargo	-103%	-430%	-96%	1787%	624%	43%	-60%	35%	32%	12%	0,4	0,6	-4,69%
Liquid Bulk	5%	-3%	-3%	12%	-18%	-30%	86%	-13%	11%	-70%	1,0	0,3	-10,24%
Total Imports	-9%	11%	11%	9%	10%	3%	5%	13%	8%	-16%	1,7	1,5	4,16%
EXPORTS													
Containers			53%	-12%	47%	-10%	38%	17%	23%	7%	2,8	3,8	14,17%
Bagged Cargo	15%	-12%	-4%	-9%	-26%	36%	0%	-47%	55%	-17%	0,5	0,6	-4,94%
General Cargo	-75%	39%	472%	-77%	959%	18%	-63%	-46%	35%	36%	1,1	2,1	7,65%
Forest Products	-17%	-88%	-99%	-100%		163%	52%	46%	-98%	64%	0,1	0,0	-42,08%
Liquid Bulk			38%	-48%	56%	30%	-100%		295%	20%			3,86%
Total Exports	-11%	3%	42%	-26%	84%	10%	-15%	-10%	25%	7%	1,5	2,0	7,07%
Total Imports+Exports	-9%	10%	14%	5%	15%	4%	2%	10%	10%	-13%	1,6	1,6	4,48%

IMPORT-EXPORT COMMODITIES TAKORADI
(1987/1997)

Commodities (Tons)	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
IMPORTS											
Total TEU Stuffed											
TEU net weight	17 875	20 792	17 162	23 141	20 610	24 408	26 279	31 921	33 525	37 016	68 786
Alumina											
Clinker	153 396	239 918	269 598	304 244	323 538	489 641	444 755	525 093	451 612	527 108	503 220
Grain	30 270				3 191						
Coke											
Pitch											
Wheat	25 542	60 005	35 102	45 996	59 361	53 691	91 479	82 048	67 688	41 346	65 806
Other									64 933	65 915	
Lime products											76 471
Cement	0	2 528	9 222	1 189	27 300	500	3 335	1 545	0	6 001	1 498
Grain	3 466										
Fertilizer										4 268	2 950
Soya Meal											
Sugar		462	496	246	86		96				
Malt											
Gypsum											
Rice		4 769	6 773	4 583	1 988	4 506	1 703	5 157			
Other		2 054	198	81	90	5 404	203		19		
Cars/Vehicles	1 078	2 693	2 637	4 409	2 740	94	2 519	3 322	2 552	2 206	2 174
Plates/Rods		82	15		74	208	128	159	424	795	1 255
Chemicals	776	670	1 408	195	507	6 107	5 025	73 509	3 885	29 402	10 579
Rods/Pipes		344	3 373	3 004	2 343	1 230	2 257	1 492	440	6 017	3 167
Machinery/Equipment	462	2 503	1 652	2 147	1 696	1 076	4 034	2 593	3 556	5 469	5 342
Steel/Wire Coils		1 527	380	211	486	896	1 558	492	2 014	330	1 314
VALCO											
Other	34 626	10 279	2 658	5 740	7 312	3 475	26 380	5 000	5 680	6 078	4 990
Paper reels			4 626	5 183	5 710	7 801	2 431	2 701	3 205	2 899	1 763
Crude Oil											
Petroleum Products	95 720	105 472	94 526	116 236	92 284	100 981	109 927	75 435	17 263	20 143	93 667
Chemicals (lever)											
Other			2 588			2 383					
Total Imports	**363 211**	**454 098**	**452 414**	**516 605**	**549 316**	**702 401**	**722 109**	**810 467**	**656 796**	**754 993**	**842 982**
EXPORTS											
Total TEU Stuffed	991	1 522									
TEU net weight			32 606	63 961	46 182	38 315	48 938	86 512	133 972	151 759	176 074
Cocoa Beans	95 286	84 736	123 138	93 104	103 765	85 583	107 921	56 848	43 805	68 939	57 300
Coffee	50	83			258	311	155				
Sheanuts	2 722	3 395	950	1 118			3 749	11 142	12 645	11 600	15 710
Other		1 783	1 001	1 600	2 749	1 820	1 684	5 586	2 996	4 842	1 082
Bauxite	234 026	274 933	374 205	369 400	324 313	399 155	364 643	451 593	531 260	380 370	536 722
Manganèse	245 928	291 931	283 895	254 236	319 997	284 055	305 366	245 423	166 913	269 233	340 180
Cars/vehicles			8	22	24	9		44	1	1	
Aluminium											
Cocoa Products	19 818	9 861	4 265	6 120	6 345	3 380	3 172	103			
Food Stuff		105							49	17	157
VALCO											
Other	21 225	9 881	3 726	920	1 006	11 518	24 948	3 720	744	3 327	8 730
Sawn Timber	67 618	62 865	75 652	120 888	117 012	144 239	160 221	188 804	196 546	137 264	149 227
Logs	221 790	233 906	145 523	128 449	163 520	121 804	362 748	425 605	62 255		
Other (e.g. Curls)			120	1 447	4 981	1 865	11 587	25 769	43 955	10 555	10 670
Chemicals (Lever)											
Petroleum Products				2 839		3 339	5 858		4 977		
Other						4 896		2 993		6 086	
Palm Oil											9 095
Total Exports	**908 463**	**973 479**	**1 045 089**	**1 044 104**	**1 090 152**	**1 100 289**	**1 400 990**	**1 504 142**	**1 200 118**	**1 043 993**	**1 304 947**
Total Imports+Export	**1 271 674**	**1 427 577**	**1 497 503**	**1 560 709**	**1 639 468**	**1 802 690**	**2 123 099**	**2 314 609**	**1 856 914**	**1 798 986**	**2 147 929**

