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STAFF APPRAISAL REPORT

TANZANIA

PORT MODERNIZATION PROJECT II

JANUARY 10, 1990

Infrastructure Operations Division
Southern Africa Department

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CURRENCY EQUIVALENTS
(as of November 30, 1989)

Currency Unit = Tanzanian Shilling
TSh 1.0 = US\$0.005
US\$1.0 = TSh 190
US\$1.0 = 0.7792
SDR 1.0 = 1.28336

WEIGHTS AND MEASURES

1 meter (m) = 3.28 feet (ft)
1 kilometer (km) = 0.62 miles (mi)
1 metric ton (tonnes) = 1.02 short tons

ABBREVIATIONS AND ACRONYMS

| | | |
|---------|---|---|
| ATC | = | Air Tanzania Corporation |
| DANIDA | = | Danish International Development Agency |
| DCA | = | Development Credit Agreement |
| EEC | = | European Economic Community |
| ERP | = | Economic Recovery Program |
| ERR | = | Economic Rate of Return |
| FINNIDA | = | Finnish International Development Agency |
| GDP | = | Gross Domestic Product |
| GOT | = | Government of Tanzania |
| ICD | = | Inland Container Depot |
| IMO | = | International Maritime Organization |
| KOJ | = | Kurasini Oil Jetty |
| MCW | = | Ministry of Communications and Works |
| MOF | = | Ministry of Finance |
| NORAD | = | Norwegian Agency For Development Cooperation |
| NTC | = | National Transport Corporation |
| ODA | = | Overseas Development Administration (U.K.) |
| OGL | = | Open General License Facility |
| PCU | = | Project Coordination Unit |
| RETCO | = | Regional Transport Corporation |
| RO/RO | = | Roll-on/Roll-off Vessel |
| RSA | = | Republic of South Africa |
| RTG | = | Rubber Tired Gantry Crane |
| SADCC | = | Southern Africa Development Coordination Conference |
| SATCC | = | Southern Africa Transport and Communications Commission |
| SIDA | = | Swedish International Development Authority |
| SSG | = | Ship-to-Shore Gantry Crane |
| TAC | = | Tanzania Audit Corporation |
| TANPRO | = | Tanzania Trade Facilitation Council |
| TA/T | = | Technical Assistance and Training |
| TANZAM | = | Tanzania-Zambia Highway |
| TAZARA | = | Tanzania-Zambia Railways Authority |
| TEU | = | Twenty Foot Equivalent Unit (Container Size) |
| THA | = | Tanzania Harbours Authority |
| TRC | = | Tanzania Railways Corporation |
| UNCTAD | = | United Nations Conference on Trade and Development |
| ZBR | = | Zaire, Burundi and Rwanda |

FISCAL YEAR

July 1 to June 30

UNITED REPUBLIC OF TANZANIAPORT MODERNIZATION PROJECT IISTAFF APPRAISAL REPORTTABLE OF CONTENTS

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DOCUMENTS IN THE PROJECT FILE

1. Joint Donor Port Mid-Term Review (May 1988 - Executive Summary, Main Report and six annexes);
2. February 1989 THA Donors' Conference Document;
3. Interim Report: SATCC Project No. 3.7.? Study of the Capacity of the Port of Dar es Salaam (January 1989);
4. The Effects of South Africa Border Closure on the Demand for Transit Transport from the Southern African Land-Locked Countries with Particular Reference to the Port of Dar es Salaam (UNCTAD, December 1988);
5. Detailed Engineering of the Container Terminal Expansion;
6. Dar es Salaam Port Development: Final Report on Technical Assistance for Port Operations (Phase I) - March 1987 by SWEDPORT for THA and SIDA;
7. Container Terminal: Project Continuation 1990-1993 - June 1989 by Roads and Water Administration of Finland for THA and FINNIDA;
8. Project Document for Finnish Contribution to Dar es Salaam Port Development - January 1989 by Roads and Water Administration of Finland for THA and FINNIDA;
9. Supporting Analysis for Economic Evaluation.

DOCUMENTS AND STUDIES RELEVANT TO THE PROJECT

1. Tanzania: Public Expenditure Review (Gray Cover Rpt. No. 7559-TA), May 22, 1989;
2. Tanzania: Financial Performance of the Public Transport Sector (Green Cover Rpt. No. 7610-TA), January 31, 1988;
3. Tanzania: Programme for Transport Sector Recovery: Report Prepared by the Government of Tanzania for the Transport Sector Donors' Conference. Arusha, Tanzania, December 1987.

TANZANIA

PORT MODERNIZATION PROJECT II

CREDIT AND PROJECT SUMMARY

Borrower: United Republic of Tanzania

Beneficiary: Tanzania Harbours Authority and the Customs Department of the Ministry of Finance

Credit Amount: SDR 28.9 million (US\$37.0 million equivalent)

Credit Terms: Standard, with 40 years maturity

Project Description: The main objective of the project is to expand the physical, managerial and operational capabilities of the Tanzania Harbours Authority (THA) to meet the traffic volume expected in the 1990s. The project will also provide a more reliable and cost effective transport link for neighboring landlocked countries, thus facilitating their overseas trade activities. The project includes: (i) civil works to expand the port container terminal by 200%, complete the Ubungo and Kurasini inland container depots, pave the lighterage wharf for container storage, construct a port access road, complete the second phase of general cargo terminal rehabilitation and repair concrete piles and fenders; (ii) rehabilitation of the port's central workshop and provision of technical assistance for training of mechanics; (iii) procurement of container and general cargo handling equipment; (iv) management assistance and training for middle and upper management; (v) technical assistance to Customs to introduce a simplified documentation process, computerize customs processing and train customs officers; (vi) addition of a technical assistance and training coordinator to the Project Coordination Unit; (vii) a development study to review the options for future port capacity expansion, including a study of the possible privatization of certain port activities; and (viii) consulting services for supervision of civil works and detailed engineering.

Project Benefits and Risks: The project will benefit the entire economy of Tanzania and its landlocked neighbors, through lower prices on a wide variety of imported products and through increased exports brought about by more competitive export prices. Additionally, the introduction of a Corporate Financial Strategy will enhance THA's position as the second largest foreign exchange earner in the country, and also make it the first Tanzanian parastatal in recent years to provide a significant contribution to the general revenue of the country and introduce a performance based bonus scheme to provide greater incentives to its workers. Possible risks include: (i) lower than expected

traffic growth; and (ii) higher than targeted dwell time for containers. The first risk is minimal. Conservative assumptions have been used for traffic forecasts, and growth of just over one-half of the projected rate would still justify the investment. If the targets for container dwell time are not met, the port will, again, experience severe congestion by mid-1990s. However, THA has already begun coordination of involved parties to actively pursue policies which aim to reduce dwell time. These activities will be supported by the project, in particular by providing technical expertise and training for customs to speed up document processing and improve its operating practices.

Economic Rate of Return: 20%

Financial Rate of Return: 14%

Staff Appraisal Report: No. 8149-TA

Map: IBRD Nos. 21936 and 21937

| <u>Estimated Cost:</u> | <u>Local</u> | <u>Foreign</u> | <u>Total</u> |
|----------------------------------|---------------------|---------------------|---------------------|
| | <u>US\$ Million</u> | | |
| Port Container Terminal & Depots | 4.3 | 12.7 | 17.0 |
| Copper Road | 0.6 | 0.9 | 1.5 |
| Berths 9, 10, 11 | 1.1 | 3.2 | 4.2 |
| Lighterage Wharf Rehabilitation | 0.9 | 2.6 | 3.5 |
| Belgian Wharf Rehabilitation | 0.4 | 1.1 | 1.5 |
| Port Central Workshop | 0.3 | 0.4 | 0.7 |
| Kurasini Oil Jetty | 1.4 | 7.6 | 9.0 |
| Berths 1-8 Rehabilitation | 3.5 | 9.5 | 13.0 |
| General Cargo Equipment | 0.0 | 4.0 | 4.0 |
| Container Handling Equipment | 0.0 | 15.2 | 15.2 |
| Office Equipment | 0.0 | 1.0 | 1.0 |
| Central Workshop Equipment | 0.0 | 2.0 | 2.0 |
| Design and Supervision | 0.6 | 2.7 | 3.3 |
| Port Development Study | 0.2 | 0.8 | 1.0 |
| Workshop Study | 0.0 | 0.2 | 0.2 |
| Technical Assistance | <u>3.8</u> | <u>15.2</u> | <u>19.0</u> |
| Total Base Cost | 17.0 | 79.1 | 96.1 |
| Physical Contingencies | 1.5 | 5.8 | 7.3 |
| Price Contingencies | <u>3.3</u> | <u>15.6</u> | <u>18.9</u> |
| TOTAL COST | <u>21.8</u> | <u>100.5</u> | <u>122.3</u> |

Financing Plan:

| | | | |
|--------------|--------------------|---------------------|---------------------|
| IDA | 0.5 | 36.5 | 37.0 |
| FINNIDA | - | 17.9 | 17.9 |
| DANIDA | - | 4.2 | 4.2 |
| NORAD | - | 11.5 | 11.5 |
| Netherlands | - | 5.4 | 5.4 |
| SIDA | - | 17.5 | 17.5 |
| THA | <u>21.3</u> | <u>7.5</u> | <u>28.8</u> |
| TOTAL | <u>21.8</u> | <u>100.5</u> | <u>122.3</u> |

Estimated Disbursement of IDA Credit:

| IDA FY: | <u>91</u> | <u>92</u> | <u>93</u> | <u>94</u> | <u>95</u> | <u>96</u> | <u>97</u> |
|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Annual | 1.2 | 6.4 | 10.7 | 7.6 | 5.2 | 4.7 | 1.2 |
| Cumulative | 1.2 | 7.6 | 18.3 | 25.9 | 31.1 | 35.8 | 37.0 |

TANZANIA

PORT MODERNIZATION PROJECT II

I. TRANSPORT SECTOR DEVELOPMENT STRATEGY

A. Introduction

1.01. In 1967, Tanzania's leadership introduced sweeping economic and social changes and embarked on an era of socialism. The new priorities of the country, as enunciated in the Arusha Declaration, were directed towards self-reliance, development of a system of basic education, and broad-based rural development. The public sector was viewed as the vanguard of development, with public expenditure as the principal means of transforming the economy. This led, in the late 1960s and early 1970s, to a rapid growth in the public sector through: (a) the nationalization of large scale industries and the financial system, the formation of Ujamaa (communal) villages, and the replacement of farmers' cooperatives with state-run crop marketing authorities; (b) dramatic increases in the provision of social services; and (c) expansion of centrally managed activities.

1.02. By the end of the 1970s, the economy was faltering: industrial output had begun to decline, agriculture was stagnating, while the fiscal situation deteriorated sharply with deficits averaging about 16% of Gross Domestic Product (GDP). In agriculture, parastatal marketing monopolies dampened incentives for farm output growth, and involuntary resettlement disrupted productive relationships in rural areas. In industry, inappropriate project designs and a heavily protective environment resulted in an import dependent sector with, in many instances, an inefficient production structure. By this time, it was clear that the Government was no longer capable of financing the extensive services which it had committed to delivering, and the poor performance of many Government agencies constituted a bottleneck to economic recovery.

1.03. The 1984/85 Budget represented a turning point, and provided the first indication of a new pragmatism in the Government's economic management. The Tanzanian Shilling (TSh) was devalued by one-third, parastatal subsidies were cut, an import liberalization program was initiated through the implementation of an "own-funds imports program", and restrictions on the movement of grain were eased. Positive responses to these measures encouraged the Government to consider a more comprehensive and systematic policy reform program to deal with the economic crisis, and to mobilize external support to bridge the expected financing gap. In 1986 the Government launched the Economic Recovery Program (ERP). The measures initiated at the time included: (a) significant exchange rate adjustments, moving towards an equilibrium rate; (b) adjustments in interest rates, aimed at achieving real positive rates; (c) increases in producer prices in real terms for export crops; and (d) significant reduction in the number of price-controlled items. These actions were followed up with (a) trade liberalization measures including export retention schemes and the Open General License Facility (OGL); (b) gradual dismantling of administrative controls over prices and distribution; and (c) progressive devaluation of the currency. The economic response to these reforms was positive, with GDP growing at between 4

and 5% p.a., sufficient to enable per capita income and consumption to rise for the first time in several years. Agricultural production, helped by good weather and stronger price signals, has increased substantially over the past two years. Similarly, manufactured and other non-traditional exports, have increased by nearly 60% over the same period.

1.04. Unfortunately, although not unexpectedly, the recovery and the strong jump in the level of economic activities have exposed how much the basic services and infrastructure have deteriorated over the past decade and a half of economic decline. The banking system, with the majority of its funds tied up in non-performing loans to the Government and parastatals, is essentially bankrupt and is incapable of providing fresh capital for new investments. Farmers responding to strong price signals have seen their efforts frustrated by inadequate processing facilities and marketing rigidities. Movement of goods and people throughout the country is at a virtual standstill due to severe deterioration in the country's transport network. These and other factors have made it difficult for the country to capitalize fully on the liberalization policy adopted by the Government under the ERP. It is remarkable that, despite these difficulties, the economy has still responded strongly to the liberalization and adjustment efforts of the Government. How long such recovery can be sustained depends heavily upon fundamental changes in the role of Government and how quickly some of the physical and institutional issues can be addressed and rectified. The challenge for policymakers in the next stage of the recovery process is to address effectively the problems of the public sector, to lift the burden of poorly performing state enterprises off the economy, to continue the shift from direct controls on economic activity to indirect levers working through macroeconomic policy and the price system, to remove Government from businesses that can be effectively and commercially delivered by the private sector, and to improve the effectiveness of Government programs in areas such as physical and social infrastructure where the state is the main provider.

B. Current State of the Transport Sector

1.05. A well functioning transport system is crucial to the sustained economic recovery of Tanzania. The main linkages between transport and economic recovery are evident in four key areas: (a) the size of the country, its structure of production and its population distribution; (b) the cost to the economy of an unreliable, deteriorated network; (c) the fiscal implications of inefficient transport operations; and (d) the sector's importance as a major foreign exchange earner.

1.06. First, the pattern of settlement and economic activity in the country gives transportation an extraordinarily strategic role in economic development. Tanzania has a large territory (slightly smaller than France and Spain combined) with a widely dispersed population, mainly around its geographic periphery. Agriculture, accounting for 54% of GDP, is dominated by smallholders scattered in small rural communities, while the major markets and the processing and collection centers for crops, as well as the distribution points for agricultural inputs and fuel, are concentrated in urban centers located at considerable distances from each other and from the major coastal seaport of Dar es Salaam. Exports are dominated by primary agricultural commodities of high bulk but low

value. Growth in agricultural output, which will constitute the primary basis for growth in the economy for the foreseeable future, is predicated on the transport system being able to integrate efficiently the rural communities with the urban centers and facilitate reliable and cost-effective transport of export crops from the major collection points to the port of Dar es Salaam. These two roles have not been effectively performed by the transport system and, as discussed in the next paragraph, the cost to the economy has been enormous.

1.07. Second, Tanzania's road infrastructure, which is crucial to the linkage of rural communities to the urban areas, has deteriorated markedly over the last decade and a half and its coverage of rural areas is limited even by regional standards. The state of the roads, 70% of which are impassable or unmaintainable, imposes significant penalties on agricultural activity through its effect on vehicle operating costs, delayed evacuation and damage to crops. Losses imposed on the economy through higher vehicle costs alone are estimated at up to US\$150 million p.a., equivalent to about one-third of the country's export earnings. Tanzania's domestic railway system, which is strategically located to serve most of the major urban centers, has been unable to meet the demand for low-cost, long-distance transport of export crops and of critical inputs such as oil and fertilizer in recent years, due to its poor operational performance. As a consequence, significant stockpiles of cotton - one of Tanzania's major export crops - for which road transport is inappropriate on competitive grounds, have built up over the last few years and a significant proportion of the other export traffic, as well as bulk inputs, have been diverted to roads. The total cost to the economy of stockholding and diversion of traffic that an effectively performing railway would have been able to handle is of the order of US\$40 million p.a. For the ports, the long dwell time of containers, caused by the inefficiency of operations as well as cumbersome customs procedures to clear the cargo, costs the economy about US\$10 million p.a. in working capital costs and demurrage charges (assuming excess dwell time is 20 days per imported container). Based on these calculations, it is conceivable that the economy is losing nearly US\$200 million p.a. in direct economic costs due to the deteriorated transport infrastructure and its inefficient operation. If the indirect costs such as loss of crop, theft, loss of export market, spoilage, etc, due to the current transport problems are taken into consideration, it would be difficult, if not impossible, to see how Tanzanian goods could be competitive in the world market, or how the cost of living could be held down. Without significant rehabilitation and actions to restructure the modes of operation and maintenance of the roads and railways, these costs and physical impediments will constitute a major barrier to sustained economic recovery.

1.08. Third, Tanzania's transport system is characterized by a significant degree of public sector participation. The transport parastatals' financial performance has deteriorated substantially in the last decade with most of them making losses or generating low returns on their assets as a result of inefficient utilization of capacity, high fixed costs and sub-economic prices. In 1987, the combined losses of the transport parastatals amounted to US\$55 million. Government budgetary support of the transport parastatals' cash flow shortfall is small, as most of it is financed by short-term borrowings from the state-owned financial system or deferred payments to suppliers. Although not directly affecting the level of the Government's current account deficit, this

mode of financing has significant and adverse implications on current levels of domestic credit creation and the future level of Government budgetary support to restructure unsustainable levels of short-term indebtedness to the banking system and suppliers. Addressing the underlying causes of the parastatals' poor financial performance will contribute to the maintenance of a sound macroeconomic climate, which is a key basis for the incentive structures set in place by the ERP. In order to address and reverse the deterioration of the road network, the Government will need to increase significantly the budgetary allocation to road maintenance and rehabilitation. This will require a substantial but attainable turnaround in the performance of the parastatal transport sector to ensure that the task is accomplished without increasing the overall claims of the sector on Government revenues.