IMPORT-EXPORT COMMODITIES TAKORADI
(1987/1997)

Type of Cargo	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
IMPORTS											
Containers	17 875	20 792	17 162	23 141	20 610	24 408	26 279	31 921	33 525	37 016	68 786
Dry Bulk	209 208	299 923	304 700	350 240	386 090	543 332	536 234	607 141	584 233	634 369	645 497
Bagged Cargo	3 466	9 813	16 689	6 099	29 464	10 410	5 337	6 702	19	10 269	4 448
General Cargo	36 942	18 098	16 749	20 889	20 868	20 887	44 332	89 268	21 756	53 196	30 584
Liquid Bulk	95 720	105 472	97 114	116 236	92 284	103 364	109 927	75 435	17 263	20 143	93 667
Total Imports	363 211	454 098	452 414	516 605	549 316	702 401	722 109	810 467	656 796	754 993	842 982
EXPORTS											
Containers	0	0	32 606	63 961	46 182	38 315	48 938	86 512	133 972	151 759	176 074
Bagged Cargo	98 058	89 997	125 089	95 822	106 772	87 714	113 509	73 576	59 446	85 381	74 092
General Cargo	265 746	301 897	288 168	260 378	326 366	287 444	308 538	245 570	166 963	269 251	340 337
Dry Bulk	234 026	274 933	374 205	369 400	324 313	399 155	364 643	451 593	531 260	380 370	536 722
Forest Products	310 633	306 652	225 021	251 704	286 519	279 426	559 504	643 898	303 500	151 146	168 627
Liquid Bulk	0	0	0	2 839	0	8 235	5 858	2 993	4 977	6 086	9 095
Total Exports	908 463	973 479	1 045 089	1 044 104	1 090 152	1 100 289	1 400 990	1 504 142	1 200 118	1 043 993	1 304 947
Total Imports+Export	1 271 674	1 427 577	1 497 503	1 560 709	1 639 468	1 802 690	2 123 099	2 314 609	1 856 914	1 798 986	2 147 929

Comodities handled by GPHA's Equipment

Type of Cargo	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
IMPORTS											
Containers	17 875	20 792	17 162	23 141	20 610	24 408	26 279	31 921	33 525	37 016	68 786
Dry Bulk	55 812	60 005	35 102	45 996	62 552	53 691	91 479	82 048	132 621	107 261	142 277
Bagged Cargo	3 466	9 813	16 689	6 099	29 464	10 410	5 337	6 702	19	10 269	4 448
General Cargo	36 942	18 098	16 749	20 889	20 868	20 887	44 332	89 268	21 756	53 196	30 584
Liquid Bulk	0	0	2 588	0	0	2 383	0	0	0	0	0
Total Imports	114 095	108 708	88 290	96 125	133 494	111 779	167 427	209 939	187 921	207 742	246 095
EXPORTS											
Containers	0	0	32 606	63 961	46 182	38 315	48 938	86 512	133 972	151 759	176 074
Bagged Cargo	98 058	89 997	125 089	95 822	106 772	87 714	113 509	73 576	59 446	85 381	74 092
General Cargo	19 818	9 966	4 273	6 142	6 369	3 389	3 172	147	50	18	157
Dry Bulk											
Forest Products	310 633	306 652	225 021	251 704	286 519	279 426	559 504	643 898	303 500	151 146	168 627
Liquid Bulk	0	0	0	0	0	4 896	0	2 993	0	6 086	9 095
Total Exports	428 509	406 615	386 989	417 629	445 842	413 740	725 123	807 126	496 968	394 390	428 045
Total Imports+Export	542 604	515 323	475 279	513 754	579 336	525 519	892 550	1 017 065	684 889	602 132	674 140

IMPORT-EXPORT COMMODITY TREND
TAKORADI
(1987/1997)

	Increase Rate										Multiplier		Average Increase Rate
Commodities	1988/1987	1989/1988	1990/1989	1991/1990	1992/1991	1993/1992	1994/1993	1995/1994	1996/1995	1997/1996	1995/1987	1997/1987	1997/1987
IMPORTS													
TEU net weight	16%	-17%	35%	-11%	18%	8%	21%	5%	10%	86%	0,9	2,8	14,43%
Alumina													
Clinker	56%	12%	13%	6%	51%	-9%	18%	-14%	17%	-5%	1,9	2,3	12,61%
Grain													
Coke													
Pitch													
Wheat	135%	-42%	31%	29%	-10%	70%	-10%	-18%	-39%	59%	1,7	1,6	9,93%
Other									2%	-100%			
Lime products													
Cement		265%	-87%	2196%	-98%	567%	-54%	-100%		-75%			-5,65%
Grain													
Fertilizer										-31%			
Soya Meal													
Sugar		7%	-50%	-65%	-100%		-100%						
Malt													
Gypsum													
Rice		42%	-32%	-57%	127%	-62%	203%	-100%					0,87%
Other		-90%	-59%	11%	5904%	-96%	-100%		-100%				
Cars/Vehicles	150%	-2%	67%	-38%	-97%	2580%	32%	-23%	-14%	-1%	1,4	1,0	7,27%
Plates/Rods		-82%	-100%		181%	-38%	24%	167%	88%	58%			35,41%
Chemicals	-14%	110%	-86%	160%	1105%	-18%	1363%	-95%	657%	-64%	4,0	12,6	29,85%
Rods/Pipes		881%	-11%	-22%	-48%	83%	-34%	-71%	1268%	-47%			27,97%
Machinery/Equipment	442%	-34%	30%	-21%	-37%	275%	-36%	37%	54%	-2%	6,7	10,6	27,73%
Steel/Wire Coils		-75%	-44%	130%	84%	74%	-68%	309%	-84%	298%			-1,66%
VALCO													
Other	-70%	-74%	116%	27%	-52%	659%	-81%	14%	7%	-18%	-0,8	-0,9	-17,61%
Paper reels			12%	10%	37%	-69%	11%	19%	-10%	-39%			-11,36%
Crude Oil													
Petroleum Products	10%	-10%	23%	-21%	9%	9%	-31%	-77%	17%	365%	-0,8	0,0	-0,22%
Chemicals (lever)													
Other						-100%							
Total Imports	25%	0%	14%	6%	28%	3%	12%	-19%	15%	12%	0,8	1,3	8,78%
EXPORTS													
TEU net weight			96%	-28%	-17%	28%	77%	55%	13%	16%			23,47%
Cocoa Beans	-11%	45%	-24%	11%	-18%	26%	-47%	-23%	57%	-17%	-0,5	-0,4	-4,96%
Coffee	66%	-100%			21%	-50%	-100%						
Sheanuts	25%	-72%	18%	-100%			197%	13%	-8%	35%	3,6	4,8	19,16%
Other		-44%	60%	72%	-34%	-7%	232%	-46%	62%	-78%			-4,87%
Bauxite	17%	36%	-1%	-12%	23%	-9%	24%	18%	-28%	41%	1,3	1,3	8,65%
Manganèse	19%	-3%	-10%	26%	-11%	8%	-20%	-32%	61%	26%	-0,3	0,4	3,30%
Cars/vehicles			175%	9%	-63%	-100%		-98%	0%	-100%			
Aluminium													
Cocoa Products	-50%	-57%	43%	4%	-47%	-6%	-97%	-100%			-1,0	-1,0	-48,18%
Food Stuff		-100%							-65%	824%			
VALCO													
Other	-53%	-62%	-75%	9%	1045%	117%	-85%	-80%	347%	162%	-1,0	-0,6	-8,50%
Sawn Timber	-7%	20%	60%	-3%	23%	11%	18%	4%	-30%	9%	1,9	1,2	8,24%
Logs	5%	-38%	-12%	27%	-26%	198%	17%	-85%	-100%		-0,7	-1,0	-14,68%
Other (e.g. Curls)			1106%	244%	-63%	521%	122%	71%	-76%	1%			33,03%
Chemicals (Lever)													
Petroleum Products						75%							9,81%
Other													
Palm Oil													
Total Exports	7%	7%	0%	4%	1%	27%	7%	-20%	-13%	25%	0,3	0,4	3,69%
Total Imports+Export	12%	5%	4%	5%	10%	18%	9%	-20%	-3%	19%	0,5	0,7	5,38%

IMPORT-EXPORT COMMODITY TREND
TAKORADI
(1987/1997)

Type of Cargo	1988/1987	1989/1988	1990/1989	1991/1990	1992/1991	1993/1992	1994/1993	1995/1994	1996/1995	1997/1996	1995/1987	1997/1987	Yly Avge Rat
IMPORTS													
Containers	16%	-17%	35%	-11%	18%	8%	21%	5%	10%	86%	0,9	2,8	14,43%
Dry Bulk	43%	2%	15%	10%	41%	-1%	13%	-4%	9%	2%	1,8	2,1	11,93%
Bagged Cargo	183%	70%	-63%	383%	-65%	-49%	26%	-100%	53947%	-57%	-1,0	0,3	2,53%
General Cargo	-51%	-7%	25%	0%	0%	112%	101%	-76%	145%	-43%	-0,4	-0,2	-1,87%
Liquid Bulk	10%	-8%	20%	-21%	12%	6%	-31%	-77%	17%	365%	-0,8	0,0	-0,22%
Total Imports	25%	0%	14%	6%	28%	3%	12%	-19%	15%	12%	0,8	1,3	8,78%
EXPORTS													
Containers			96%	-28%	-17%	28%	77%	55%	13%	16%			23,47%
Bagged Cargo	-8%	39%	-23%	11%	-18%	29%	-35%	-19%	44%	-13%	-0,4	-0,2	-2,76%
General Cargo	14%	-5%	-10%	25%	-12%	7%	-20%	-32%	61%	26%	-0,4	0,3	2,50%
Dry Bulk	17%	36%	-1%	-12%	23%	-9%	24%	18%	-28%	41%	1,3	1,3	8,65%
Forest Products	-1%	-27%	12%	14%	-2%	100%	15%	-53%	-50%	12%	0,0	-0,5	-5,93%
Liquid Bulk				-100%		-29%	-49%	66%	22%	49%			12,35%
Total Exports	7%	7%	0%	4%	1%	27%	7%	-20%	-13%	25%	0,3	0,4	3,69%
Total Imports+Export	12%	5%	4%	5%	10%	18%	9%	-20%	-3%	19%	0,5	0,7	5,38%