1.09. Finally, the transport sector has an important role to play in the generation of additional sources of foreign exchange for the country. Tanzania offers the intrinsically lowest cost route to a seaport for Zambia, Rwanda, and Burundi, largely because of the possibility of using the railways network for most of the distance; and is an important alternative route for the transport of Uganda's, Malawi's and eastern Zaire's foreign trade traffic, allowing them to diversify their use of transport corridors. However, this potential has never been fully tapped, largely because the cost advantages have been significantly outweighed by the inefficiencies of the roads and railways leading to extensive detention of traffic in transit. Improvements in the service reliability of the railways and the operating capacity of the port of Dar es Salaam and a generally more commercial orientation of financial management would allow Tanzania to increase its net foreign currency earnings from the transport sector. Currently, the port subsector is the second largest foreign exchange earner in the country after coffee, earning more than US\$36 million p.a. Potentially, the transport sector could earn a total of between US\$55 and 75 million p.a. (equivalent to about 12-18% of total export earnings) in foreign exchange if the system were operated more effectively.

C. Government Objectives and Policy in the Sector

1.10. Given the critical state of the transport sector, the Government called a Transport Sector Donors' Conference in December 1987 in Arusha. At the Conference, a draft National Transport Policy document was presented along with a Conference document entitled "Programme for Transport Sector Recovery" which outlined the basic policy, institutional changes and rehabilitation requirements of the sector in order to reestablish the transport infrastructure and services to cater to the requirements of the economy. As enunciated at the Conference, the basic objective of the Government in the transport sector is to generate immediate improvements in the supply of transport services in the first instance, followed by a more sustained growth in the capacity and the volume of services commensurate with the expansion taking place under ERP. As outlined in the Conference document, sustained improvement in the delivery of transport services will require major effort and change in the way transport has been managed in the past. The basic reforms needed in the sector are outlined below:

- (i) deteriorated infrastructure requires a major shift in public expenditure towards the transport sector, particularly for the road

network. Over the past decade and a half, there has been a precipitous drop in the funds allocated for recurrent and development funding for the sector. Tanzania spent, on average, only 7% of its total public expenditures on transport, where 15 to 25% is normal for countries with far better maintained transport networks;

- (ii) a more flexible and dynamic response to road infrastructure development requires a major institutional change to move away from the existing highly centralized administrative system to a more decentralized system with greater delegation of authority;
- (iii) to improve the financial and operational efficiency of transport parastatals, commercially oriented pricing and management must be adopted by all entities, including cost-based tariff setting (taking into consideration proper depreciation of assets), bonus/incentive schemes to reward good performance, and rigorous cost control systems. The enunciated policy of the Government is for all parastatals to generate at least an operating surplus;
- (iv) similar to the financial objectives for parastatals, cost recovery for the road sector must be improved, i.e. the revenues generated from the road sector should cover at least the recurrent and periodic road maintenance cost;
- (v) to improve provision of road transport services, all administered tariffs for trucking and passenger transport sector should be removed;
- (vi) to develop the local capacity in the transport sector more vigorously, private sector development should be promoted in the areas of civil works, engineering consultancy, mechanical services, truck and passenger transportation, and air charters; and
- (vii) to promote regional integration, customs procedures and transit arrangements should be simplified to improve the ease with which transit cargo can pass through Tanzania.

D. Strategy for Transport Sector Recovery

1.11. To the Government's credit, and owing to its willingness to undertake major reforms in the transport sector, the donor community responded positively to the recovery program presented at the Transport Sector Donors' Conference. In partnership with the Bank, the Government has formulated three major programs to address the shortcomings of the transport sector: (a) a proposed Integrated Roads Project (FY90); (b) a proposed Port Modernization Project II (FY90); and (c) a proposed Railway Restructuring Project (FY91). With the majority of required financing secured, the investments in the transport sector, supported by Bank Group operations, will total about US\$1,230 million over the next eight to ten years. The largest allocation is for the roads sector with US\$935 million, followed by railways with US\$200 million and US\$96 million for the port sector. The magnitude of investment foreseen is consistent with the

recommendation of the Public Expenditure Review (May 1989 Report No. 7558-TA), which suggests a major shift of public funds to the transport sector, increasing to over 20% of the total development budget expenditure. The following sections outline the general strategy of development for each of the subsectors as formulated in the proposed projects.

1.12. **Roads.** The deterioration of the roads network has been caused primarily by: (a) inadequate funding for road maintenance and diversion of scarce funds to non-priority investments; (b) an inefficient institutional structure which has three ministries and over 100 entities involved in road administration; (c) a highly centralized and bureaucratic procurement and administrative decision making process which stifles effective execution of programs; and (d) inadequate technical capacity to carry out maintenance and manage contracts. Efforts to install trunk road maintenance capacity under the Fourth and Fifth Highway Projects (Cr. 507-TA and 876-TA) failed to develop any improvements in road conditions, and road rehabilitation under the on-going Sixth Highway Project has been extremely slow in starting, mainly because of the institutional weakness of the Ministry of Communications and Works (MCW) and the protracted procurement process caused by outdated government regulations.

1.13. The Government has recognized that a major restructuring of roads administration is necessary if the road network is to be in good condition to serve its economic purposes. The primary objective of the Government in the subsector is to restore the country's essential roads and to develop institutional capacity in MCW for their maintenance. The physical targets are to restore the trunk road network to 70% in good condition by the mid-1990s and the regional roads network to a similar condition by the year 2000. The institutional objective will be to transform MCW from a basically "blue collar" construction oriented ministry to a "white collar" administration/management oriented ministry, with executive authority being delegated to MCW's 20 Regional Engineer's Offices (REOs) for implementing road programs and maintenance.

1.14. The proposed Integrated Roads Project (FY90) is the vehicle through which the above noted objectives will be pursued. The following key actions would be implemented under the proposed project: (a) road administration would be reorganized to bring all roads essential to supporting the agricultural sector under MCW; (b) funding for maintenance of trunk and regional roads would be increased substantially, commensurate with full requirements; and (c) MCW operations would be decentralized by providing greater executive authority to its regional offices. Concurrently, greater participation of the domestic construction industry in road rehabilitation and maintenance would be encouraged through expanding the training of local contractors initiated under the Sixth Highway Project, and by limiting the growth of the Government's own force account activities. The donor community is responding by pledging large funding levels for road rehabilitation and by supporting the decentralization of road management through direct assistance to the newly-created REOs. Already, the Government has appointed a new Minister and Principal Secretary to inject leadership into MCW, and has significantly increased MCW's road maintenance budget for FY1990. The reorganization of road administration is being implemented, and a draft National Construction Industry Policy, which will, inter alia, promote private sector participation in road maintenance, is expected to be passed by the Government shortly (condition of Credit effectiveness for the proposed Integrated

Roads Project).

1.15. Road Transport. The trucking sector plays a major role in the domestic transport industry, carrying nearly 70% of the estimated 2.5 billion tonne-km of freight movement within Tanzania. The existing fleet size is estimated to be about 14,000 trucks (over three-tonne capacity), of which 78% is owned by the private sector, 4% by the 12 Regional Transport Corporations (RETCOs) and 18% by other public sector organizations (marketing boards, cooperatives, etc.). The main feature until 1984 was a chronic shortage of replacement vehicles, spare parts, fuel and tires. Consequently, the vehicles were aged with a very low availability rate. Fleet replacement was only about 4% p.a., inadequate under Tanzanian conditions, when over 15% would be optimal because of the poor road conditions. Freight movement by road appears to have declined by at least 2% p.a. since the mid-1970s, but as the overall level of economic activity had stagnated, this did not result in persistent or widespread capacity shortage. Between 1985 and 1988, the situation changed dramatically with the revitalization of economic activity under the ERP. Since the introduction of the "own-funds imports program" and donor assistance for the import support program, the sector is in the process of being revitalized to cater to the rapidly expanding demand. The sector, however, continues to experience major problems in meeting the rapidly growing agricultural production and the economic activities in the rural areas. Administratively, the Government, realizing the distortional impact of tight administrative controls, has eliminated essentially all barriers to market entry and administratively-set tariffs. The trucking business is now on an upswing, but will continue to require external assistance for procurement of spare parts and replacement trucks. The magnitude of the annual foreign exchange requirement is of the order of US\$80 million.

1.16. Railways. In the railways subsector, the Tanzania Zambia Railways Authority (TAZARA) operates a service that is principally dedicated to Zambian transit traffic, although it is increasingly catering to local traffic in the southern part of Tanzania. The performance of TAZARA in terms of freight transported has been good in spite of serious constraints on the availability of its locomotive fleet. However, cost recovery is poor and TAZARA has been unable to meet its debt-service obligations from its cash generation thereby necessitating a recent restructuring of its capital structure. TAZARA has formulated a well-designed investment program to address the constraints on efficient operations which has attracted considerable donor support. The effective haul capacity of the Tanzania Railways Corporation (TRC) -- which serves the central and northern parts of the country as well as transit traffic from Burundi, Rwanda, Zaire and Uganda -- has declined progressively from about 1.0 million tonnes of freight in the first year of its establishment in 1978 to 0.9 million tonnes in 1989, despite considerable additions to its asset base in the intervening years. This decline has proved particularly serious in the last three years with the pronounced upsurge in domestic agricultural production and increased diversion of transit traffic from other littoral countries to Tanzania. The decline in traffic moved has reflected (a) the poor availability of TRC's assets as a result of limited access to spare parts, deficient maintenance systems and skilled staff shortages; and (b) the poor utilization of assets when made available caused largely by ineffective management of operations and the unreliable condition of operational and infrastructural assets. The chronic

underutilization of assets by TRC coupled with regulatory restrictions on its ability to adjust its tariffs in line with costs or to control the large labor component of its costs, has led to a worsening financial performance and a massive erosion of its financial position. As a commercial enterprise, TRC is currently a financially bankrupt entity. An Emergency Recovery Program for TRC (EP) was launched in 1987 with financing from the Bank and donors to stem and reverse the deterioration in TRC's performance. The program, which is being implemented, has so far succeeded in stabilizing TRC's performance. The Railways Restructuring Project (FY91) currently under preparation, will address the restructuring of TRC's organization and operating practices and systems, the changes in the system of Government regulation of TRC and the investment requirements that are necessary to enable it to cater fully and profitably to the underlying demand for freight transport by rail.

1.17 Ports. The port of Dar es Salaam is a major regional port serving the neighboring landlocked countries of Zambia, Malawi, Burundi, Rwanda, Uganda, and Zaire. The port throughput is the second largest on the eastern coast of Africa after the port of Mombasa, and is the second largest earner of foreign exchange in Tanzania after coffee. International traffic constitutes nearly 60% of the total traffic throughput, and the efficiency and cost effectiveness of port operations is of paramount importance to its users. In order to modernize the port of Dar es Salaam, a major program was started in 1984 under the Tanzania Port Rehabilitation Project (Cr. 1536-0-TA). The project aimed to (ia) expand the container handling capacity of the port to meet the rapidly increasing containerized traffic; (b) rehabilitate the general cargo berths; (c) improve equipment maintenance; and (d) improve the management and skills level of the Tanzania Harbours Authority (THA). Since 1984, the traffic volume, which had fallen continuously since the mid-1970s, began to recover at a rate of nearly 7% p.a. During the same period, THA's operating efficiency also showed gradual improvements. However, it has become evident in the past two years that serious bottlenecks have begun to develop. First, physically (and perhaps most seriously), the capacity of the newly constructed container terminal is inadequate, with the demand already exceeding technical storage capacity by over 40%. The second phase of terminal expansion must be started immediately if a major disruption in traffic movement is to be avoided. Second, institutionally, inefficient customs procedures, inter alia, have contributed to the excessive congestion in the container terminal through an unacceptably high dwell time of containers in the port. Third, managerially, a shortage of trained middle management and skilled workers continues to make management and operation of the port difficult. Better use of technical assistance and a more systematized management information system is required to improve management of operations. Fourth, operationally, equipment maintenance continues to be a major problem, especially with regard to the availability of dry cargo handling equipment. Fifth, financial management could be further improved to expand the profitability of port operations. And finally, a better incentive scheme is required to improve output.

1.18 The capacity shortage of the container terminal is of a very serious and imminent nature, requiring immediate action. The proposed Port Modernization Project II (this project) was prepared by THA, the Bank and donors to address the outstanding issues noted above. The project, with an estimated cost of US\$122 million, will: (a) execute the second phase container terminal expansion

to handle 2.4 million tonnes annually (200% expansion in terminal capacity); (b) change the financial management of THA in order to allow THA to (a) repay to the Government all debts incurred in the past, including grants and (b) introduce an incentive/bonus scheme for workers funded from its own profits; (c) improve equipment availability; and (d) improve customs processing through adoption of simplified documentation and training for the customs officers. Given the structure of the project, if successfully implemented, THA would be in a position to move expeditiously all cargo on demand, contribute between US\$25 and 50 million p.a. to the general revenues of the Government, continue to be one of the largest earners of foreign exchange in the country (between US\$30 and 40 million p.a.), and provide an incentive/bonus scheme of up to 100% of existing salaries to its workers which would improve morale and productivity. Details of the project are provided in Chapter III.

1.19 Civil Aviation. Given the substantial distance between major population centers, aviation is an important means of transport in the country. The available seat kilometers on Air Tanzania Corporation (ATC), the sole provider of scheduled domestic services, has grown at an average of 16% p.a. from about 83 million in 1977 to about 363 million in 1987. The demand for ATC's services is high with an average passenger load factor of 76% on all routes and 83% in the domestic market, often resulting in a high turnaway rate for customers. Despite this favorable demand for its services, ATC's financial performance has been characterized by growing deficits: in 1986 its operating deficit amounted to TSh 583 million (about US\$17.8 million equivalent). ATC faces perennial problems in acquiring minimum access to spare parts due to its inability to generate sufficient foreign exchange to finance its own recurrent requirements; it also has constraints on fleet utilization due to lack of proper facilities (e.g. lack of night-landing facilities and poor maintenance of runways). Furthermore, ATC is unable to train its staff properly due to lack of foreign exchange for training abroad. Given these conditions, a systematic assessment of ATC was carried out under a general civil aviation sector study funded by the Irish Trust Fund, and an issues-oriented report "Air Tanzania Corporation - Strategic Evaluation and Corporate Restructuring" carried out by the Bank (Report No. 7618-TA Green Cover - April 1989), set a suitable strategy for the sector both in terms of improvements to the financial performance of ATC, improved cost recovery in the civil aviation sector in general, and a least cost strategy to meet the apparent unsatisfied demand in air travel.

1.20 In order to rectify the situation and to implement the recommendations contained in the restructuring study, ATC has: (a) increased fares by 100-150%; (b) streamlined its operations through reorganization and staff reduction; and (c) stopped operations on several uneconomic routes. Overall, with the actions being taken, ATC is expected to cover its operating cost by 1991. However, ATC has not as yet decided to implement a sale-leaseback strategy for its current fleet of Boeings and Fokkers; nor has the Government decided to inject funds into the airline. One of these actions is mandatory if ATC is to repay its current indebtedness (including to suppliers). In order to assist ATC with management assistance and training, funds have been allocated under the proposed Integrated Roads Project for use by ATC, as long as the key recommendations of the Restructuring study have been implemented by negotiations.

E. Resource Mobilization and Cost Recovery in the Transport Sector

1.21. As a follow-up to the Public Expenditure Review carried out in November 1987, a Bank study on revenue collection and funding needs in the transport sector was undertaken and presented to the Government in September 1988. The objective of the study was to investigate (a) how the transport sector, as a whole, including parastatals, was performing financially, and (b) how the increased requirements for the roads sector could be financed. In essence, to finance the massive rehabilitation program and the necessary increase in the road maintenance budget, Tanzania needs to increase its budget allocation for trunk and regional roads from the present 7% of total public expenditure to about 21% at a stabilized level.

1.22. The study concludes that the overall revenue collected by the Government through road user charges and charges on civil aviation activities was TSh 4.9 billion (US\$94.8 million equivalent) in 1986/87, accounting for about 15% of the Government's total current revenue. On the other hand, the overall expenditure for the road and civil aviation sector amounted to TSh 2.5 billion (US\$48.4 million equivalent), with a net contribution to general tax revenue of TSh 2.4 billion (US\$46.4 million equivalent). This contribution is roughly the same as the total revenue raised from import duties in the same year and is equivalent in size to about 26% of the Government's current account deficit. The net contribution made through the road user charges has, however, been negated by the overall deficit of the public transport enterprises which amounted to about TSh 2.8 billion (US\$54.2 million equivalent). The existing financial status of the transport sector, therefore, cannot accommodate the need to increase the annual maintenance requirement from the current level of US\$11 million to US\$40 million, without adversely affecting resource allocation to other sectors.

1.23. The study, however, also concludes that the financial control of road user revenue collection and road expenditures is weak and the tax structure is too complicated for it to be effectively administered. The study estimates that due to administrative weaknesses, about 40% of the potential revenue is either not collected or never reaches the Treasury. It recommends that financial controls be strengthened, the structure of taxes be simplified and the present road toll tax rates be replaced by a tax on motor vehicle fuels which would raise their prices by 1.6% in real terms. Since fuel prices in Tanzania are significantly lower than those in neighboring countries (particularly Kenya), which encourages smuggling that leads to a drain on foreign exchange, it is also suggested that fuel prices additionally be raised by 7.5% p.a. in real terms for each of the next four years. The aim of the tax would be to mobilize extra revenues to support road maintenance and rehabilitation. Implementation of this program would allow the increases in road expenditures to be met. Revenue would rise under the proposed program to US\$127 million p.a. to enable the road sub-sector to continue making a substantial contribution to the general Government revenue.

1.24. An overall strategy for improving financial performance will require: (a) institutional arrangements which provide incentives for revenue mobilization and controlling costs (roads and civil aviation); (b) financial controls which foster a commercial outlook and facilitate timely decisions on important financial matters (in relation to MCW's control of road expenditures and management of public transport enterprises); (c) a framework of financial and performance targets which promotes market discipline and encourages optimum use of existing assets; (d) introduction of appropriate monitoring mechanisms to ensure that sector agencies meet established performance targets; and (e) selection of appropriate price and fiscal instruments which discourage avoidance/evasion and minimize leakages. The Government is currently reviewing the various options open to it to generate sufficient revenues to finance the massive increase in public funding for road maintenance and rehabilitation. In addition to the above-mentioned study, a specific study of petroleum pricing is being undertaken in connection with the preparation of the proposed Petroleum Sector Rehabilitation Project (FY91).

1.25. Apart from the resource mobilization program to be agreed with the Government in terms of road user charges (at the negotiation of the Integrated Roads Project), specific action programs are being prepared for each public transport enterprise: (a) a Bank study on the financial performance of the civil aviation sector and ATC has been completed and some of its recommendations are already being implemented; (b) a Bank study on financial performance of the Tanzania Harbours Authority has been completed and will be implemented under this proposed Port Modernization Project II; and (c) a financial restructuring plan has been formulated for TRC and will be implemented under the proposed Railways Restructuring Project. If the respective programs are successfully implemented, the overall effect would be: (a) ATC and TRC would begin to make modest operating surpluses (i.e. elimination of US\$10 million p.a. combined loss suffered by the two parastatals in the past); and (b) THA would increase its profitability and contribute between US\$25 to 40 million p.a. to the general revenue of the Government. The transport sector, therefore, would become a net contributor to the general revenues of the Government (US\$75 to 80 million p.a., combining the THA contribution and the net contribution from the road user charges).

F. Previous Bank Group Involvement in the Sector

1.26. The Bank Group has extended credits and loans to help finance six highway projects, one trucking project, one railways project and three port projects, totaling US\$272.6 million since Tanzania became a Bank Group member in 1964. During the earlier years of lending, the projects concentrated on financing of construction and equipment. The focus later shifted to strengthening of local institutions with provisions for technical assistance and training, particularly for road maintenance and road transportation. While experience with the execution of physical components has generally been acceptable, the objectives of technical assistance and training have been difficult to achieve mainly because of: (a) delays in appointment of technical assistance staff; (b) cultural and language adjustment problems of technical assistance staff; (c) lack of effective administrative commitment by Government agencies; (d) lack of suitable local counterparts; and (v) unrealistic targets. A more detailed assessment of past Bank involvement in the sector is given in Annex 1-1.

1.27. These lessons have been confirmed by the eight Project Performance Audit Reports¹, and have been highlighted in the comprehensive audit carried out by the Bank's Operations Evaluation Department on all Tanzania projects from 1964 to 1988. For the port sector, the main lesson has been the lack of institution building under the first two port projects. Under the on-going Port Rehabilitation Project (Cr. 1536-TA), a major component has been included to assist THA in developing its institutional capability. The shortcomings of current assistance, however, have been (a) a lack of monitoring, coordination and guidance of technical assistance by THA; and (b) delays in appointment of local counterpart staff. These points have been discussed among THA, donors and IDA, and the necessary adjustments will be made under the proposed project (para 3.12).

G. Rationale for Bank Involvement

1.28. Since December 1987, when the Transport Sector Donors' Conference was convened in Arusha, IDA has taken the lead in working with the Government to bring together a comprehensive rehabilitation and restructuring program for the transport sector of Tanzania. Nearly 20 donor agencies have mobilized over US\$1 billion in their resources to join Tanzania in implementing the ambitious program. The large commitment by donors reflects not only the donor community's understanding of the problems facing the sector, but is also a tribute to the Government, which is undertaking difficult policy and institutional changes to revitalize not only the transport sector, but the economy in general. What IDA has contributed is: (a) a vision of the future, of how the transport sector can operate in the future if specific actions are taken to adjust the institutional and policy framework under which the transport sector is managed; (b) the technical expertise which has been brought to bear on the complex issues stifling the existing system and which has recommended options on what and how the system can be changed to improve the effectiveness of the Government's effort; and (c) a change in the attitude of Government officials towards liberalization of transport operations, manifested in the following policy changes: (i) decentralization of decision making authority; (ii) expansion of private sector involvement; (iii) encouragement to parastatals to operate strictly on commercial merits; and (iv) less restrictive procurement and administrative practices. The impetus to change, however, has come from Tanzania, and IDA's role has been primarily in providing a "road map" to attain the new objectives set by the Government.

1.29. The proposed project embodies the main principles of the transport sector recovery program, and is geared towards expanding the capacity of Tanzania Harbours Authority to meet the increasing volume of traffic expected in the 1990s. The rationale for IDA involvement is based not only on the lead it has taken in producing a strategy to modernize and expand the port capacity, but also the benefit which THA and the Government derive from the technical expertise which IDA can provide in developing the sector.

¹ PPAR Nos: 791 of June 26, 1975; 4029, 4030 and 4031 of June 30, 1982; 4533 of June 30, 1983; 6483 of November 7, 1986; 6938 of September 15, 1987; and 7571 of December 30, 1988.

II. THE PORT SUB-SECTOR

A. Introduction

2.01. With the collapse of the East African Community in 1977, the Government of Tanzania established, by legislation, the Tanzania Harbours Authority (THA) to develop, improve, maintain, operate and regulate the harbors of Tanzania and also to construct and operate new ports as and when required. THA is legally responsible for the four major ports of Dar es Salaam, Zanzibar, Tanga and Mtwara as well as several minor ports. However, Zanzibar essentially functions as a separate entity, albeit under the direction of THA, and its accounts are separate from those of THA. The other three major ports function as separate administrative and operational units managed by port managers, under the supervisory control of the General Manager of THA. The minor ports are attached to one of the major ports for administrative and operational purposes, depending on their location. Tanga and Mtwara handle only a limited amount of traffic (about 350,000 tonnes and 145,000 tonnes respectively, p.a.); the bulk of the traffic is handled by the port of Dar es Salaam. Consequently, the staff employed in the former two ports is small, being only 1,500 and 400 respectively. Dar es Salaam currently employs about 6,550, of which 4,180 are in the operations department.

2.02. The port of Dar es Salaam, Tanzania's largest seaport, is served by two rail systems connecting the Tanzanian hinterland and Zambia and a radiating road network. The main port facilities consist of 11 berths totalling 2,013 meters in length built between 1956 and 1977. In the northern port area there is a group of wharves for coasters, dhows and port service boats. The land area behind the berth is restricted by a high natural embankment. Historically, the port has evacuated and received most of its cargo by rail, hence the port lands are partly taken up with separate rail sidings and distribution networks for the TRC and TAZARA systems, which are of different gauge.

2.03. Berths 1 to 3 in the port have traditionally handled the transit traffic for ZBR (Zaire, Burundi and Rwanda) and thus the storage area behind these berths is used for the storage of containers associated with that traffic. Berths 4 to 8 serve dry bulk carriers, conventional cargo ships and Roll-On/Roll-Off ships (RO/RO) carrying break-bulk and containerized cargo. The transit cargo for Zambia and Malawi and domestic cargo transported by TAZARA and the TANZAM highway are handled within these berths. The quay space between berths 6 and 7 is mainly allocated to RO/RO vessels. The area between berths 1 to 8 is now being rehabilitated under financing from the Swedish International Development Authority (SIDA). The work includes paving of the quay apron, the open storage area and the main roads, and railway track restoration in the mid-port area. Completion of this work is expected in mid-1990.

2.04. Berths 9 to 11 and part of the back-up area were converted to a container terminal under the ongoing Port Rehabilitation Project. The total quay length is 540 m which is enough to accommodate two container vessels of 1,500 TEU capacity. Two ship-to-shore gantry cranes (SSGs), five rubber-tired gantries (RTGs) for container stacking and one rail-mounted gantry for

transshipment to railway wagons have commenced operation. Approximately half of the back-up area behind these berths was paved, creating storage capacity of about 2,000 TEUs. The two inland container depots (ICD), at Kurasini and Ubungu, function as the main area for stuffing and stripping of containers and have open storage area capacities of 150 and 315 TEUs, respectively.

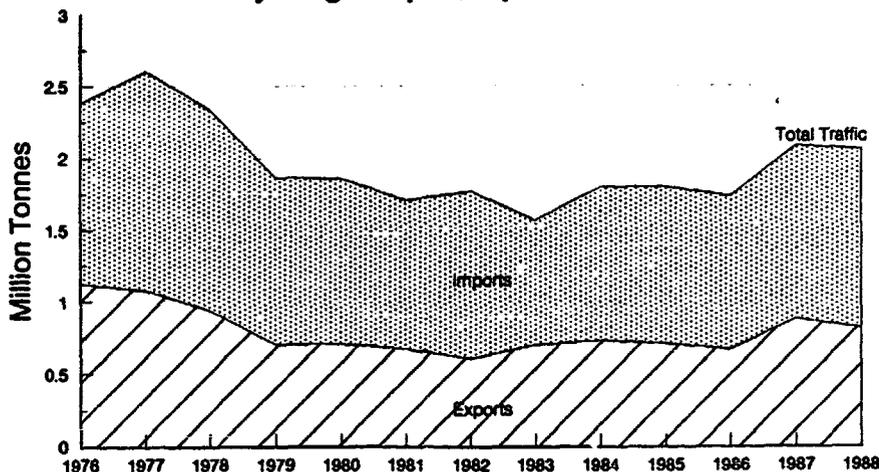
2.05. In addition, the port of Dar es Salaam has (i) a bulk grain handling facility on berth 4 and silos with 26,000 tonnes of storage capacity, financed by the Netherlands (expected completion in December 1989); (ii) Kurasini oil jetty, located at the south end of the main berths, which handles bunkers and petroleum products, and was rehabilitated with funding from Norway (completed in January 1989); and (iii) transit sheds totalling 81,040 sq.m of floor area on the general cargo berths, with additional sheds at Kurasini and Ubungo ICDs.

B. Current Status and Issues

Past and Present Traffic

2.06. The traffic throughput of Dar es Salaam port has been extremely volatile during the past twelve years (Figure 2.1). Dry cargo declined by more than a third between 1977 and 1983. The port regained a part of the lost traffic thereafter, with the traffic growing at about 7% p.a. between 1983 and 1988, as the macroeconomic adjustments under the ERP were beginning to take effect. The relaxation of import restrictions and the implementation of Open General Licenses (OGL) along with the depreciation of real exchange rates have respectively helped boost imports and exports. In 1988, the traffic level had recovered to nearly 2.1 million tonnes, or 80% of the peak traffic level recorded in 1977.

Figure 2.1
Port of Dar es Salaam
Dry Cargo: Import/Export Traffic

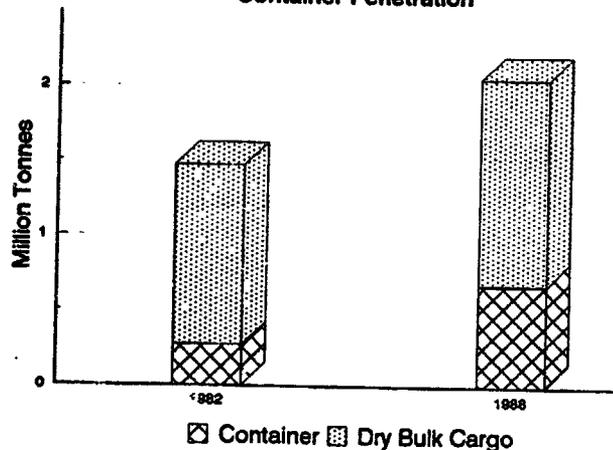


2.07 The composition of traffic has also changed. In the late 1970s and early 1980s, combined Tanzanian and Zambian traffic accounted for nearly 90% of the total throughput of the port. Since then, there has been a rapid increase in traffic from other landlocked countries, with Uganda, Rwanda and Burundi traffic more than doubling since 1983. In 1988, Tanzanian traffic accounted for 41%, Zambia 40%, ZBR 14% and the remaining equally split between Malawi and Uganda. The change in the composition is due to (i) the weak performance of the Zambian economy, particularly in declining exports; and (ii) increasing preference shown by ZBR and Uganda for using the port of Dar es Salaam, instead of the port of Mombasa in Kenya, due to relatively higher operational efficiency and lower ocean freight cost to Dar es Salaam.

2.08 Container penetration has also been strong, with the proportion of dry cargo carried in containerized form increasing from less than 1% in 1977, to 19% in 1983, and 33% in 1988, equivalent to 674,000 tonnes (Figure 2.2). Imports and exports have contributed equally to the trend. Whereas overall dry cargo traffic has increased at about 7% p.a. since 1983, container traffic has increased over 20% p.a. There are, however, significant differences in how containerization has

penetrated the different countries. Nearly half of Tanzania and Uganda traffic is now containerized, whereas ZBR and Malawi have containerized 30 to 40% of their traffic, with Zambia at only 16% of its traffic. The difference in the pace of containerization is due mainly to (i) conditions of onward shipment (e.g. lack of appropriate trucks or rail wagons for container transport); (ii) lack of container handling facilities at inland transshipment points (for ZBR and Uganda traffic); and (iii) slow introduction of container use (e.g. copper). Annexes 2-1 to 2-5 provide details of historic traffic levels.

Figure 2.2
Container Penetration



Current Operational Situation

2.09 Despite substantial operational difficulties caused by the construction of the container terminal (from 1985 to 1989) and rehabilitation of the general cargo terminal (since 1987), Dar es Salaam port has managed to make significant improvements in its operational efficiency. Comparison of the operational performance between 1981 and 1987 (Table 2.1) indicates the following: (i) average cargo handled per gangshift improved substantially beyond the target set under the Port Rehabilitation Project; (ii) average cargo handled per ship-day improved beyond the target for break bulk cargo; (iii) very little improvement for bagged cargo; and (iv) somewhat below the target improvement for containers. The substantial increase in gangshift productivity is somewhat misleading due to the way in which THA collects its statistical data, but

interviews with shipping agents and others indicate significant improvements since the mid-1980s. For the ship-day productivity, the low improvements in bagged cargo handling is due to the delay in completion of the bulk grain handling and storage facilities. The facilities which were to be completed in 1987 will now only be completed by December 1989. Similarly for containers, the container terminal and handling equipment were only handed over to THA for full operation in early 1989. But the general conclusion is that the productivity increases have been acceptable, particularly under the exceptional conditions under which THA had to work during this period (nearly 30% of the port area was under construction).

Table 2.1
Dar es Salaam Port
Dry Cargo Productivity Rates
(tonnes)

| | (1) Average Cargo/Gangshift | | | (2) Average Cargo/Shipday | | | (3) Annual Cargo Throughput | | |
|--------------|-----------------------------------|--------------------|----------------|---------------------------------|--------------------|----------------|-----------------------------------|--------------------|----------------|
| | Actual 1981 | SAR Target 1988 | Actual 1987 | Actual 1981 | SAR Target 1988 | Actual 1987 | Actual 1981 | SAR Target 1988 | Actual 1987 |
| Break Bulk | 48 | 50 | } } 112 | 422 | 450 | 480 | } } 1,550 | } } 1,740 | } } 1,490 |
| Bagged Cargo | 57 | 65 | } | 718 | 2,400 | 900 | } | } | } |
| Container | -- | -- | -- | 85 | 300 | 200-300 | 160 | 610 | 600 |
| TOTAL | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | 1,710 | 2,350 | 2,090 |

2.10. In addition to the above operational improvements, significant improvements were also made in overall staff productivity. Continuing from improvements over the 1968-1980 period, where dry cargo traffic nearly doubled while the number of gangs increased by only two-thirds, from 1980 to 1988, THA reduced its staff by 34% in the face of a 10% increase in traffic. The overall productivity improvement during this period was an impressive 67%, a result of both the gang productivity improvement seen in the general cargo operation, as well as the continuing strong increase in containerization of cargo.

2.11. Despite the operational improvements noted above, the port is beginning to experience some congestion and capacity constraints. First, for the general cargo berths 1-8, congestion was beginning to be observed in 1988, with berth occupancy over 85%. In order to avoid further congestion, and reduce ships' turnaround time, further improvement is required in cargo handling speed.

2.12. Second, the port is also severely congested by containers. The new container terminal, which (with the ICDs) provides a storage capacity for 2,507 TEUs, was handed over to THA in March 1989. However, the number of loaded containers on hand, averaging 3,560 in June 1989, has already exceeded capacity. The excess containers are scattered throughout the port wherever space can be found. Technically, if the average dwell time for loaded containers were at an

acceptable level of, say, 12 days (18 days for imports and 4 days for exports), the existing terminal could handle a throughput of about 76,250 TEUs p.a., or 58% more than the 1988 throughput of 48,152 TEUs. However, congestion is being caused by the inordinately high average dwell time of import containers, which was 37 days in July 1989 (albeit down from 37 days in June 1988). The extraordinarily high levels of 1988 were caused by implementation of a strict (100%) customs verification procedure, which started in January 1988, and the overall administrative inefficiency in processing the necessary documentation for clearing the cargo from the port. Although the procedures were eased, and the average dwell time has dropped, further reduction is required if the port is to handle greater volumes of container traffic, or even the present volume efficiently.

2.13. Lastly, the availability of cargo handling equipment has fallen and will become a major hindrance to cargo operation in the future. Owing to the dilapidated central equipment workshop and the insufficient number of skilled mechanics, the equipment availability level has been low: below 60% for both forklifts and tractors. Training programs for mechanics are being started by the Bandari college, and funds for equipment rehabilitation have been allocated under the ongoing project. As for container terminal equipment, the equipment is still relatively new and availability is at an acceptable level. However, the training program for local mechanics has been slow in taking root and the FINNIDA technical assistance is making a concerted effort to transfer the necessary skills to the THA mechanics.

2.14. Under the coordination of THA and the Bank, a Joint Donor Mid-Term Port Review was carried out in May 1988 to review the implementation of the ongoing project for the Dar es Salaam port and its impact on improving the operation of the port. A comprehensive report was produced, reviewed by the donor group and presented to a THA Port Donors' Conference in February 1989. The results of the review highlighted the above-noted major shortcomings of the ongoing operation and the constraints faced by THA in effectively operating the newly-modernized Dar es Salaam port.

2.15. The main conclusion of the Review, which has been confirmed by an independent assessment of THA, is that despite moderate improvements in port operational performance and the addition of equipment and terminal infrastructure to begin a full container terminal operation, the port of Dar es Salaam is experiencing a severe capacity constraint in the container storage area. Furthermore, the port will face greater capacity constraints unless: (i) the container terminal is expanded immediately; (ii) the operational efficiency of dry cargo and container berths is further improved; and (iii) the dwell time of containers is reduced to an acceptable level. The Review also recommended that a Development Study be commissioned to study the options available for further expansion in the mid-1990s in order to meet the forecast traffic for 1996 and beyond. The specific capacity constraints are presented in the following sections, and a detailed analysis of operational capacity is given in Annex 2-6.