Comodities handled by GPHA's Equipment

Type of Cargo	1988/1987	1989/1988	1990/1989	1991/1990	1992/1991	1993/1992	1994/1993	1995/1994	1996/1995	1997/1996	1995/1987	1997/1987	Yly Avge Rat
IMPORTS													
Containers	16%	-17%	35%	-11%	18%	8%	21%	5%	10%	86%	0,9	2,8	14,43%
Dry Bulk	8%	-42%	31%	36%	-14%	70%	-10%	62%	-19%	33%	1,4	1,5	9,81%
Bagged Cargo	183%	70%	-63%	383%	-65%	-49%	26%	-100%	53947%	-57%	-1,0	0,3	2,53%
General Cargo	-51%	-7%	25%	0%	0%	112%	101%	-76%	145%	-43%	-0,4	-0,2	-1,87%
Liquid Bulk													
Total Imports	-5%	-19%	9%	39%	-16%	50%	25%	-10%	11%	18%	0,6	1,2	7,99%
EXPORTS													
Containers			96%	-28%	-17%	28%	77%	55%	13%	16%			23,47%
Bagged Cargo	-8%	39%	-23%	11%	-18%	29%	-35%	-19%	44%	-13%	0,6	0,8	-2,76%
General Cargo	-50%	-57%	44%	4%	-47%	-6%	-95%	-66%	-64%	772%	0,0	0,0	-38,36%
Dry Bulk													
Forest Products	-1%	-27%	12%	14%	-2%	100%	15%	-53%	-50%	12%	1,0	0,5	-5,93%
Liquid Bulk						-100%		-100%		49%			
Total Exports	-5%	-5%	8%	7%	-7%	75%	11%	-38%	-21%	9%	1,2	1,0	-0,01%
Total Imports+Export	-5%	-8%	8%	13%	-9%	70%	14%	-33%	-12%	12%	1,3	1,2	2,19%

IMPORT AND EXPORT COMMODITY STRUCTURE BY TYPE OF CARGO (1987-1997)

All Comodities

I. TEMA

Type of Cargo	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
IMPORTS	80%	78%	83%	82%	84%	80%	85%	85%	85%	86%	86%
Containers	7%	11%	9%	14%	13%	14%	13%	12%	13%	15%	16%
Dry Bulk	30%	29%	32%	33%	35%	36%	39%	36%	40%	35%	36%
Bagged Cargo	8%	10%	9%	11%	10%	13%	12%	9%	8%	10%	9%
General Cargo	13%	6%	7%	6%	7%	8%	7%	6%	6%	7%	7%
Liquid Bulk	43%	45%	42%	36%	36%	29%	29%	37%	32%	33%	32%
Total Imports	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
EXPORTS											
Containers			14%	19%	18%	19%	23%	30%	32%	40%	39%
Bagged Cargo	16%	17%	17%	15%	15%	8%	14%	13%	7%	10%	8%
General Cargo	29%	24%	30%	39%	33%	29%	31%	26%	22%	23%	21%
Forest Products	14%	11%	2%				1%	1%	2%		
Liquid Bulk	41%	48%	38%	26%	34%	44%	32%	29%	37%	27%	32%
Total Exports	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

II. TAKORADI

Type of Cargo	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
IMPORTS											
Containers	5%	5%	4%	4%	4%	3%	4%	4%	5%	5%	8%
Dry Bulk	58%	66%	67%	68%	70%	77%	74%	75%	89%	84%	77%
Bagged Cargo	1%	2%	4%	1%	5%	1%	1%	1%		1%	1%
General Cargo	10%	4%	4%	4%	4%	3%	6%	11%	3%	7%	4%
Liquid Bulk	26%	23%	21%	22%	17%	15%	15%	9%	3%	3%	11%
Total Imports	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
EXPORTS											
Containers			3%	6%	4%	3%	3%	6%	11%	15%	13%
Bagged Cargo	11%	9%	12%	9%	10%	8%	8%	5%	5%	8%	6%
General Cargo	29%	31%	28%	25%	30%	26%	22%	16%	14%	26%	26%
Dry Bulk	26%	28%	36%	35%	30%	36%	26%	30%	44%	36%	41%
Forest Products	34%	32%	22%	24%	26%	25%	40%	43%	25%	14%	13%
Liquid Bulk						1%	0%	0%	0%	1%	1%
Total Exports	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

IMPORT AND EXPORT COMMODITY STRUCTURE

Comodities handled by GPHA's Equipment **BY TYPE OF CARGO**

(1987-1997)

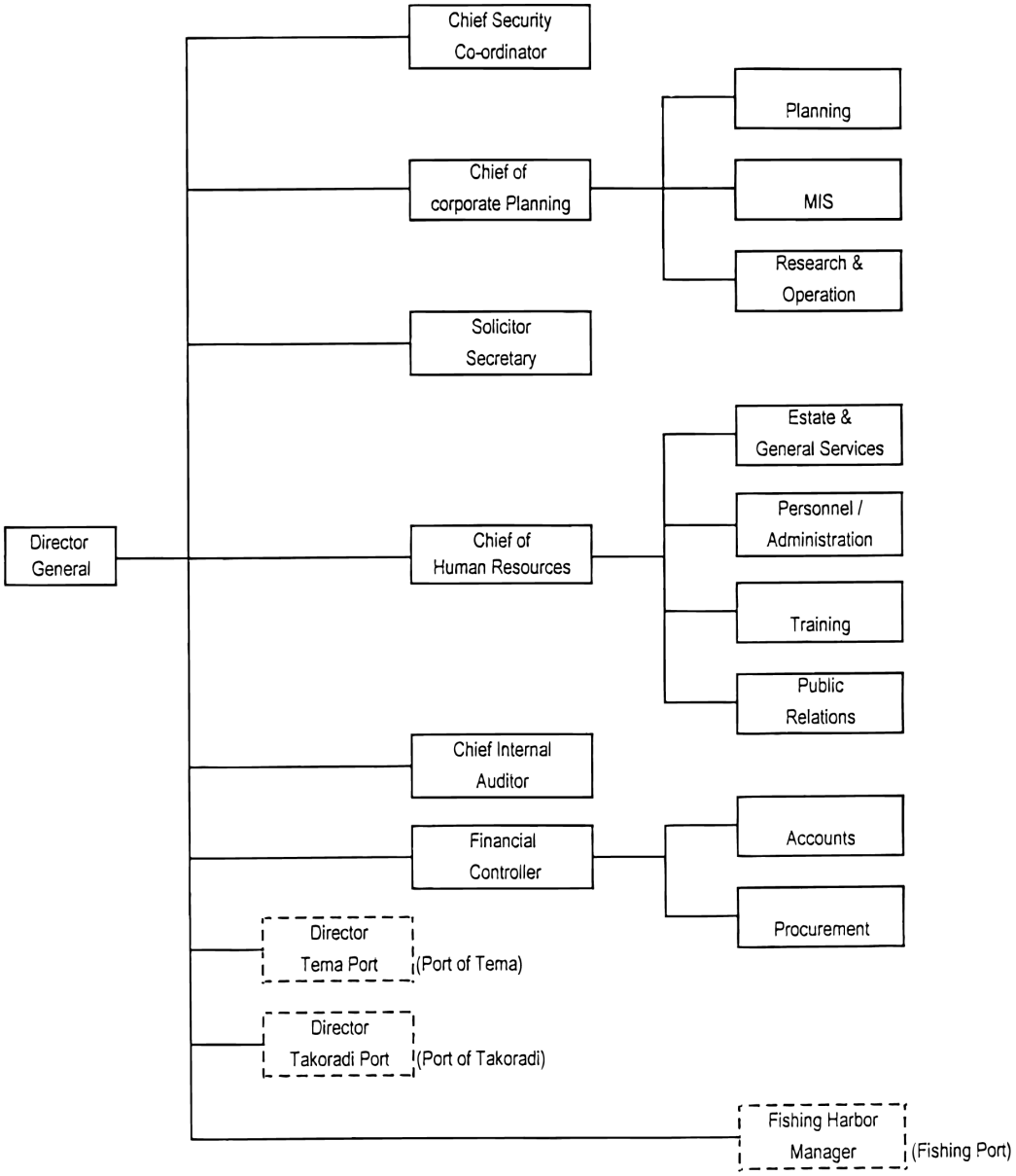
I. TEMA

Type of Cargo	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
IMPORTS											
Containers	8%	14%	13%	18%	17%	17%	17%	15%	16%	18%	25%
Dry Bulk	21%	22%	27%	28%	30%	31%	38%	35%	42%	36%	44%
Bagged Cargo	10%	13%	13%	14%	13%	15%	16%	11%	10%	12%	14%
General Cargo	17%	-1%	2%	0%	1%	7%	9%	4%	4%	5%	7%
Liquid Bulk	44%	51%	45%	39%	40%	30%	20%	36%	27%	28%	10%
Total Imports	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
EXPORTS											
Containers	0%	0%	40%	43%	51%	41%	33%	54%	70%	69%	69%
Bagged Cargo	45%	58%	49%	33%	41%	17%	20%	24%	14%	18%	14%
General Cargo	15%	4%	6%	23%	7%	42%	44%	19%	11%	12%	16%
Forest Products	40%	38%	4%	0%	0%	1%	1%	2%	4%	0%	0%
Liquid Bulk	0%	0%	1%	1%	0%	0%	0%	0%	0%	1%	1%
Total Exports	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