Future Traffic and Capacity Constraint

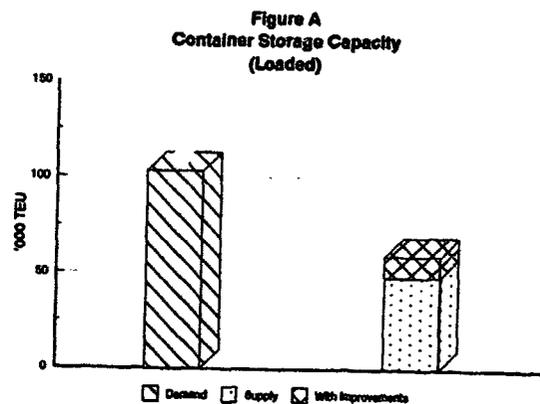
2.16 Various assessments made by the Review mission, THA and the Bank, indicate that Dar es Salaam port will handle about 2.6 million tonnes of dry cargo by 1993. This implies an increase of 26% over the five-year period, corresponding to an average annual growth rate of 5%. Although this growth rate is lower than the 7% p.a. growth rate experienced between 1983 and 1988, it compares well to the 4.6% p.a. growth of the economy forecast by various macroeconomic assessments by the Bank. During this period, rapid container penetration is assumed to continue with about 55% of the total traffic being containerized. This implies that by 1993, 1.4 million tonnes will be in the form of containers and the remaining 1.2 million tonnes in break bulk; i.e. there will be a modest decline in non-containerized dry cargo traffic with all the growth being in the form of containerized traffic. A detailed forecast is given in Chapter IV.

2.17 The impact of the forecast demand on berth and port storage capacity, as indicated in Figures 2.3: A to D, reveals major capacity constraints for the port. The critical constraint is the storage capacity in the container terminal. Other major constraints are the berth capacities at both the conventional and container terminals, which can be removed by improving operational efficiency and providing additional cargo handling equipment. The cumulative effect of the three constraints, however, is that by not having sufficient container terminal space, it not only limits the volume of container traffic which the port can handle, but it effectively: (a) lowers the total capacity of the port of Dar es Salaam; (b) limits the growth of containerized traffic which is a cheaper form of transport; (c) reduces the earning capacity of THA; and (d) prevents THA from capturing the full benefit of the modernization process which began in 1984. The various constraints and their impact on the forecast traffic are analyzed in the following sections (paras 2.18 to 2.22).

2.18 As indicated, the most critical constraint is the container storage capacity. The forecast container traffic in 1993 is 1.4 million tonnes, or 103,000 loaded TEUs p.a. As shown in Figure 2.3(A), with the current terminal storage capacity of 2,507 TEU and assuming that the average dwell time for loaded imports can be reduced from the current level of 37 to 33 days, the terminal capacity is only one half of the expected traffic demand. On an emergency basis, additional terminal capacity of 700 TEUs is being constructed behind berths 7 and 8 with SIDA financing to alleviate the expected congestion. Even with this addition, it is clear that a shortfall of nearly 40% of forecast demand can be expected. The result of such a mismatch in demand and capacity is that:

(i) container traffic will be capped at

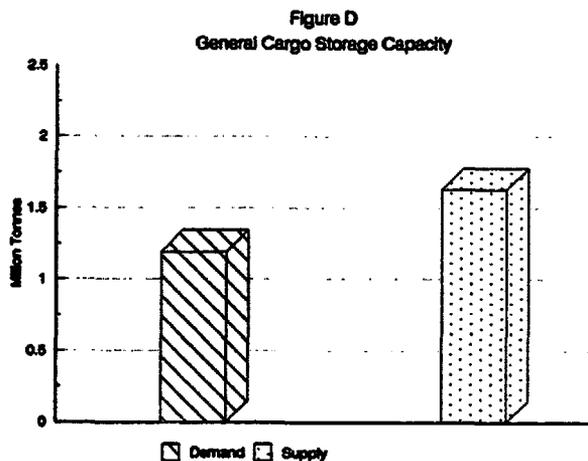
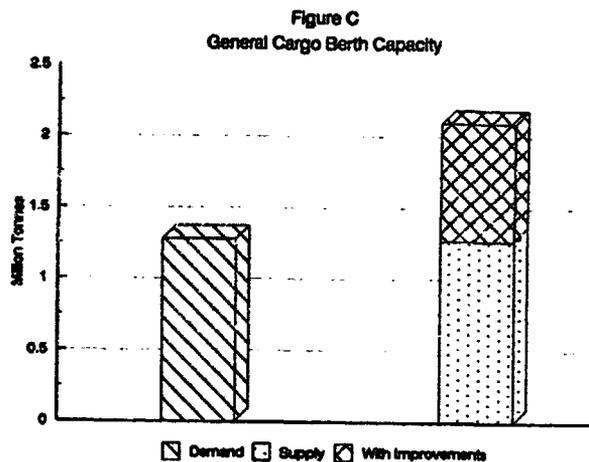
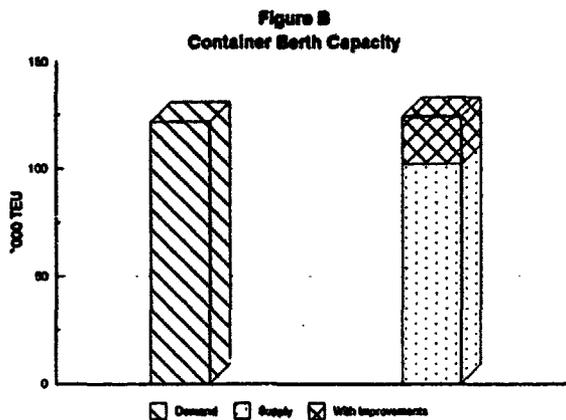
Figure 2.3
Dar es Salaam Port
Demand Forecast and Port Capacity = 1993



64,700 loaded TEUs or 880,000 tonnes p.a.; (ii) all additional container traffic will then have to be routed through berths 1-8 as break-bulk cargo with the additional expense involved; (iii) ships' turnaround time will rise dramatically; and (iv) the total dry cargo capacity of Dar es Salaam port will be limited, leading to diversion of traffic to other ports, such as Mombasa, with loss of revenue for THA. Expansion of the container terminal and paving for additional storage areas at the two ICDs have been included in the proposed project (para 3.03, A.1 and A.2).

2.19 The major constraint on the container berth capacity is indicated in Figure 2.3(B). This constraint is determined not by the berth itself, but by the number of Ship-to-Shore Gantry Cranes (SSGs) to handle the forecast container throughput (loaded and empties) of 122,000 TEUs in 1993. Given the existing operational speed of SSGs of 16 containers per hour (and assuming 75% availability, 60% berth occupancy and ship's gear handling rate of 5 containers per hour), THA's container berth capacity is 102,000 TEUs p.a. With productivity improvement up to 20 containers per hour and availability up to 80%, which are reasonable standards, the terminal will be able to handle a throughput of about 129,000 TEUs p.a., matching the forecast demand. Any further increase in container traffic would require installation of an additional SSG (Sections II and VI of Annex 2-6). Provision for an additional SSG and RTGs have been included in the proposed project (para 3.03, B.2 and B.3).

2.20 The major constraint in the general cargo berth capacity is indicated in Figure 2.3(C), where at 80% berth occupancy, the forecast demand of 1.2 million tonnes nearly matches existing capacity. With productivity improvements from the existing 582 tonnes/berth-day to 971 tonnes/berth-day (with the project), it is possible to nearly double the berth capacity to 2.3 million tonnes. Given that: (i) the rehabilitation of general cargo berth will be completed by mid-1990; (ii) the bulk grain handling facility will be fully operational by the end of 1989; (iii) the incentive scheme will be in place by 1990-91; and (iv) the general cargo



equipment included in the project will be available, the target productivity level of 971 tonnes/berth-day should be achievable. Failure to achieve the target, however, would translate directly into ships' waiting time and hence higher costs for port users. Requirements for additional general cargo equipment have been included in the proposed project (para 3.03, B.1).

2.21 Figure 2.3 (D) indicates that storage capacity for general cargo is quite comfortable, given that cargo dwell time can be kept below the current average of 13 days (Annex 2-6, Section IV).

2.22 The conclusions which can be drawn from the above assessment are as follows: (i) there is a serious shortage of container storage capacity and (a) the terminal area for container storage must be expanded immediately to meet the forecast demand for 1993, and (b) a major effort is required to reduce the container dwell time; (ii) urgent action must be taken to improve productivity further, particularly in general cargo and container berth operations, to maximize the output of existing facilities; (iii) an additional SSG will be required in 1992-93 to expand the container berth capacity; and (iv) further study must be carried out to review options available for expansion of berth capacity for general cargo and storage capacity for containerized cargo to meet the demand beyond 1993.

C. Strategy for Operational Improvements

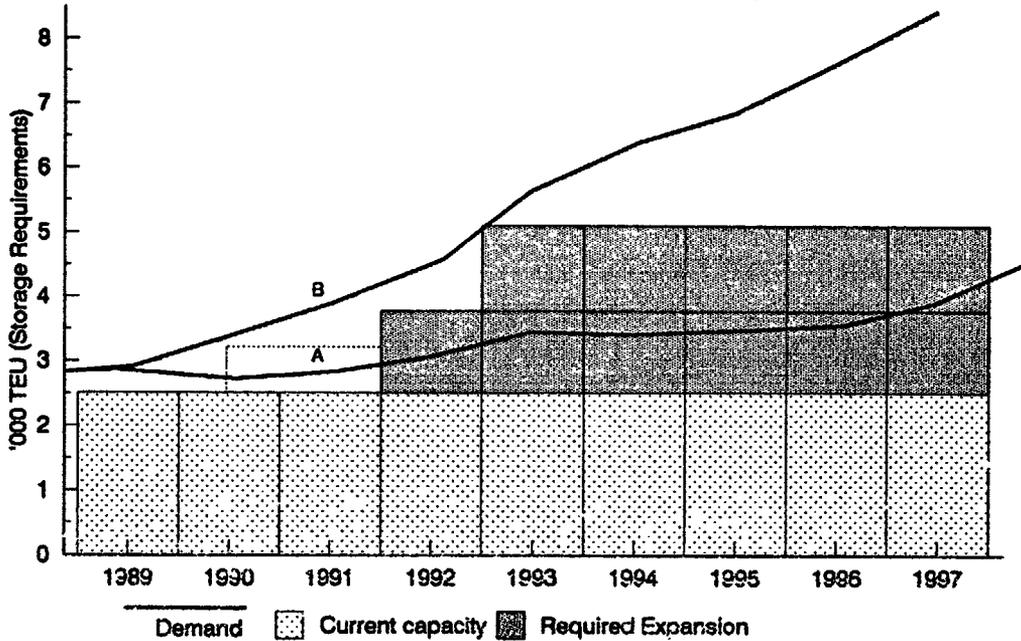
General

2.23 Given the current situation at the port of Dar es Salaam, if no action is taken to expand the port capacity and improve cargo handling efficiency, the traffic through the port would most likely stagnate at about 2.7 million tonnes of dry cargo (900,000 tonnes of container cargo and 1.8 million tonnes of break bulk cargo). This traffic level is forecast to be reached by 1994. Any further increase in traffic would result in rapidly rising ships' waiting time and the diversion of large volumes of traffic to neighboring ports. The basic strategy to tackle the constraint faced by Dar es Salaam port has been discussed extensively with THA and the donors involved in assisting the port subsector, and the details are presented below.

Container Terminal Capacity Expansion

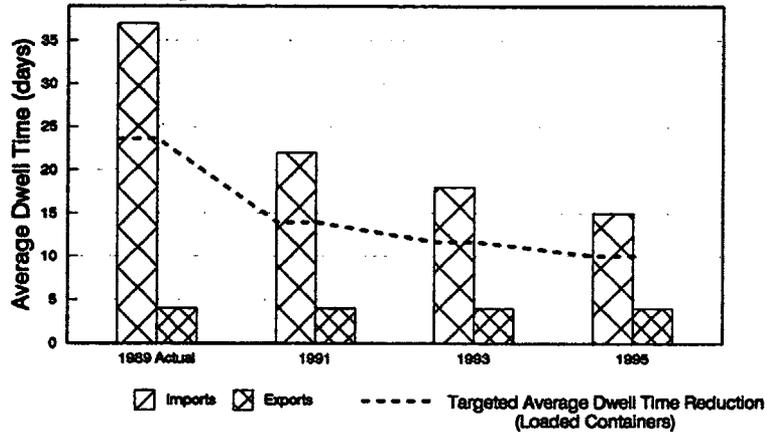
2.24 Figure 2.4 provides a comparison between the forecast growth in container storage requirements and the proposed capacity expansion under the project. Demand curves A and B, respectively, indicate the terminal capacity required with and without a reduction in the dwell time of containers. Without a major reduction in container dwell time, the demand for container storage area will outstrip the capacity even with a doubling of the terminal size. With significant reduction, the capacity requirement is within the proposed expansion until 1997; thereafter, container dwell time is assumed to have reached its lowest reasonable level, and any increase in container traffic will be directly translated into requirements for larger terminal capacity.

Figure 2.4
Dar es Salaam Port
Container Traffic Growth and Terminal Capacity



2.25. The underlying assumption of demand curve A in Figure 2.4 is that the container dwell time will be progressively reduced to 10 days, less than half the current level, by 1995 (an acceptable average dwell time for a port newly involved in container operations). Therefore, the dwell time of containers must be reduced significantly; target levels are illustrated in Figure 2.5. If these reductions in dwell time are not made, the effective demand on storage capacity is larger, exceeding the planned terminal expansion (demand curve B of Figure 2.4).

Figure 2.5
Dar es Salaam Port
Targeted Container Dwell Time Reduction



2.26. The main causes behind the high container dwell time for import containers, ranked in order of priority, are: (i) cumbersome customs clearance process (including complicated documentation, opaque regulations, slow document processing, 100% verification policy and shortage of trained customs officers); (ii) importers' shortage of funds to pay duties and sales tax and often late notification of cargo arrival by NASACO, the state-owned ships' agent; (iii) slow onward shipment by rail, including lack of appropriate wagons to carry containers; and (iv) delays in cargo handling by THA, including searching for specific containers (caused by a shortage of proper equipment and lack of a container tracking system).

2.27. In an endeavor to reduce the dwell time of loaded containers to 12 days by 1993 (18 days for imports and 4 days for exports), a plan of action has been agreed with the Ministry of Finance (including Customs) and THA. In conjunction with the United Nations Conference on Trade and Development (UNCTAD), the Association will provide assistance to Customs, contingent upon certain policy changes. The assistance has five components: (i) help in the introduction and refinement of a simplified documentation system; (ii) training in basic customs techniques; (iii) long-term skill development of customs officials; (iv) essential hardware items; and (v) subject to the Government's decision to adopt ASYCUDA (the computerized system for customs administration developed by UNCTAD), the hardware required to install it. In addition, assistance will be given to TANPRO, the Tanzania Trade Facilitation Council, to strengthen its institutional framework and help it in its efforts to introduce simplified customs documentation. The policy changes are: (a) more vigorous auctioning of unclaimed containers (at least three auctions per month); (b) verification of containers to be conducted on a sampling basis (no more than one in three); (c) transit goods to be handled in a streamlined fashion; and (d) positive advocacy of parastatals' use of customs bonded warehouses outside the port. These changes are currently being undertaken. Technical assistance and hardware required to achieve the improvements in container dwell time have been included in the proposed project (para 3.03, D.3).

General Cargo and Container Berth Capacity Expansion

2.28. Expanding the berth capacity will be achieved mainly through improvements in operating performance: namely in the areas of higher berth and gang productivities. The forecast traffic growth over the next few years dictates a substantially faster improvement in the operating performance than has been achieved by THA in the past. The following areas have been targeted for change: (i) introduction of a performance based bonus scheme to provide incentives for THA's workers; and (ii) improvement in equipment availability through rehabilitation of the central workshop, intensive training of local mechanics and procurement of additional cargo handling equipment. Specific operational performance and equipment availability targets which are required to enhance the port's productivity have been agreed with THA and these are detailed in Annex 2-6.

2.29. In terms of improving worker productivity, incentive schemes have proven effective at the port of Dar es Salaam. An informal system of incentives, paid for by the users of the port, has been used from time to time in the past with noticeable success in improving the speed of cargo handling. Given that

THA is financially capable of funding such a scheme, a detailed productivity based incentive scheme will be introduced: daily for stevedores and equipment operators and annually for administrative and other operations staff. Detailed performance contracts already exist between various departments and the General Manager. These, plus specific operating targets, will be used as a basis for evaluation of worker performance and for the amount of funds to be allocated for the bonus scheme. During negotiations, it was agreed, as conditions of Credit effectiveness, that THA would carry out a thorough census of its workforce and would provide the Association with the report and recommendations of its study on the operational guidelines for the scheme. Furthermore, it was agreed that the scheme would be instituted by October 1, 1990 at the latest.

2.30 Equipment availability is essential to increase operational productivity. In this regard, the central workshop, which is in a dilapidated condition, will be rehabilitated under the project, the training program for local mechanics will be expanded, and additional equipment will be procured. Apart from the lack of facilities, skilled mechanics are in high demand in Tanzania, and it is difficult both to find experienced mechanics and to retain mechanics who have been trained. To help combat this problem, the training program will be intensified, through on-the-job training at the port and class room training at the Bandari College which is being supported under the ongoing port project; and an incentive scheme, as noted above, will be introduced. The possibility of achieving further improvements in productivity and in equipment maintenance through privatization will be considered in the Port Development Study. In addition, new equipment will be procured: replacements in the case of general cargo handling equipment and additional equipment in the case of the container terminal operation. Detailed justification for both types of equipment is given in Annex 2-6. For the procurement of the more expensive container terminal equipment (an SSG and RTGs), the funding agencies (DANIDA and FINNIDA) and THA have agreed on the specific level of container traffic which would trigger the process of procuring the equipment. Renovation of the central workshop has been included in the proposed project (para 3.03, A.6).

2.31 If the various actions noted above are successful in achieving their objectives, there will effectively be a substantial expansion in the throughput capacity of the port of Dar es Salaam. Based on the improvements described above, the capacity of the port would increase to about 4.8 million tonnes of dry cargo (2.3 million for break bulk and 2.5 million for container cargo), doubling the current throughput. The requirement for further capacity expansion will most likely be deferred to the mid-to-late 1990s.

Institutional and Manpower Development

2.32 Given the rapid changes in international shipping and cargo handling technologies, and the development of a modern container terminal with sophisticated equipment, THA's operational management must make appropriate adjustments to meet the new conditions. One of the most prominent shortcomings of past assistance to THA has been the lack of attention paid to developing the manpower capacity of the port authority, both in terms of management skills and skills of various levels of workers. Under the ongoing project, the situation was reversed with a substantial increase in the technical assistance and training

(TA/T) program. At present, the TA/T program provides some 2,073 man-months of TA and 60 man-months of training at a cost of over US\$25 million. By January 1989, about 775 man-months had been used (see Annex 3-1A). Substantial efforts were made by THA and donors to coordinate the various technical assistance activities but these efforts were not always successful, thus resulting in the overlapping of certain activities while others remained non-active. Also, THA encountered problems in identifying and allocating appropriate counterparts, often resulting in a waste of TA resources.

2.33 Based on the Mid-Term Review's evaluation, THA management has focused more on closely coordinating the activities of TA, and on monitoring the impact of the assistance. Also, during the past year, THA has put forward its own requirements for consideration by donors for funding. The main shift in emphasis has been: (i) a reduction in technical assistance for equipment operator training (the program has gone very well and the local operators are fully qualified to operate the equipment); (ii) closer monitoring of mechanic training, particularly for container handling equipment; and (iii) the addition of TA for headquarters (middle and upper management), particularly in the areas of procurement, accounting, management information systems, and planning. THA has also decided to add a TA/T Coordinator in the Project Coordination Unit (PCU) to monitor the effectiveness of the TA/T program. Based on discussions with donors, the TA/T program has been adjusted to include 710 additional man-months of technical assistance and 50 man-months of training under the proposed project (para 3.03, D.1 and D.2).

D. Strategy for Improved Financial Management

2.34 THA's overall financial structure, as one of the few parastatals which is profitable in Tanzania, is satisfactory. Operating surplus, expressed in current US Dollar terms, has multiplied by six over the last five years (US\$6 million in 1982/83; US\$33 million in 1987/88), although this is largely due to favorable exchange rate movements and external assistance passed on as grants. The project aims to transform THA from being an adequately managed parastatal, shielded by its strong financial health from the need to seek efficiency gains, into an efficient, commercially-oriented organization. The overall "Corporate Financial Strategy" for THA, which has been agreed between THA and IDA, and approved by the Board of THA and the Government, is the means by which this transformation can take place. The strategy includes the following changes: (i) THA to repay to the Government all donor grants (and IDA Credits) at 11% interest, retroactive to all grants received after creation of THA; (ii) THA's debt-to-equity ratio to be kept below 60:40; (iii) fixed assets to be revalued so as to depreciate the asset base properly; (iv) a dividend policy to be adopted (50% of net profit to the Government, given certain specified conditions); (v) a well funded and rigorously administered productivity incentive scheme to be introduced (up to 100% of existing salaries and other remuneration); (vi) short term funds to be invested in higher-yielding assets; and (vii) the tariff structure to be used more actively to influence the behavior of port users.

2.35 The strategy will bring financial discipline to bear on THA, and will force management to operate the port in a purely commercial manner. Although THA's Finance Department has suffered recently due to loss of qualified staff (accountants and financial specialists carry a premium in Tanzania), the

financial management system, which has been developed over the years, is well established and sound enough to form the basis of the new strategy. A financial forecast based on the above criteria indicates that THA would be in a position to pay about US\$25 million p.a. to the general revenues of the Ministry of Finance beginning in 1990/91, increasing to more than US\$40 million p.a. by 1996/97. THA would be the first parastatal in Tanzania to have developed a comprehensive financial management strategy, to repay all debts to the Government, and to set aside sufficient funds to institute an incentive scheme. As such, it would be the role model for other Tanzanian parastatals seeking to establish commercial management practices. As the detailed analysis presented in Chapter V indicates, the strategy will require that THA plan its investments prudently and limit its expenditure within its financial capacity. As an added precaution, it was agreed with THA at negotiations that all investments larger than US\$2 million for civil works and US\$500,000 for equipment would be undertaken only after consultation with IDA, and that the annual financial plan would be jointly reviewed by IDA and THA by March 31 of each year before being effected. The Corporate Finance Strategy, which was formulated by THA (with assistance from IDA) has been approved by THA management, its Board, MCW and the Ministry of Finance, and is now in effect. During negotiations, agreement was reached that no material changes would be made in THA's Corporate Financial Strategy without prior agreement with IDA, including the commitment to repay, according to an agreed schedule, the principal and interest due on all debts to the Government.

III. THE PROJECT

A. Objectives

3.01 The main objective of the proposed project is to expand the physical, managerial and operational capabilities of THA to meet the traffic from Tanzania and its neighboring landlocked countries expected in the 1990s. Without the project, the Dar es Salaam port will reach full capacity by 1994 and incremental traffic increase thereafter will result in diversion of landlocked countries' transit traffic to longer and more costly routes. In particular, the project aims to: (i) execute the second phase container terminal expansion to handle 2.4 million tonnes of dry cargo p.a. (200% expansion of the terminal storage capacity); (ii) enhance the operational, administrative and managerial capacity of THA to manage the modern container terminal operations; (iii) improve THA's capacity to maintain and operate cargo handling equipment through institutional support as well as development of a central workshop; (iv) rationalize the financial management of THA to enhance its revenue earning capacity as well as to strengthen the Authority's commercially-oriented management discipline; (v) carry out a development study to determine the next stage of port expansion requirement; and (vi) establish a computer-based management information system to improve management control and decisions. The physical and the operational improvements to be made under the project will improve the overall capacity of the port to handle nearly 80% more cargo than under the current conditions, and will address the urgent capacity requirements of the port up to the mid-1990s.

3.02. In general, the project will contribute to the important objective

of developing improved transport links for the neighboring landlocked countries, thus contributing to reducing the cost and improving the efficiency of their overseas trade activities. As one of the primary ports on the eastern coast of Africa, the expansion of capacity and improvement of operating efficiency at the port of Dar es Salaam will contribute to the primary goals of regional organizations such as the Southern Africa Development Coordination Conference (SADCC), the Economic Community of Africa (ECA) and the Preferential Trade Area (PTA).

B. Project Scope

3.03. To realize the above objectives, the project will provide financial assistance for the following components:

Civil Works

- A.1 **Port Container Terminal and Inland Depots:** doubling the port's storage capacity for loaded containers and completion of inland depots at Kurasini and Ubungo;
- A.2 **Copper Road:** construction of port access road (2.5 km) to enable direct access from the port to the inland terminals of Kurasini, ZAMCARGO and Malawi Cargo Center;
- A.3 **Berth Repair:** repair of corroded and damaged concrete piles on berths 9, 10 and 11, and installation of a new fender system;
- A.4 **Lighterage Wharf Paving and Utilities:** paving for additional storage of empty containers and dry bulk cargo;
- A.5 **Belgian Wharf Rehabilitation:** rehabilitation of piles and fender system;
- A.6 **Port Central Workshop:** rehabilitation of existing structures;
- A.7 **Kurasini Oil Jetty (KOJ) Strengthening:** upgrading to accommodate larger oil tankers;
- A.8 **Berth 1-8 Rehabilitation:** second phase of the general cargo terminal rehabilitation;

Equipment

- B.1 **General Cargo Equipment:** forklift trucks, and mobile cranes;
- B.2 **Container Terminal Equipment:** rubber tired gantries, tractors, trailers and forklift trucks;
- B.3 **Ship-to-Shore Gantry Crane (SSG):** one additional SSG to increase container berth capacity;

- B.4 **Office Equipment:** computers, copying, telex and facsimile machines;
- B.5 **Central Workshop Equipment:** acquisition and installation of tools and equipment for the Central Workshop;

Engineering Services and Studies

- C.1 - C.7 **Design and Supervision:** design and supervision of civil works A.1 through A.7;
- C.8 **Port Development Study:** study to determine the various options available for future expansion of port capacity;
- C.9 **Central Workshop Study:** study to determine the design and operation of the Central Workshop;

Institutional Development

- D.1 **Project Coordination Unit:** continued assistance to staff the PCU, with addition of a Technical Assistance and Training Coordinator;
- D.2 **Management Technical Assistance:** provision of management assistance to the middle and upper management at THA headquarters, training of mechanics for the central workshop, and a computer and data specialist to develop a management information system;
- D.3 **Technical Assistance to Customs:** training of customs officials in customs regulation and procedures, use of computers and introduction of simplified documentation for customs declaration.

C. Detailed Project Description

Civil Works

3.04 The main civil works component comprises the expansion of the container terminal within the port area and completion of the two ICDs (Ubungo and Kurasini). For the port container terminal, an additional two and a half rows of container stacking area are to be constructed at the land side of the newly-completed stack area behind berths 9 to 11. For customs verification and the storage of empty containers, two fringe areas along the stacking area will also be paved. The additional storage capacity obtained in the port area is 2,582 TEUs for loaded containers and 200 TEUs for empty containers. The railway tracks in the mid port will be removed and the port access road (Copper road) for transport of goods to and from the nearby inland depots (Kurasini, ZAMCARGO and Malawi Cargo Center) will be relocated along the railway tracks in the container railway terminal. Additionally, the corroded reinforced concrete piles under berths 9, 10 and 11 will be repaired and a fender system suitable for larger container ships will be installed. At the Kurasini ICD, the railway access to TAZARA, additional paved area for empty container storage (700 TEUs) and a work shop building will be constructed. At the Ubungo ICD, existing area for container storage will be repaved.

3.05 To create additional storage area in the port for empty containers and dry bulk cargo, the Lighterage Wharf will be paved and the piles and the fender system of the Belgian Wharf will be rehabilitated. The Port Central Workshop, which will become the main workshop for heavy repairs and maintenance of general cargo equipment, will be rehabilitated. Rehabilitation of the general cargo Berths 1-8 will continue under the second phase program financed by SIDA.

3.06 Since the completion of KOJ rehabilitation under the ongoing project, the size of petroleum tankers calling at the port of Dar es Salaam has increased substantially. The average size of tankers is now beyond the strength of KOJ to accommodate, and is becoming a major hazard. Strengthening of KOJ will include installation of berthing and mooring dolphins, provision of fire fighting equipment for tug boats, a waste oil reception facility and a oil pollution control facility.

Equipment

3.07 Given the increasing traffic through the port of Dar es Salaam, availability of equipment will have a major impact on the operating efficiency of the port. Although the forecast for break bulk traffic indicates a declining trend, the existing equipment for dry bulk cargo handling is in a dilapidated condition and will need to be replaced. The container handling equipment, on the other hand, is new and in good working condition, but requires expansion in its fleet to service the substantial increase in container traffic forecast during the project period. For the major pieces of equipment, RTGs and an SSG, it has been agreed among THA, DANIDA and FINNIDA that the procurement of this equipment will commence once the container traffic level reaches a specific volume (94,000 TEUs p.a.). The number and types of equipment, along with technical justification of their requirement, and the target productivity levels of each type of equipment have been agreed with THA (Annex 2-6).

3.08 Office equipment, such as computers, and copying, telex and facsimile machines will be procured to improve office productivity. The personal computers will be vital for the development of a management information system, computerizing various port management systems, including procurement, statistics and operational performance. Additionally, the central workshop will be installed with new equipment and tools.

Engineering Services and Studies

3.09 Given the forecast of traffic through the port of Dar es Salaam, THA will need to consider further expansion of port capacity to meet the demand expected towards mid-to-end 1990s. To identify and analyze the various options available and the associated cost, consulting services will be engaged to carry out a master plan study for the next stage of port development. About 83 man-months is estimated for the study.

3.10 The Port Central Workshop is in a dilapidated condition and is seriously affecting the equipment maintenance activities and the availability of equipment. About 17 man-months of consulting services will be engaged to review the role of the Central Workshop and the associated facility required to carry out proper maintenance of equipment. The consulting services will include

a study of central workshop function, required facilities and the detailed engineering and design of the recommended facilities.

3.11 Consulting services will also be engaged for designing and supervising construction work under the project (para 3.03, C.1 to C.7).

Institutional Development

3.12 Consulting services will be engaged for the purposes of improving the operational and port management skills of THA as well as to expand the capabilities of the Project Coordination Unit (PCU). Currently, the funding for PCU is met by contribution from various donors assisting THA. This arrangement will continue under the proposed project. In addition to the current staffing, a Technical Assistance and Training Coordinator will be engaged to assist THA in monitoring the effectiveness of the TA/T program. In terms of developing the institutional capacity of THA, a substantial amount of technical assistance is already being provided by donors in the areas of port operation, container terminal management, equipment operation and maintenance of container handling equipment. Strong results have been seen in the areas of operator training and container terminal operation. The areas which will be supported under this project are (i) development of middle and upper management skills; (ii) training of mechanics for general cargo handling equipment; and (iii) development of a reliable statistical gathering process and management information systems. A significant amount of computer usage will be introduced to improve timeliness and reliability of data collection. About 1,515 man-months of technical assistance and training has been included in the project (includes extension of on-going assistance program to reflect the totality of T.A. being made available to THA). Details of the current TA/T program (para 2.32) and the assistance proposed under this project are outlined in Annexes 3-1(A) and 3-1(B), respectively. A summary of IDA-funded technical assistance and training, (486 man-months) is given in Annex 3-2.

3.13 In addition to assisting THA, IDA will fund a program begun by UNCTAD to improve and streamline customs procedures, and to assist TANPRO (under the Tanzania Board of External Trade) in introducing simplified documentation for import/export activities (para 4.11).

D. Status of Project Preparation

3.14 Detailed cost estimates for the Port Container Terminal and Copper Road have been completed and the detailed engineering design is being carried out by Finnish and U.K. consultants with FINNIDA funding. Engineering is expected to be completed by December 1989. Preliminary engineering design for Berth Repair, Lighterage Wharf Paving and Belgian Wharf Rehabilitation have been completed and detailed costs and engineering will be carried out by funds from respective donors funding the components. A study for the facility and operational requirement of the Port Central Workshop is currently being undertaken by Finnish consultants funded by FINNIDA, and the detailed engineering design will be substantially completed by end-1989. KOJ strengthening will require a short technical study to determine the feasibility of investment and the most economic solution to the technical problem at hand. The KOJ study will be completed by late-1990 and the component will be appraised by NORAD at that

point. Draft terms of reference for the Port Development Study were agreed with THA at negotiations (Annex 3-3). Furthermore, it was agreed that the study would be completed and the recommended development plan submitted for IDA review by June 30, 1992. Engineering design and detailed costs for the second phase of berth 1-8 rehabilitation have been completed.

E. Cost Estimates

3.15 The total project cost, including contingency allowances, is estimated at TSh 23.245 million or US\$122.3 million of which US\$100.5 million (82%) would be the foreign exchange component (Table 3.1). Total cost includes: (a) physical contingencies of 10% of base cost on all civil work items and 5% on equipment and consulting services; and (b) price contingencies amounting to about 18% of base costs plus physical contingencies on all items. Price contingencies are based on estimated foreign inflation of 4.9% p.a. until 1995 and 3.6% thereafter and have been applied to the foreign and local components. It is assumed that any persistent divergence between local and foreign cost escalation will be corrected by exchange rate adjustments. Taxes and duties amount to about US\$8.6 million or about 7% of total project cost.

3.16 The base costs are estimated as of November 30, 1989 (US\$1.0 = TSh 190) and have been derived as follows:

- (a) Civil Works. The cost estimates for the Port Container Terminal, Copper Road and Berth 1-8 Rehabilitation components are based on quantities derived from detailed engineering and actual costs experienced under the previous container terminal construction contract which was completed in March 1989. The cost estimates for the Berth Repair, Lighterage Wharf Paving, Belgian Wharf Rehabilitation and Port Central Workshop are based on preliminary estimates of THA consultants based on similar experiences under ongoing construction contracts. The foreign exchange component is assessed at 76% of total cost of works.
- (b) Equipment. The cost estimates for equipment have been based on recent procurement of similar types of equipment under the ongoing project.
- (c) Engineering Services and Studies. Design and supervision requirements for the project are estimated at 240 man-months and has an estimated base cost of US\$3.3 million, or equivalent to 9% of the estimated construction cost. Consulting services for the Development Study and Workshop Study is estimated at 83 man-months and 17 man-months respectively, with a base cost of US\$1.2 million.
- (d) Institutional Development. Technical assistance and training are estimated at 1,448 and 67 man-months respectively with a base cost of US\$17.0 million. Additionally, technical assistance and training for customs and TANPRO is estimated to have a base cost of US\$2.0 million. The cost estimate has been based on similar assistance currently being provided to THA.