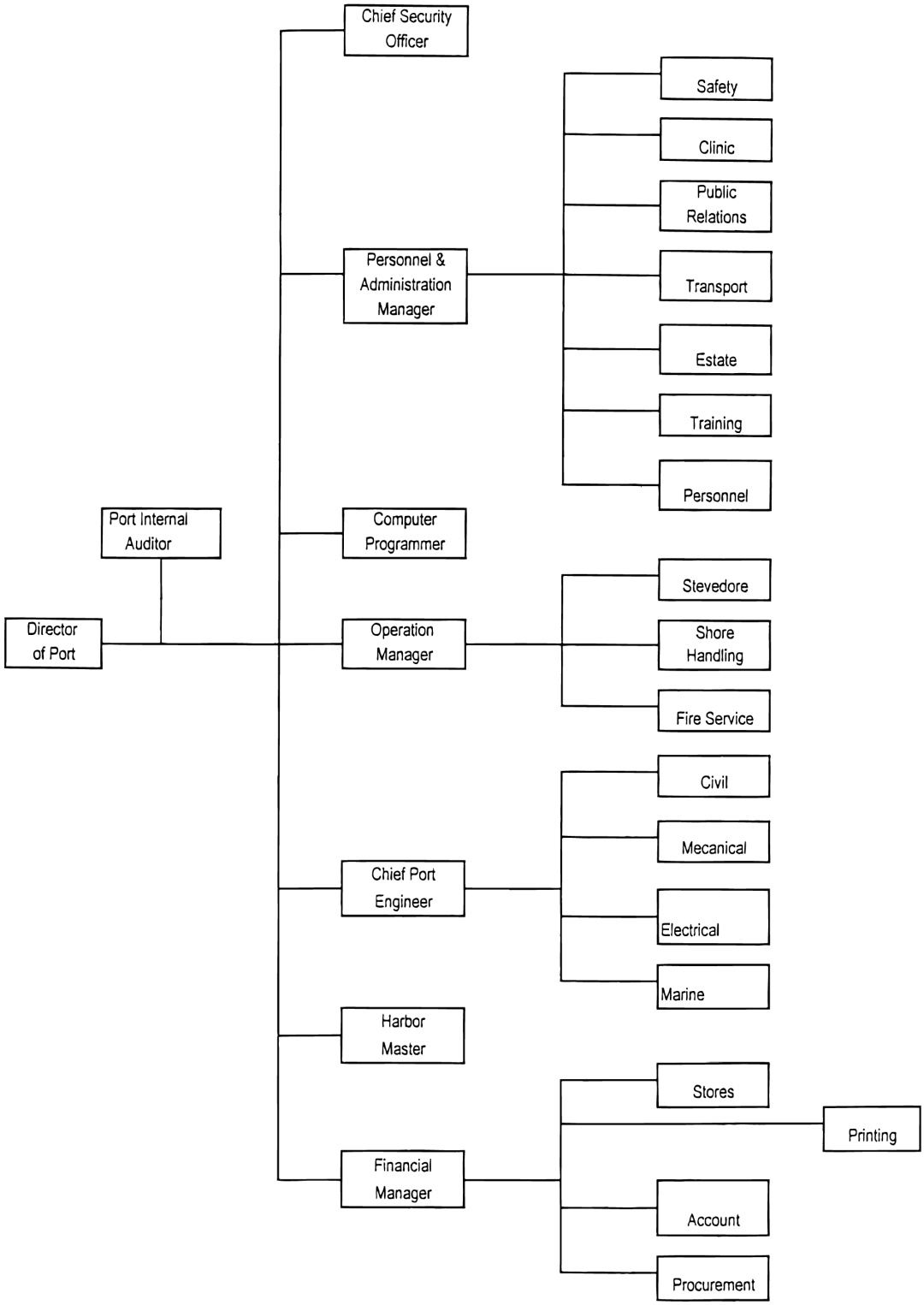
II. TAKORADI

Type of Cargo	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
IMPORTS											
Containers	16%	19%	19%	24%	15%	22%	16%	15%	18%	18%	28%
Dry Bulk	49%	55%	40%	48%	47%	48%	55%	39%	71%	52%	58%
Bagged Cargo	3%	9%	19%	6%	22%	9%	3%	3%	0%	5%	2%
General Cargo	32%	17%	19%	22%	16%	19%	26%	43%	12%	26%	12%
Liquid Bulk	0%	0%	3%	0%	0%	2%	0%	0%	0%	0%	0%
Total Imports	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
EXPORTS											
Containers	0%	0%	8%	15%	10%	9%	7%	11%	27%	38%	41%
Bagged Cargo	23%	22%	32%	23%	24%	21%	16%	9%	12%	22%	17%
General Cargo	5%	2%	1%	1%	1%	1%	0%	0%	0%	0%	0%
Dry Bulk	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Forest Products	72%	75%	58%	60%	64%	68%	77%	80%	61%	38%	39%
Liquid Bulk	0%	0%	0%	0%	0%	1%	0%	0%	0%	2%	2%
Total Exports	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

ORGANIZATION CHART
FOR HEADQUARTERS OF GPHA



ORGANIZATION CHART
FOR HEADQUARTERS OF TEMA



PRODUCTIVITY PERFORMANCE INDICATORS (1988-1997)

PORT OF TEMA	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
A. SHIP TURNROUND TIME										
NO. OF SHIPS CALLED	609	594	769	772		717	656	710	828	618
AVER. HOURS IN PORT	63,5	67,5	64,1	61,0		55,7	50,3	57,7	53,4	72,9
AVER. HOURS AT BERTH	56,9	58,0	54,4	54,6		46,9	44,8	44,1	42,2	55,1
B. SHIP PRODUCTIVITY										
AVER. TONNES IMP/EXPORT	1 802	2 207	2 061	2 146		3 078	3 146	3 640	3 370	3 497
AVER. TONNES PER SHIP WORKING-HOUR	46,0	59,0	61,0	66,6		85,6	94,3	106,5	98,6	90,6
C. LABOUR PRODUCTIVITY										
AVER. TONNES PER GANG-HOUR NET	13,2	18,7	13,2	26,8		38,3	48,7	57,2	59,7	52,0
D. LABOUR										
TOT. NET MAN-HOURS	1 052 812	891 458	909 707	716 230		726 908	604 323	654 294	673 482	563 508
AVER. WORKING HOURS PER DAY	14,7	13,3	12,7	12,7		15,5	15,9	14.2	15,4	12,7
E. BERTH OCCUPANCY (%)										
OCCUPIED	35,8	65,5	71,8	64,1	68,9	73,9	65,1	68,6	61,0	64,7
OCCUPIED WORKING	31,0	22,3	21,8	18,5	22,4	26,5	21,9	26,9	29.5	33,8

PORT OF TAKORADI	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
A. SHIP TURNROUND TIME										
NO. OF SHIPS CALLED	276	261	243	275		335	339	317	331	269
AVER. HOURS IN PORT	101,2	88,4	100,8	94,4		95,7	95,6	65,4	40,1	39,7
AVER. HOURS AT BERTH	92,5	81,4	91,5	84,1		85,6	80,4	58,5	35,6	34,7
B. SHIP PRODUCTIVITY										
AVER. TONNES IMP/EXPORT	1 747	1 809	2 108	2 146		2 532	2 984	2 156	1 841	1 802
AVER. TONNES PER SHIP WORKING-HOUR	22,0	27,0	31,0	32,9		34,3	41,1	40,2	57,3	55,7
C. LABOUR PRODUCTIVITY										
AVER. TONNES PER GANG-HOUR NET	11,3	14,7	17,2	19,3		20,6	21,6	18,2	28,4	34,1
D. LABOUR										
TOT. NET MAN-HOURS	596 420	459 979	396 587	338 940		423 950	479 252	348 894	182 520	127 341
AVER. WORKING HOURS PER DAY	18,9	18,0	16,0	16,6		18,5	18,2	19,7	19,3	19,6
E. BERTH OCCUPANCY (%)										
OCCUPIED	35,8	22,0	20,2	21,5	27,4	30,5	31,0	22,1	14,4	18,8
OCCUPIED WORKING	31,0	21,0	16,5	19,0	21,7	24,3	23,1	17,3	11,2	12,2

PRODUCTIVITY PERFORMANCE INDICATORS (1988-1997)

INDICATOR EVOLUTION: 100 = 1989

PORT OF TEMA	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
A. SHIP TURNROUND TIME										
NO. OF SHIPS CALLED	103	100	129	130		121	110	120	139	104
AVER. HOURS IN PORT	94	100	95	90		83	75	85	79	108
AVER. HOURS AT BERTH	98	100	94	94		81	77	76	73	95
B. SHIP PRODUCTIVITY										
AVER. TONNES IMP/EXPORT	82	100	93	97		139	143	165	153	158
AVER. TONNES PER SHIP WORKING-HOUR	78	100	103	113		145	160	181	167	154
C. LABOUR PRODUCTIVITY										
AVER. TONNES PER GANG-HOUR NET	71	100	71	143		205	260	306	319	278
D. LABOUR										
TOT. NET MAN-HOURS	118	100	102	80		82	68	73	76	63
AVER. WORKING HOURS PER DAY	111	100	95	95		117	120		116	95
E. BERTH OCCUPANCY (%)										
OCCUPIED	55	100	110	98	105	113	99	105	93	99
OCCUPIED WORKING	139	100	98	83	100	119	98	121		152