TABLE 3.1 ESTIMATED PROJECT COST

| COMPONENT | TOTAL | | | TOTAL | | | % Foreign |
|---|-------------|-----------|-----------|---------------|----------|----------|-----------|
| | LOCAL | FOREIGN | TOTAL | LOCAL | FOREIGN | TOTAL | |
| | (US\$ '000) | | | (TSh million) | | | |
| A. Civil Works | | | | | | | |
| A.1 Port Container Terminal | 2,667.5 | 7,252.5 | 9,920.0 | 566.8 | 1,378.0 | 1,944.8 | 73 |
| Kurasini Depot | 1,237.5 | 4,202.5 | 5,440.0 | 235.1 | 798.5 | 1,033.6 | 77 |
| Ubungu Depot Paving | 417.5 | 1,252.5 | 1,670.0 | 79.8 | 238.0 | 317.8 | 75 |
| Sub-Total A.1 | 4,322.5 | 12,707.5 | 17,030.0 | 821.3 | 2,414.4 | 3,235.7 | 75 |
| A.2 Copper Road | 612.6 | 877.5 | 1,490.0 | 116.4 | 166.7 | 283.1 | 59 |
| A.3 Berth 9, 10, and 11 | 1,057.5 | 3,172.5 | 4,230.0 | 208.9 | 602.8 | 811.7 | 75 |
| A.4 Lighterage Wharf Paving & Utilities | 875.0 | 2,625.0 | 3,500.0 | 166.3 | 498.8 | 665.0 | 75 |
| A.5 Belgian Wharf Rehabilitation | 375.0 | 1,125.0 | 1,500.0 | 71.3 | 213.8 | 285.0 | 75 |
| A.6 Port Central Workshop | 302.0 | 453.0 | 755.0 | 57.4 | 86.1 | 143.5 | 60 |
| A.7 Kurasini Oil Jetty Strengthening | 1,400.0 | 7,600.0 | 9,000.0 | 266.0 | 1,444.0 | 1,710.0 | 84 |
| A.8 Berth 1-8 Rehabilitation | 3,510.0 | 9,490.0 | 13,000.0 | 666.9 | 1,883.1 | 2,470.0 | 73 |
| Subtotal Part A Base Cost | 12,454.5 | 38,850.5 | 51,305.0 | 2,306.4 | 7,229.0 | 9,535.4 | 75 |
| Physical Contingencies | 1,245.5 | 3,635.1 | 4,880.6 | 236.6 | 723.0 | 959.6 | 75 |
| Price Contingencies | 2,412.7 | 7,531.2 | 9,943.9 | 458.4 | 1,438.9 | 1,897.3 | 75 |
| Subtotal Part A Total Cost | 16,112.7 | 49,986.7 | 66,100.4 | 3,001.4 | 9,399.5 | 12,400.9 | 75 |
| B. Equipment | | | | | | | |
| B.1 General Cargo Equipment | 0.0 | 4,000.0 | 4,000.0 | 0.0 | 760.0 | 760.0 | 100 |
| B.2 Container Terminal Equipment | 0.0 | 8,195.0 | 8,195.0 | 0.0 | 1,557.1 | 1,557.1 | 100 |
| B.3 Ship-to-Shore Gantry | 0.0 | 7,000.0 | 7,000.0 | 0.0 | 1,330.0 | 1,330.0 | 100 |
| B.4 Office Equipment | 0.0 | 1,000.0 | 1,000.0 | 0.0 | 190.0 | 190.0 | 100 |
| B.5 Central Workshop Equipment | 0.0 | 1,950.0 | 1,950.0 | 0.0 | 370.5 | 370.5 | 100 |
| Subtotal Part B Base Cost | 0.0 | 22,145.0 | 22,145.0 | 0.0 | 4,207.6 | 4,207.6 | 100 |
| Physical Contingencies | 0.0 | 1,167.3 | 1,167.3 | 0.0 | 210.4 | 210.4 | -- |
| Price Contingencies | 0.0 | 4,249.4 | 4,249.4 | 0.0 | 807.4 | 807.4 | 100 |
| Subtotal Part B Total Cost | 0.0 | 27,561.6 | 27,561.6 | 0.0 | 5,225.3 | 5,225.3 | 100 |
| C. Design/Supervision | | | | | | | |
| C.1 Design for A1,A2 | 0.0 | 400.0 | 400.0 | 0.0 | 76.0 | 76.0 | 100 |
| C.2 Supervision for A1,A2 | 275.0 | 1,100.0 | 1,375.0 | 52.3 | 209.0 | 261.3 | 80 |
| C.3 Design/Supervision for A3 | 40.0 | 160.0 | 200.0 | 7.6 | 30.4 | 38.0 | 80 |
| C.4 Design/Supervision for A4 | 50.0 | 224.0 | 274.0 | 10.6 | 42.6 | 53.2 | 80 |
| C.5 Design/Supervision for A5 | 24.0 | 96.0 | 120.0 | 4.6 | 18.2 | 22.8 | 80 |
| C.6 Design/Supervision for A6 | 35.0 | 140.0 | 175.0 | 6.7 | 26.6 | 33.3 | 80 |
| C.7 Design/Supervision for A7 | 144.0 | 576.0 | 720.0 | 27.4 | 109.4 | 136.8 | 80 |
| C.8 Port Development Study | 200.0 | 800.0 | 1,000.0 | 39.0 | 152.0 | 191.0 | 80 |
| C.9 Workshop Study | 0.0 | 200.0 | 200.0 | 0.0 | 38.0 | 38.0 | 100 |
| Subtotal Part C Base Cost | 774.0 | 3,096.0 | 3,870.0 | 147.1 | 702.2 | 849.3 | 83 |
| Physical Contingencies | 38.7 | 154.8 | 193.5 | 7.4 | 35.1 | 42.5 | -- |
| Price Contingencies | 136.0 | 544.1 | 680.1 | 24.8 | 103.4 | 128.2 | 81 |
| Subtotal Part C Total Cost | 948.7 | 4,424.9 | 5,373.6 | 179.3 | 840.7 | 1,020.0 | 82 |
| D. Institutional Development | | | | | | | |
| D.1 Project Coordination Unit | 339.8 | 1,359.2 | 1,699.0 | 64.6 | 250.2 | 314.8 | 80 |
| D.2 Management Technical Assistance | 3,059.0 | 12,236.0 | 15,295.0 | 581.2 | 2,324.8 | 2,906.0 | 80 |
| D.3 Technical Assistance To Customs | 400.0 | 1,600.0 | 2,000.0 | 76.0 | 304.0 | 380.0 | 80 |
| Subtotal Part D Base Cost | 3,798.8 | 15,195.2 | 18,994.0 | 721.8 | 2,879.0 | 3,600.8 | 80 |
| Physical Contingencies | 139.9 | 759.6 | 899.5 | 36.1 | 144.4 | 180.5 | -- |
| Price Contingencies | 805.4 | 3,221.7 | 4,027.1 | 153.0 | 612.1 | 765.1 | 80 |
| Subtotal Part D Total Cost | 4,744.1 | 19,176.5 | 23,920.6 | 910.9 | 3,635.5 | 4,546.4 | 80 |
| TOTAL BASE COST | 17,027.3 | 79,036.7 | 96,064.0 | 3,235.2 | 15,026.5 | 18,261.7 | 82 |
| TOTAL PHYSICAL CONTINGENCIES | 1,474.1 | 5,550.9 | 7,025.0 | 280.1 | 1,112.8 | 1,392.9 | 80 |
| TOTAL PRICE CONTINGENCIES | 3,348.0 | 15,546.4 | 18,894.4 | 636.3 | 2,953.8 | 3,590.1 | 82 |
| TOTAL COST | 21,849.4 | 100,134.0 | 124,983.4 | 4,151.6 | 19,093.1 | 23,244.8 | 82 |
| TOTAL COST (net of taxes) | 13,288.3 | 100,490.0 | 113,778.3 | 2,524.4 | 19,093.1 | 21,617.5 | |
| November 1989 Prices | | | | | | | |
| Expected Price Increases (%) | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 |
| | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 | 3.6 |

F. Financing

3.17 A financing plan has been agreed between the Government of Tanzania, THA, the Association and bilateral sources. The bilateral participation has been arranged in the course of discussions between February 1989 and December 1989. Bilateral donors will subject their components to their own appraisal processes to confirm project costs estimates and a timetable for implementation to the satisfaction of the financing source. Most of the bilateral financing will be from the SADCC regional funds, and their commitment to finance specific components in the project will be subject to inclusion of those components in the SADCC Regional Transport Investment Program (Components A.3, A.4, A.5 and A.7). The Government, in December 1989, undertook to make a formal request to SADCC. Also, the procurement of container terminal equipment (Rubber Tired Gantry) is subject to the container throughput reaching an agreed level of container traffic. As for the Ship-to-Shore Gantry (B.3) and the Belgian Wharf Rehabilitation (A.5), THA is committed to financing these two components from its own resources (consistent with the revenue earning capacity of THA), unless external financing can be secured from bilateral sources. It was agreed at the December 1989 NORDIC Donors Meeting at Oslo that donors would assist THA to secure the financing for these components through future donor meetings. The external financing will be provided through an IDA Credit of US\$37 million, a FINNIDA grant of US\$17.9 million, a SIDA grant of US\$17.5 million, a NORAD grant of US\$11.5 million, a Netherland grant of US\$5.4 million and a DANIDA grant of US\$4.2 million. THA will contribute US\$28.8 million to cover the local cost financing and the foreign exchange element required for the Ship-to-Shore Gantry and the Belgium Wharf Rehabilitation. Details are given in Annex 3-4.

3.18 The proposed IDA Credit of US\$37 million equivalent will be on-lent to THA for a period of 20 years including five years of grace at an interest rate of 11% p.a. It was agreed at negotiations that THA would bear the foreign exchange risk. The execution of a subsidiary loan agreement between the Government and the THA, is a condition of Credit effectiveness. The local cost component totaling US\$21.3 million and foreign cost of US\$7.5 million will be financed by THA with funds allocated for the purpose from its reserves. All co-financing commitments are being confirmed by the respective financing sources. Agreement for cofinancing the PCU has been confirmed by respective donors.

G. Implementation and Project Monitoring

Implementation

3.19 The borrower will be the Government of Tanzania (GOT). Implementation of the project will be the responsibility of THA with whom a Project Agreement has been executed. THA is extremely short of qualified staff and to ease the burden of project management, THA will continue the current arrangement for engaging technical experts in the PCU to coordinate the overall execution of the project. The PCU, which will be jointly financed by SIDA and FINNIDA, will continue the current coordination and liaison work through to completion of the project, preparing such reports on implementation as are required by the donors and assisting in the preparation and processing of withdrawal applications. The supervision of the civil works will be carried out by consultants appointed by the THA and financed by the respective agencies

funding the civil works. Prequalification for the main civil works component (Container Terminal and Copper Road) is underway. The project should be physically completed by December 31, 1996. The implementation schedule (Chart 1) was agreed upon during negotiations.

Project Monitoring and Reporting

3.20 For the purposes of monitoring the project during implementation, the following matters were reviewed during appraisal and agreed with the THA with respect to the format of the quarterly reports to be prepared by THA for submission to IDA and the donors:

- (a) progress of the project works with cost data;
- (b) training and technical assistance;
- (c) THA and the Port of Dar es Salaam financial performance, including operational ratios and cash flow requirements and overall operations;
- (d) equipment operation and maintenance (availability and costs); and
- (e) general and bulk cargo, container, RO-RO and grain movements, berth utilization, ships' waiting and service times and productivity indicators.

It was agreed at negotiations that THA will be responsible for preparing quarterly reports and a project completion report within six months of the closing date of the proposed Credit.

H. Procurement

3.21 The construction of the civil works financed from the IDA Credit would be procured through international competitive bidding (ICB) in accordance with IDA guidelines. Eligible domestic bidders would be afforded a margin of preference of 7.5% under ICB procurement. Prequalification will be required for all contracted works. Equipment or materials financed from the IDA Credit would be procured through ICB in accordance with the IDA guidelines with eligible domestic bidders afforded a margin of preference of 15%. Contracts for office equipment consisting of computers, facsimile machines, typewriters, copying machines, etc., estimated to cost up to US\$50,000 would be procured by local shopping with at least three quotations, up to an aggregate of US\$1.0 million. Technical Assistance and Training financed under the proposed Credit are estimated to cost about US\$10.7 million, and the Engineering and Supervision services financed under the Credit are estimated to cost about US\$1.7 million. The Port Development Study is estimated to cost about US\$1.2 million. These consulting services will be carried out by firms appointed from short lists in accordance with the Association's guidelines. All IDA-financed procurement packages over US\$100,000 will be subject to prior IDA review.

3.22 NORAD-financed works (Kurasini Oil Jetty Upgrading) will be undertaken by a Norwegian contractor appointed in accordance with the procedures of NORAD. The Government of the Netherlands will appoint a contractor to undertake the Lighterage Wharf Paving. Equipment (other than those financed by IDA) will be supplied by Finnish manufacturers in accordance with FINNIDA

procedures. Experts for Technical Assistance and Training (other than those financed by IDA) will be engaged by FINNIDA, NORAD, SIDA, and the Netherlands based on their respective procedures.

3.23 Procurement arrangements are summarized below:

Amounts and Methods of Procurement^{a/}
(US\$ million)

| <u>Items to be Procured</u> | <u>Procurement Method</u> | | <u>Total Cost</u> |
|--|---------------------------|---------------------------|-------------------|
| | <u>ICB</u> | <u>Other^{b/}</u> | |
| Civil Works | 23.8 (17.5) | 41.7 (-) | 65.5 (17.5) |
| Equipment | 7.4 (7.4) | 20.1 (1.2) | 27.5 (8.6) |
| Engineering Services and Studies | | 5.4 (2.3) | 5.4 (2.3) |
| Technical Assistance for Institutional Development | | 23.9 (8.6) | 23.9 (8.6) |
| TOTAL | 31.2 (24.9) | 91.1 (12.1) | 122.3 (37.0) |

^{a/} Figures in parentheses indicate financing by IDA.

^{b/} Includes bilateral donors and THA.

I. Disbursement

3.24 The length of the implementation period is based on past experience on similar projects as reflected in the relevant standard disbursement profile (6.5 years). The IDA Credit is expected to be fully disbursed by December 31, 1996. The IDA funds will be disbursed as follows:

| <u>Category</u> | <u>Description</u> | <u>% of Expenditure to be Financed</u> | <u>IDA Amount (US\$ million)</u> |
|-----------------|---|--|--------------------------------------|
| 1 | Civil Works | 100% of foreign exp. | 14.1 |
| 2 | Equipment | 100% of foreign exp. | 6.9 |
| 3 | Consultant's Services and Training for THA | 100% of foreign exp. | 7.0 |
| 4 | Training for Customs | 100% | 1.6 |
| 5 | Equipment for Customs | 100% | 0.4 |
| 6 | Unallocated | 100% | 7.0 |
| | TOTAL | | <u>37.0</u> |

3.25 All disbursements will be fully documented, except for contracts and purchase orders of less than US\$50,000. Disbursement for items less than US\$50,000 will be made against Statement of Expenditures, documentation for which would be held by THA, to be made available for inspection by supervision missions. An estimated schedule of disbursements is given in Annex 3-5. This schedule is in line with comparable disbursements under previous Bank Group financing of specific investment projects in Tanzania. In order to expedite disbursement of funds under the above categories of the Credit, two Special Accounts with deposits of US\$1.5 million and US\$400,000 respectively (an amount roughly equivalent to four months of estimated expenditures). The Special Accounts will be established and maintained in THA and Customs' name, respectively, in the Central Bank will be replenished by the Association in accordance with agreed procedures.

J. Accounting and Auditing

3.26 Project accounts will be maintained by THA. In previous Bank Group projects, THA has experienced considerable delays in having its accounts prepared and audited. To combat this problem, the project includes a technical assistance and training component for THA's Finance Department, as well as provision for the computerization of ledger operations. It was agreed at negotiations that the Tanzania Audit Corporation (TAC), who have audited the accounts of previous Bank group project's accounts, will audit the accounts and that all audited THA and project accounts, including the Special Accounts and Statements of Expenditures, will be submitted to the Association no later than six months after the end of each fiscal year.

K. Environmental Impact

3.27 Although the physical aspects of the proposed project do not pose any serious environmental concerns (all works are a continuation of ongoing works which will be governed by the procedures to safeguard the environment adopted under the ongoing project), the proposed port development study (Annex 3-3) will need to include a very careful environmental impact study. The main concerns are two-fold: (i) if the study recommends that berth expansion is required to handle the future traffic, this would most likely entail a major reclamation program to extend the berth area; and (ii) THA has expressed interest in widening the entrance channel to the harbor, and this would entail heavy dredging to deepen and widen the channel. The concern here is that both undertakings would (a) alter the existing balance of tidal flow which is preventing heavy siltation of the harbor channel; and (b) heavy dredging may affect the environmental balance in the port area. In drafting the terms of reference for the development study, specific points on environmental issues have been raised which will need to be addressed in the study. The study will also be guided by the recently published Bank Technical Paper: Environmental Considerations for Port and Harbor Developments (January 1989).

3.28 In addition to the physical aspects related to the environment, the area which has raised concern during project appraisal has been the treatment of bilge and ships' waste, including bunkers from petroleum tankers. THA is not a signatory to the International Convention for the Prevention of Pollution from Ships - MARPOL - (1978 Protocol) under the International Maritime Organization (IMO). The Convention sets out strict guidelines on management of ships' waste,

including that of petroleum tankers, in an endeavor to minimize damage caused by port and shipping operations. Given the beneficial effect of proper pollution control and environmental protection enshrined in this Convention, it has been agreed with THA that an investigation will be commissioned under the proposed Port Development Study to analyze the facilities and changes in operating practices which THA will need to undertake to join the MARPOL Convention. A careful balance must be struck between environmental concerns and the cost of necessary facilities, such as an incinerator, required to enable THA to comply with the detailed requirements of the Convention. The details of the necessary investigation have been specified in the draft terms of reference for the port development study. Furthermore, in order to take precautionary measures and improve on the already existing pollution control system at THA, fire fighting equipment for tugs, and a pollution control facility, including a waste oil reception facility, have been included in the KOJ Strengthening component to be financed by NORAD.

IV. ECONOMIC ANALYSIS

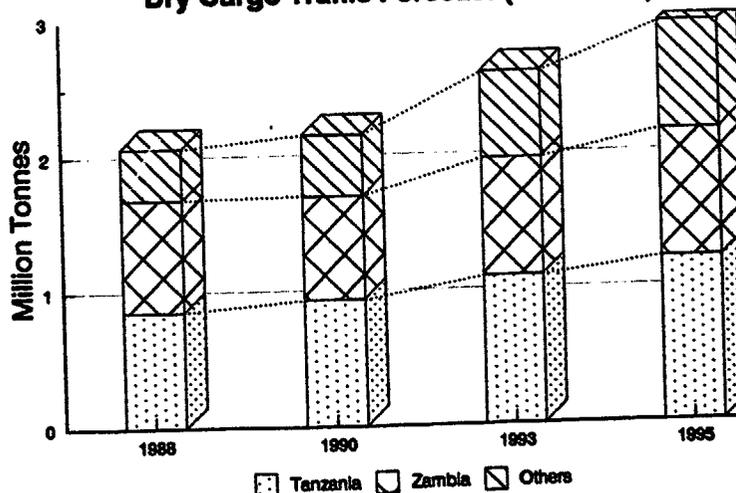
A. Future Traffic

4.01 The future levels of Dar es Salaam port traffic will largely be a function of (i) a continued recovery of the Tanzanian economy, (ii) the direction of Zambian economic growth; (iii) the pace of diversion of ZBR and Uganda traffic to Tanzania; and (iv) the opening of inland transshipment depots channelling increased Malawi transit traffic. Detailed traffic projections have been made up to 1995, assuming that the proposed container terminal expansion at the port of Dar es Salaam will be in operation by early 1993. The forecast assumes that Tanzania continues the macroeconomic adjustments begun under the Economic Recovery Program (1986-1989) and that the economy will continue to grow at about 4-5% p.a., the growth rate experienced over the past three years. For Zambia, in the absence of a concerted effort to adjust its macroeconomic policy, the economy is forecast to continue its low level of growth over the forecast period (0-2% p.a.). With the completion of the Isaka transshipment terminal and the planned improvements in TRC operations (proposed Railways Restructuring Project), the diversion of ZBR and Uganda traffic to Dar es Salaam from the port of Mombasa is expected to continue. Specifically, the projections anticipate modest growth in traffic from Burundi and Rwanda; a continuation of the significant growth experienced in the past five years by Uganda traffic; and stagnation at current levels for traffic from Zaire. Given the planned completion of the Malawi Cargo Centers at Dar es Salaam and Mbeya (1990/91), Malawi transit traffic to Dar es Salaam is expected to increase significantly. In aggregate, non-petroleum traffic is expected to recover by 1993 to little less than the level recorded in 1977, and thereafter to grow at 6% per annum to 1995. The overall growth rate between 1988 and 1995 is expected to be about 5% p.a.

4.02 As for the composition of traffic through the port of Dar es Salaam, Tanzanian traffic is forecast to maintain its share at about 41%, while Zambian traffic's share will continue to decline to 32% in 1995 (although it will rise slightly in absolute terms). In contrast, the proportion of total traffic accounted for by Malawi, ZBR and Uganda is projected to increase to over 27% from the current 18% (12% in 1983).

4.03 The traffic projections are based upon a study by THA consultants and THA's Department of Planning, adjusted for recent trends. A summary of traffic projections is presented in Figure 4.1, with detailed quantitative figures in Annexes 4-1 to 4-3. Annex 4-4 describes the rationale for each country's traffic projections. To summarize, the traffic is forecast to increase from 2.06 million tonnes in 1988,

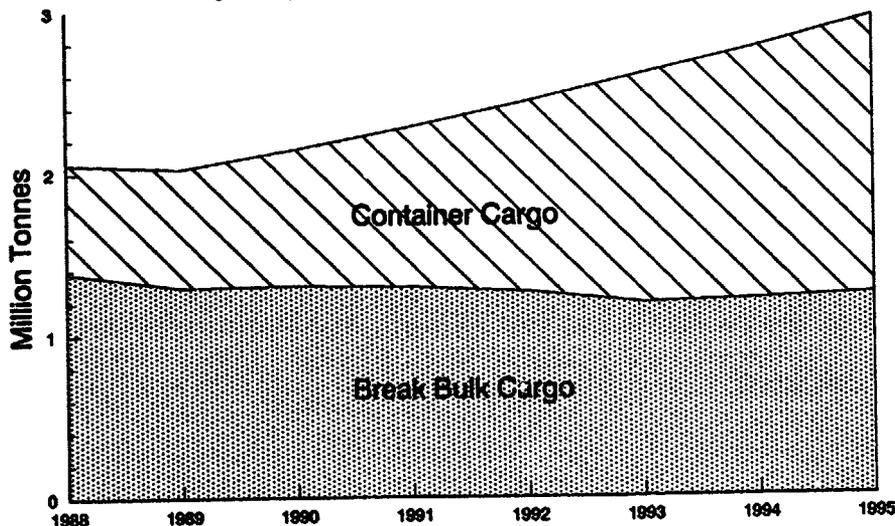
Figure 4.1
Port of Dar es Salaam
Dry Cargo Traffic Forecast (1988-1995)



to 2.60 million tonnes in 1993 and 2.95 million tonnes in 1995. Also in Annex 4-4, the potential impact of a South African border closure on traffic through Dar es Salaam has been analyzed. The results indicate that, given the capacity expansion proposed under this project, the port of Dar es Salaam would just be able to handle the diverted traffic in an intermediate scenario in which the Benguela, Limpopo and Beira-Malawi railways are closed. In the highly unlikely scenario in which all other transport corridors in Southern Africa, including the Beira-Zimbabwe corridor, are closed, the port would be overwhelmed.

4.04 A high proportion of the non-bulk traffic through Dar es Salaam, some 80% to 85% by consultant estimates, can be containerized. In 1983, only about 19% was actually containerized. By 1988, nearly 33% was containerized; an average annual growth rate of 20% between 1983 and 1988. The critical determinant of future container traffic is, therefore, the speed of penetration, rather than the overall growth of traffic, and this in turn is determined by the effectiveness of inland transport and transshipment facilities in handling containerized cargo. The major obstacle to a faster pace of containerization has been TRC's and TAZARA's lack of wagons and transshipment facilities. The increase in container traffic has outstripped their capacity and shippers are currently forced to strip the containers in the port before onward shipment. Both TRC and TAZARA have realized the magnitude of containerized transport demand and have begun major investments to increase their fleet of flat bed wagons to transport containers. Also, inland container depots are being built at Isaka for Burundi and Rwanda traffic and at Mbeya and Dar es Salaam for Malawi traffic. These capacity and facility improvements should further encourage the rate of containerization. Within the overall forecast, it is projected that container traffic will continue to grow, albeit at a relatively slower pace of 14% p.a., to reach 1.7 million tonnes by 1995 (58% containerization). Forecast traffic volumes for the period 1988 to 1995, disaggregated by mode of handling, are shown in Figure 4.2 below.

Figure 4.2
Port of Dar es Salaam
Dry Cargo Traffic by Mode of Handling



B. Project Economic Benefits

General

4.05. The proposed project will have three different types of benefits. In the first place, it will increase the overall capacity of the port of Dar es Salaam, allowing it to accommodate expected traffic growth at least until 1997, rather than reaching full capacity by 1994. Second, the project will facilitate the continued containerization of traffic through Dar es Salaam, with accompanying savings in ships' turnaround time, and onward transportation and other costs. Third, institutional reforms and new equipment will improve productivity in both the container and the conventional terminals. Specific quantifiable benefits are: reductions in ships' service times and in ships' waiting times; avoidance of the increased costs and/or lost revenues involved in having to route traffic through other ports; reduction in the average dwell time of containers; and lower insurance costs. These benefits are discussed below, after an analysis of future traffic in the absence of the project.

Future Traffic Without the Proposed Project

4.06. Dar es Salaam port currently has storage capacity for a throughput of 64,700 loaded TEUs p.a., which is barely sufficient for the container traffic forecast for 1990 (62,075 loaded TEUs). Without the increase in storage capacity envisaged under the project, from 1991 onwards, increasing amounts of traffic which would otherwise have been containerized would have to be "reassigned" to the conventional terminal and shipped in break-bulk form. In this scenario, dry cargo through the conventional terminal would rise quickly until its full capacity of 1.87 million tonnes is reached in 1994. Consequently, from 1994 onwards, traffic would be "diverted" at an increasing rate to other ports such as Tanga and Mombasa, reaching an estimated level of 600,000 tonnes p.a. by 1997. A comparison of traffic forecasts with and without the project, including projections for "reassigned" and "diverted" traffic, is presented in Annex 4-5.

4.07. If additional capacity at Dar es Salaam port were urgently required, the lighterage wharf could be rehabilitated with a substantial investment in barges, cargo handling equipment and infrastructure. This would increase capacity by about 400,000 tonnes (or about 30,000 TEUs) p.a., but the high operating costs and up-front investment make this an uneconomic proposition compared to the proposed project.

Ships' Service and Waiting Times

4.08. The major benefit derived from the project is a reduction in the total number of ship berth days and the number of days that ships spend waiting for a berth, despite an increase in total traffic handled at Dar es Salaam (see Annexes 4-6 to 4-8). This benefit is captured through the cost savings related to a reduction in ship turnaround time (service time plus waiting time). These reductions in ships' turnaround time are caused by two factors: first, productivity improvements will reduce the average service time for each ship; and, second, increasing container penetration (which would not be possible

without the project) will relieve the conventional terminal, allowing berth occupancy rates there to fall from the full capacity level of 75-90% to the 45-60% range. Since the ratio of ships' waiting time to service time is exponentially related to berth occupancy, this translates into a significant saving.

4.09. It should be noted that the Tanzanian economy does not receive the full benefit of the savings in ships' time, nor does it receive it immediately. In the first instance, the shipowners stand to gain the full benefit. However, since the shipping industry is reasonably competitive, it is estimated that half of these savings are passed on in the form of lower freight rates and demurrage charges. Many of these savings accrue to importers in neighboring land-locked countries, so the analysis has assumed that Tanzania gains the benefits according to its share of total traffic through Dar es Salaam, and that the benefits are lagged one year behind actual reductions in ships' time.

Container Dwell Time Reduction

4.10. A second major benefit of the project is the reduction in container dwell time. Every day that a container sits idle in the port, the owner of its contents is losing an average of US\$5, the opportunity cost (at 10%) of the capital tied up in the goods, assuming containerized imports are worth US\$1,400 per tonne. Only those benefits attributable to Tanzania, i.e. the working capital cost savings on Tanzanian imports, have been applied as project benefits in the economic analysis. In addition to these working capital cost savings, the owners of the containers (usually shipowners) charge demurrage fees for every day the container is not returned empty to port beyond a certain grace period. Since the terms and conditions of these demurrage charges vary and the savings associated with their reduction are difficult to quantify, they have not been included in the calculation of the project's economic return. However, given that Tanzania currently owes more than US\$5 million in demurrage charges for the first five months of 1989, this is clearly a substantial additional project benefit.

4.11. Technical assistance, training and essential equipment for Customs officials as well as co-ordination between THA, Customs and other port users is designed to reduce the average dwell time of containers to specific targets (in coordination with IDA, UNCTAD began the first phase of assistance in September 1989). A description of the dwell time issue and details of this program of assistance and agreed dwell time targets are provided in Technical Working Paper 2, attached as Annex 4-9. The benefits from container dwell time reduction are summarized in Annex 4-10.

Reduced Insurance Costs

4.12. Containerizing cargo reduces the risk of damage and pilferage. This is translated into insurance costs which are typically lower by 0.5% of the value of the cargo. Without the project, the port would not be able to accommodate any container traffic beyond 64,700 loaded TEUs p.a., and all traffic subsequently "reassigned" to the conventional terminal in break-bulk form would

incur the higher insurance costs. Assuming local traders bear the additional costs ascribed to Tanzanian traffic only, the project saves the domestic economy about US\$1.0 million p.a. (Annex 4-11).

Avoidance of Diversion to Other Ports

4.13. Without the project, the port of Dar es Salaam would reach full capacity in 1994 and any further traffic would have to be diverted to other ports. Zambian and Malawian traffic would most likely be diverted through RSA and Mozambique; Uganda, Zaire and Rwanda would probably use Mombasa (in Kenya); and Burundi traffic as well as incremental domestic Tanzanian traffic could use Tanga (in Tanzania) or Mombasa. The cost to the Tanzanian economy of traffic being diverted to foreign ports is at least as high as the lost contribution (revenue minus variable costs) foregone by THA, and probably considerably more if one takes into account the lost value added in inland transportation services. Very conservatively, it is assumed that US\$250 in wharfage and stevedoring contribution is lost for every twenty foot container which is diverted to a non-Tanzanian port. Any traffic being diverted to Tanga would incur additional road/rail costs of about US\$90 per tonne, as well as necessitating capital investment at Tanga, making it an even more costly alternative for Tanzania than diversion of transit traffic to a foreign port. In the no-project scenario, therefore, it would make sense, on strictly economic grounds, for Tanzania to continue to serve its own trade needs in full at Dar es Salaam plus any other traffic which could be accommodated, diverting only transit traffic to foreign ports. In this case, the cost of diversion (i.e. THA's loss of contribution) would start at about US\$1.3 million in 1994, rising to US\$12.1 million in 1997 (see Annex 4-11). In addition to the direct economic losses, diversion of transit traffic would hinder recent endeavors to strengthen regional integration and economic cooperation.

Other Unquantified Benefits

4.14. There are a number of additional project benefits which have not been quantified. Some relate to THA specifically, others more generally to the Tanzanian economy. With reference to THA, the new financial strategy (described in Chapter V and more fully in Annex 5-6) will lead to more efficient capital investment decision making and a better allocation of physical resources through strategic use of the tariff structure. Having to repay all donor grants to the Government will reduce the state of "aid dependence", and the incentive scheme will improve productivity not just in ship-to-shore handling, but also in all aspects of THA's activities from planning and supplies management to engineering services and financial administration. Instead of privatizing one or two specific functions relating to port activity, the project will cause THA to behave in a more commercial manner, effectively bringing private sector forces to bear on the whole organization.

4.15. With reference to the economy in general, the project will facilitate trade flows through increased capacity, shorter dwell times and simpler documentation. Since the private sector plays a relatively large part in trading activity in the region, this aspect of the project has a beneficial impact on private sector development. Inland transportation services (mainly TRC, TAZARA and the trucking industry) will see greater demand, although the extent to which

they benefit will depend on their success in relieving their own capacity constraints. At the national accounts level, the fiscal deficit will be reduced by THA's increased payments of tax, interest, principal and dividends (which could total more than 10% of the 1987-88 budget deficit by 1992).

4.16. The rehabilitation of the Kurasini Oil Jetty will substantially reduce the probability of an accident taking place, especially since the tankers mooring at the oil jetty are becoming steadily larger. Such an accident might lead to the loss of a tanker plus its cargo (conservatively estimated at US\$30 million), with the attendant pollution costs, as well as loss of human life. It might also prevent the port from receiving further tankers for up to six months, thus depriving the economy of vital fuel. Since these losses and the probability of their taking place are not susceptible to precise quantification, this component has been excluded from project costs and benefits for the purposes of calculating an economic rate of return.

Distribution of Benefits

4.17. The main beneficiaries of the project are freight forwarders and importers in Tanzania and neighboring countries who receive the benefits of lower freight rates, lower insurance costs, lower container demurrage charges and lower working capital needs. To the extent that these savings are passed on to the consumer, they too will benefit from the project.

4.18. Along with traders and their customers, THA will be a major beneficiary due to increased revenues, lower operating costs and more commercially minded management practices. Some of these benefits will be passed on to the Treasury and therefore to the Tanzanian taxpayer. In the first instance, shipowners (almost entirely foreign) will profit from the reduced ship turnaround times, but some of these gains (50% is assumed) will be passed on to traders after a short lag. Finally, the railway and trucking industries will benefit from increased traffic, especially transit cargo.

C. Project Economic Costs

4.19. In estimating project costs, all components have been included except the Kurasini Oil Jetty (para 4.16) and certain civil works and technical assistance costs associated with the ongoing project. Physical contingencies, but not price contingencies, have been included. Non-tradeable goods are assumed to make up 90% of all local costs (mainly civil works) and a conversion factor of 0.8 has been applied. The tax and duty component of local goods has been excluded. The project will be implemented over five years, with the bulk of the capital costs occurring in years two, three and four (1991-93). The project's recurrent costs comprise maintenance of the new infrastructure (relatively inexpensive since it is basically just paving) and maintenance and added operating costs of the new equipment. Maintaining the new equipment will also be relatively inexpensive (5% of capital cost p.a.) during the life of the project when technical assistance will be at hand. Thereafter, it is forecast to rise to 8% of capital cost. The third SSG and the conventional cargo equipment will require fuel and a larger number of relatively skilled operators, equivalent to 3% of the equipment's capital cost p.a. Annex 4-12 provides a

breakdown of project costs by type and year.

D. Economic Return and Sensitivity Analysis

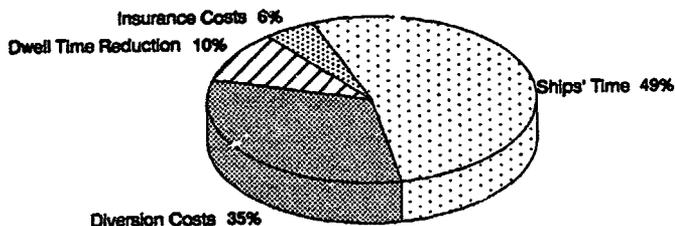
Economic Return

4.20. Projecting cash flows to 2004 and assuming zero salvage value, the project's economic rate of return (ERR) is estimated at 20% (Table 4.1 summarizes economic costs and benefits). Adopting the standard convention for dealing with a multi-year construction period, the project's "first year return" is 12%, indicating the project is timely. Using a discount rate of 10%, the project's net present value is estimated at US\$43 million. The reduction in ships' service and waiting time accounts for 49% of gross benefits, with avoidance of diversion costs making up another 35%. Figure 4.3 shows the relative importance of the different benefits.

Table 4.1
SUMMARY OF ECONOMIC COSTS AND BENEFITS
US\$ 000

| US\$000: | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998-200 |
|---------------------------------|----------------|-----------------|-----------------|----------------|--------------|---------------|---------------|---------------|---------------|
| COSTS: | | | | | | | | | |
| CAPITAL INVESTMENT | (6,156) | (14,876) | (40,969) | (18,262) | (3,253) | 0 | 0 | 0 | 0 |
| MAINTENANCE AND OPERATING COSTS | (77) | (846) | (2,205) | (2,454) | (2,476) | (3,150) | (3,150) | (3,150) | (3,150) |
| BENEFITS: | | | | | | | | | |
| SHIPS' SERVICE TIME | 0 | 302 | 1,026 | 1,671 | 2,277 | 2,446 | 2,253 | 2,092 | 2,092 |
| SHIPS' WAITING TIME | 0 | 279 | 6,571 | 6,264 | 7,236 | 8,219 | 8,072 | 8,028 | 8,028 |
| DWELL TIME REDUCTION | 0 | 307 | 822 | 1,191 | 1,551 | 1,976 | 2,360 | 2,604 | 2,604 |
| INSURANCE | 0 | 293 | 719 | 1,178 | 1,322 | 1,233 | 1,128 | 1,036 | 1,036 |
| AVOIDANCE OF DIVERSION COSTS | 0 | 0 | 0 | 0 | 1,295 | 4,659 | 8,240 | 12,054 | 12,054 |
| NET BENEFITS | (6,235) | (14,042) | (34,036) | (5,431) | 7,953 | 15,382 | 18,903 | 22,664 | 22,664 |
| | | | | | | | | ERR | 2 |
| | | | | | | | | NPV | 42,69 |

Figure 4.3
Share of Project's Gross Benefits
Accounted For By Each Type Of Benefit



Breakdown of Project
(Gross) Benefits

Present Value (US\$m)
Gross Benefits = 127.4
Costs = 84.7
Net Benefits = 42.7

Sensitivity Analysis

4.21. Table 4.2 depicts the sensitivity of the project's ERR to critical variables, while Table 4.3 shows the switching values of these variables (the values at which the project's net present value is zero). It can be seen that the economic return is most sensitive to the growth in total traffic. Specifically, if traffic grows at only 80% of the rate forecast, the estimated ERR falls from 20% to 15%. If the growth rate falls further to 62% of the forecast (i.e. growth of 4.0% p.a. between 1989 and 1997 rather than 6.5%), then the project's estimated ERR would be only 10%, indicating zero net present value.