PORT OF TAKORADI	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
A. SHIP TURNROUND TIME										
NO. OF SHIPS CALLED	106	100	93	105		128	130	121	127	103
AVER. HOURS IN PORT	114	100	114	107		108	108	74	45	45
AVER. HOURS AT BERTH	114	100	112	103		105	99	72	44	43
B. SHIP PRODUCTIVITY										
AVER. TONNES IMP/EXPORT	97	100	117	119		140	165	119	102	100
AVER. TONNES PER SHIP WORKING-HOUR	81	100	115	122		127	152	149	212	206
C. LABOUR PRODUCTIVITY										
AVER. TONNES PER GANG-HOUR NET	77	100	117	131		140	147	124	193	232
D. LABOUR										
TOT. NET MAN-HOURS	130	100	86	74		92	104	76	40	28
AVER. WORKING HOURS PER DAY	105	100	89	92		103	101	109	107	109
E. BERTH OCCUPANCY (%)										
OCCUPIED	163	100	92	98	125	139	141	100	65	85
OCCUPIED WORKING	148	100	79	90	103	116	110	82	53	58

FINANCIAL PERFORMANCE 1989-1995
(AUDITED ACCOUNTS IN M. GHC)

A. REVENUE	1989	1990	1991	1992	1993	1994	1995
Vessel Services	3,707	5,063	6,270	8,144	15,567	20,732	26,144
Vessel Facilities	1,220	2,009	4,299	5,808	9,591	14,158	17,401
Cargo Services	2,629	4,816	4,118	4,863	5,579	5,774	6,655
Cargo Facilities	2,216	2,928	1,279	1,333	2,620	2,344	3,675
Others	0,888	1,833	2,120	4,222	3,044	5,883	6,298
Total revenue	**10,660**	**16,649**	**18,086**	**24,370**	**36,401**	**48,891**	**60,173**
B. OPERATING EXPENDITURE							
Personnel Costs	2,576	3,351	3,739	5,127	8,793	12,723	16,205
Fuel, Power & Water	0,302	0,481	0,720	1,045	1,735	1,749	2,572
Bought-in Maintenance & Materials	0,729	0,725	1,578	1,749	2,135	2,689	4,034
* Administrative Expenses	1,002	1,464	1,127	1,856	2,158	2,659	3,687
Other Operating Costs	0,022	0,046	0,106	0,104	0,146	0,234	0,191
Maintenance Dredging	-	-	-	2,013	-	-	-
Depreciation	1,444	1,847	2,754	3,339	7,100	9,137	15,142
Bad & Doubtful Debts	1,354	0,493	0,564	1,223	1,540	0,392	1,286
Interest & Charges - Loan	0,297	0,295	0,522	2,505	6,953	6,661	6,008
Total Operating Expenses	**7,726**	**8,702**	**11,110**	**18,961**	**30,560**	**36,244**	**49,125**
Profit before Taxation and Exceptional Item	2,952	7,949	7,267	5,409	5,841	12,647	11,050
ADD (LESS)							
Exceptional Item - Exchange difference	-1,247	-0,272	2,642	1,005	6,397	4,811	9,154
LESS : Taxation	1,330	4,590	2,800	2,000	3,200	4,200	5,600
NET PROFIT	0,375	3,087	7,109	4,414	9,038	13,258	14,604

FINANCIAL ASSESSMENT OF PORTS

Operating Income	Price Index Variance*	Revenues Amount M.GHC	Revenues Cedi 1987 M. GHC		GPHA Traffic Variance
			Amount	Variance	
1987		4290	4 290		
1988	0,33	7205	5 401	26%	-8%
1989	0,28	10 660	6 228	15%	7%
1990	0,31	16 649	7 414	19%	13%
1991	0,20	18 086	6 712	-9%	7%
1992	0,11	24 370	8 140	21%	1%
1993	0,25	36 401	9 735	20%	25%
1994	0,29	48 891	10 144	4%	5%
1995	0,43	60 173	8 706	-14%	-0,3%

Costs and Expenses	Operating Expenditure Amount M. GHC	Operating Expenditures M. GHC 1987		Loan Charges M.GHC 1987	Net Operating Expenditures without Loan Charges M. GHC 1987	
		Amount	Variance		Amount	Variance
1987	5784	5784		43	5 741	
1988	6826	5 117	-12%	46	5 070	-12%
1989	7 726	4 514	-12%	174	4 341	-14%
1990	8 702	3 875	-14%	131	3 744	-14%
1991	11 110	4 123	6%	194	3 929	5%
1992	18 961	6 334	54%	837	5 497	40%
1993	30 560	8 173	29%	1 860	6 313	15%
1994	36 244	7 520	-8%	1 382	6 138	-3%
1995	49 125	7 108	-5%	869	6 238	2%

Operating Profit M.GHC 1987	With Loan Charges	Without Loan Charges
1987	-1 494	-1 451
1988	284	331
1989	1 714	1 888
1990	3 539	3 670
1991	2 589	2 783
1992	1 807	2 644
1993	1 562	3 422
1994	2 624	4 006
1995	1 598	2 468

* IMF Statistical Annex

①テマ港（バースＮｏ.1）

②タコラディ港（港湾全景）

③タコラディ港（クレーンと船舶が
OECF事業により調達された）