Table 4.2

SENSITIVITY OF ECONOMIC RATE OF RETURN TO KEY VARIABLES

| | | CAPITAL COSTS (% Base) | | PROJECT DELAY (Years) | |
|--|--------------------------|---------------------------|------|--------------------------|-----|
| | | 100% | 120% | One | Two |
| | BASE CASE: | 20% | 16% | 15% | 10% |
| TRAFFIC GROWTH RATE (% Base) | 80%: | 15% | 11% | 10% | 5% |
| | 60%: | 9% | 6% | 4% | 1% |
| CONTAINER PENETRATION RATE (% Base) | 80%: | 19% | 15% | 14% | 9% |
| | 60%: | 18% | 15% | 14% | 9% |
| TRAFFIC GROWTH PLUS CONTAINER PENETRATION (% Base) | 80%: | 14% | 10% | 10% | 4% |
| | 60%: | 7% | 4% | 2% | -1% |
| | NO PRODUCTIVITY EFFECT: | 18% | 14% | 13% | 8% |
| | NO DWELL TIME REDUCTION: | 16% | 13% | 12% | 7% |

On the other hand, the project's ERR is not so sensitive to the rate at which containerization increases: if the container penetration rate (defined as the percentage rise in the proportion of traffic which is containerized) falls to 60% of the forecast rate, the estimated ERR drops only to 18%. Even with zero additional container penetration, the project has positive net present value. This counter-intuitive result can be explained as follows: the economic analysis considers the whole port of Dar es Salaam, not just the container terminal. If potential traffic cannot be containerized, it will instead be shipped through the conventional terminal as break-bulk cargo. This will lead to higher

operating and insurance costs, but the traffic will not have to be diverted to another port until the conventional terminal also reaches capacity. The key benefit of the project is not that it expands the container terminal per se, but that it is the most effective and efficient way of increasing the port's total capacity, thus reducing the more important costs of diversion and ships' waiting time. Consequently, it is total traffic growth which is the key variable for Dar es Salaam port, rather than container penetration.

Table 4.3
Switching Values of Key Variables

| <u>Variable</u> | <u>Switching Value</u> |
|---|------------------------|
| Total Traffic Growth (% p.a. 1989-1997) | 4.0 (Forecast = 6.5) |
| Container Penetration | N.A. |
| Project Costs (% of Base) | 165 |
| Project Delay (Months) | 24 |
| Dwell Time Reduction | N.A. |
| Productivity Improvements | N.A. |

Note: N.A. = Not Applicable. Net present value of project remains positive when variable = zero.

4.22. If productivity improvements with the project are no better than those expected without the project, the estimated ERR will fall from 20% to 18%; and if no benefits from dwell time reduction materialize at all then the ERR will fall from 20% to 16%. If both circumstances occur together, the combined effect is a fall in the ERR to 14%. In effect, therefore, these two variables do not have switching values. The project's viability is more sensitive to an increase in project costs or a delay in implementation. A 20% increase in costs will reduce the ERR to 16%, while a one year delay would imply an ERR of 15%. If both occurred, the ERR would be just 12%. Switching values for these two variables are a 65% increase in costs and a 24 month delay respectively.

4.23. The project's sensitivity is not unduly compounded by high correlation between these key variables. In certain cases, the correlation may actually be negative, reducing the inherent riskiness of the project. For instance, a reduction in total traffic will be accompanied by an increase in container penetration, if container volumes are unaffected. Even if traffic growth and container penetration are perfectly correlated, the impact of a reduction in their growth rates is not significantly different from a reduction in the growth of total traffic alone, except at exceptionally low growth rates.

E. Project Risks

4.24. The project faces three major risks: traffic growth; project costs and potential delays in implementation; and the pace of achievement of operational improvements, including dwell time reduction. In the first instance, total traffic may not grow as quickly as forecast, especially if there is a pause in Tanzania's economic recovery. Nevertheless, the traffic projections used in the analysis have adopted conservative assumptions

growth, the extent to which Malawi decides to use its newly developed northern corridor, and Dar es Salaam's attractiveness to Rwanda, Uganda and Zaire as an alternative port to Mombasa. Furthermore, the anticipated improvements in operational efficiency at Dar es Salaam will solidify its competitive position, significantly reducing the opportunities for other ports to win back lost business. As a precaution against this project risk, the Ship-to-Shore Gantry Crane and the Rubber Tired Gantry Cranes included in the project will only be ordered once a certain trigger level of container traffic has been reached.

4.25. The second risk concerns project costs and timing. As in all projects, there is always the possibility that estimated costs will be exceeded or that implementation will be delayed. In this case, the risk is reduced by certain aspects of the project, namely that: civil works represent only about 40% of total project costs; the planned construction (mainly paving) is technically straightforward; cost estimates have been based on detailed engineering studies; and THA has recent experience of major construction activity under the ongoing Port Rehabilitation Project. Project delay is more of a threat, given the experience of the ongoing project, but again this is mitigated by the relative technical simplicity of the planned civil works and by THA's prior knowledge of Bank procedures.

4.26. Finally, there is also the risk that the operational improvements envisaged under the project will not materialize. Although this would not have a drastic effect on the ERR, it would severely diminish some of the project's unquantified benefits. To guard against this threat, a detailed strategy for operational improvements has been designed (described in paragraphs 2.23 to 2.33). In particular, the Technical Assistance and Training program incorporates lessons learned from the ongoing project, and its effectiveness will be closely monitored by a TA/T Coordinator in the Project Coordination Unit. Performance targets have been explicitly defined in the Project Agreement and the productivity incentive scheme will play a strong role in promoting their attainment. On the specific issue of container dwell time reduction, the Customs component will ensure that improvements are made in document processing procedures, the major cause of high average dwell time.

V. FINANCIAL EVALUATION

A. Financial Management

5.01. Although THA's Finance Department is currently suffering from a staffing shortage, its basic competence is sound. The Department compiles THA's financial statements (balance sheet, profit and loss, and sources and application of funds) and submits to the Ministry of Communications and Works an annual and a supplementary budget for approval.

5.02. A covenant was included in the 1984 Credit Agreement requiring that audited accounts be forwarded to the Association no later than 9 months after the end of THA's fiscal year (which runs from July to June). However, since the start of the project, financial reports have been regularly delayed. Audited

accounts for fiscal year 1986-87 were only completed in April 1989. Moreover, at the end of June 1989, THA's 1987-88 accounts had not been audited, and ledgers had only been completed up to December 1988.

5.03. The delays in preparing accounts have been caused by two factors. First, there is substantial understaffing at senior management levels, with unfilled vacancies in critical positions in the headquarters finance unit. Recruiting efforts have been unsuccessful, chiefly because of THA's wage policy. Second, the accounts have been delayed by a state of partial computerization. A computer specialist has been included in the project's technical assistance program to upgrade the Finance Department's computing capabilities and to help train the staff who will be recruited or promoted into the vacant positions.

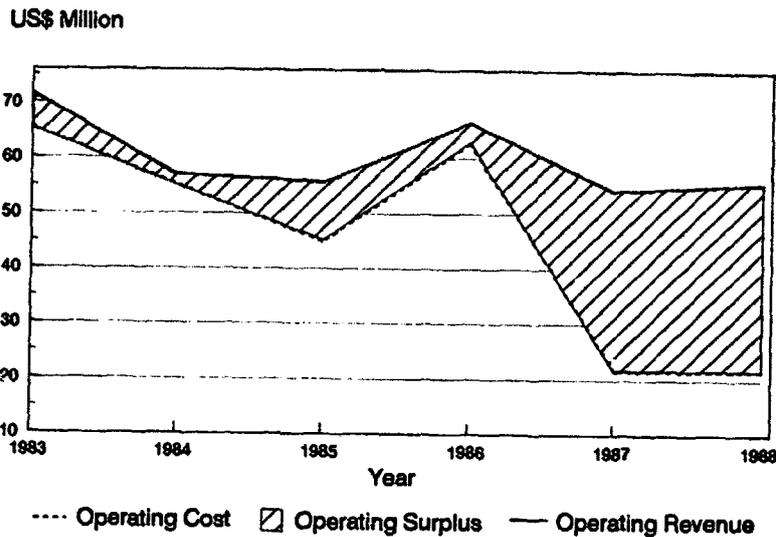
5.04. A major improvement is currently being effected concerning the format of THA's financial reporting. There has been a general confusion between financial and management accounting, with costs being classified in the profit and loss accounts according to cost centers (such as shipping, wharfage etc.) instead of being sorted by major expenditure item (such as salaries, depreciation etc.). Starting from fiscal year 1989-90, THA's financial documents will classify costs according to expenditure items, and management accounts will be reported separately. This will improve the quality of financial information, as well as simplifying budget preparation and productivity studies.

5.05. External auditing has been carried out by the Tanzania Audit Corporation (TAC), which was established in 1968 to audit all Tanzanian parastatals. TAC's staff is independent and competent but under strength. THA's internal auditing unit is also understaffed. It comprises about 40 employees, with 8 at headquarters and the rest distributed among the three ports. As in the Finance Department, the major cause of understaffing is THA's wage and incentive structure. As noted in para 3.26, in the future, THA's audited accounts are to be presented to the Association no later than 6 months after the end of each fiscal year.

B. Operating Performance

5.06. Operating surplus has risen from US\$6 million (8% of operating revenue) in 1983 to US\$33 million (60% of operating revenue) in 1988 (Figure 5.1). THA's income statements for the period 1983-88 are summarized in Annex 5-1. The massive increase in operating surplus has been caused chiefly by the depreciation of the TSh versus the US Dollar (Annex 5-2), since more than 60% of THA's operating revenues are foreign exchange denominated. Furthermore, some revenue categories like wharfage on domestic imports are cashed in TShs but are effectively invoiced on foreign currency values because the tariff basis is ad valorem. On the other hand, only 20% of operating costs (financial charges, spare parts, tug servicing) are foreign exchange denominated. More than half the operating costs are staff costs and depend primarily on the local inflation rate for salaries and allowances. As a result of this currency mismatch, operating expenditure has decreased from US\$65 million in 1983 to US\$22 million in 1988, while revenues have decreased from US\$71 million to US\$56 million over the same period. THA's operating margin is highly dependent on movements in the TSh/US Dollar exchange rate, and it can be estimated that a 10% depreciation of TSh generates, everything else being equal, about US\$2.5 million a year for THA.

Figure 5.1
Operating Surplus 1983-88



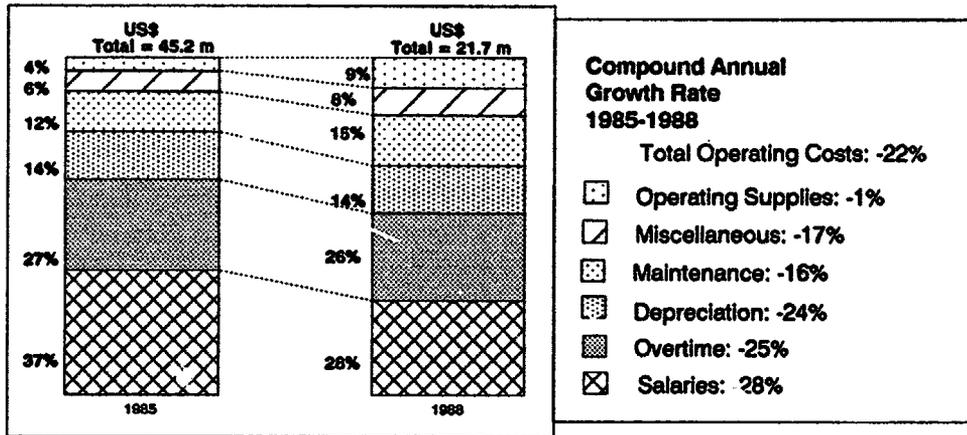
5.07. Table 5.1 below indicates that the structure of operating revenues has been relatively stable, with wharfage and operations generating two thirds of total revenues. In spite of high dwell times, storage revenues have fallen from their 1986 peak because they are denominated in TShs (which have depreciated against the US Dollar).

Table 5.1
Operating Revenue by Activity
(as a percentage of total operating revenue)

| Year Ending June 30: | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 (6 mos) |
|-------------------------|-----------|-----------|-----------|-----------|-----------|--------------|
| Shipping | 10% | 16% | 14% | 14% | 14% | 13% |
| Wharfage | 39% | 35% | 34% | 36% | 39% | 40% |
| Operations | 31% | 28% | 28% | 32% | 31% | 30% |
| Storage | 15% | 16% | 20% | 13% | 11% | 13% |
| Other | 4% | 5% | 5% | 5% | 6% | 4% |
| Total (in US\$m) | 57 | 56 | 66 | 54 | 56 | 31 |

5.08. Although a historical cost breakdown by major expenditure item cannot be obtained at a global THA level, an analysis of Dar es Salaam port's financial documents shows a steeply declining share of the salary component. In TSh terms, salary rises have been consistently below the Tanzanian inflation rate. Operating supplies, maintenance and miscellaneous items, where the foreign cost component is substantial, have increased their share of total costs from 22% to 32% (see Figure 5.2).

Figure 5.2
Dar es Salaam Port
Breakdown of Operating Costs 1985-88



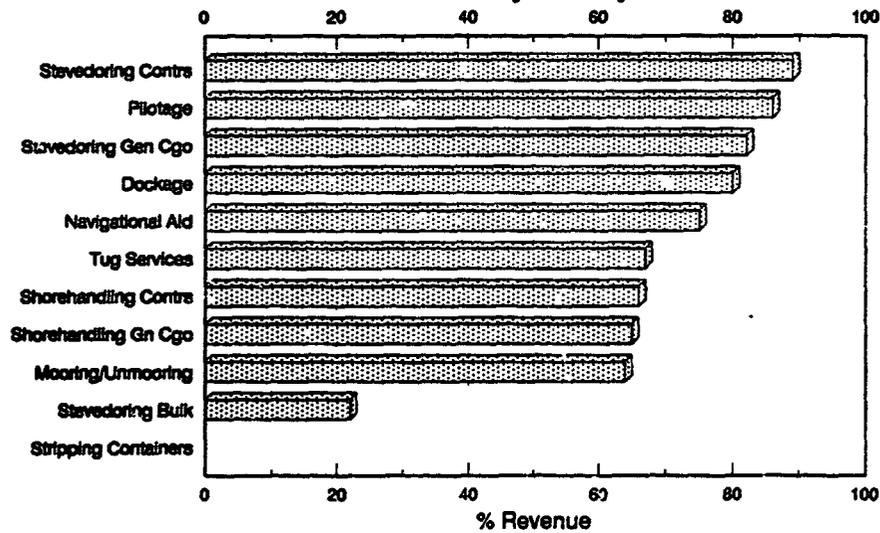
5.09. Two anomalies are worth noting in the general cost structure. First, accounting depreciations do not in any way reflect the economic replacement cost of assets. As a result, the cost of services (wharfage, operations, storage etc.), a crucial element in pricing decisions, is understated, and may jeopardize THA's ability to replace its asset base. Second, surplus before taxation is overstated because realized currency losses on long term loans are not being deducted, and because depreciation charges are too low, as outlined above.

5.10. A costing exercise by service at the Dar es Salaam port has been regularly carried out by THA's Finance Department. Costs are broken down into "direct" (salaries and overtime charged to specific services, maintenance, insurance and depreciation of specific equipment), "direct general" (unproductive labor remuneration) and "overheads" (headquarters' salaries, maintenance and depreciation). 80% of overheads are allocated to wharfage, while the remaining 20% are attributed to the different services at the prorata of direct costs. The costs per unit of services are shown in Annex 5-3(A).

5.11. Average tariffs are shown in Annex 5-3(B), by currency denomination, and tariff unit, for the main categories of service. The tariff structure is overall adequate, given prices charged by the competition. A number of major activities generate gross contributions (revenues minus direct and direct general costs) in excess of 70% (Figure 5.3). However, some improvements could be made: (i) the tariff unit for transit containers and transit break bulk cargo should be TEUs and harbor tonnes respectively instead of the current ad valorem pricing basis. As from May 1989, transit export containers are being charged on a TEU basis. This tariff policy should be applied to all transit traffic to make the

giving of quotations easier, eliminate undervaluation problems, and accelerate the flow of merchandise by easing documentation procedures; (ii) tariffs of TSh denominated services like domestic cargo shorehandling and loaded container storage should be adjusted on a more regular basis to take account of exchange rate movements; and (iii) all tariffs should be reassessed in light of rising depreciation costs caused by investment in new equipment and revaluation of some older assets.

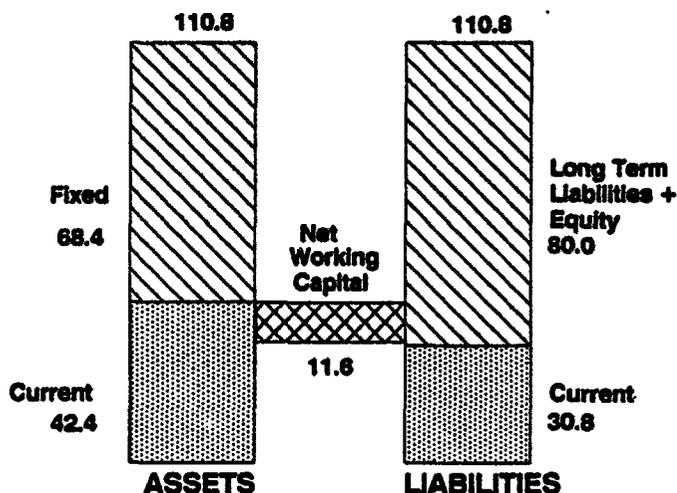
Figure 5.3
Dar es Salaam Port
Gross Contribution by Activity



C. Financial Condition

5.12. THA's total assets quadrupled between 1986 and 1988 in current TShs (a 40% increase in current US Dollars). This increase is the result of the ongoing port development project (which includes the container and grain terminals, the inland container depots and substantial amounts of new equipment) on the one hand, and the fact that existing assets in 1986 were severely undervalued. Figure 5.4 depicts the draft balance sheet for fiscal year 1988, and balance sheets for the period 1983-88 are summarized in Annex 5-4.

Figure 5.4
THA's Financial Structure
June 30, 1988 (US\$ m)



5.13. The fixed asset base is grossly underestimated. The Mid-Term Project Review reassessed asset values, and estimated that net fixed assets were undervalued by US\$80 million in May 1988. Additional adjustments for fiscal year 1988-89 raise this figure to more than US\$100 million. The debt to equity ratio falls from three to less than one when the revaluation is taken into account. Long-term loans outstanding at June 30, 1989 (excluding grants under the ongoing project) amounted to US\$39.7 million, 97% of which is represented by IBRD loans and IDA credits (Annex 5-5).

5.14. Grants committed to THA by donor countries under the ongoing project amount to US\$141 million equivalent. Approximately two thirds of the total had been disbursed at the end of fiscal year 1989, most of which does not as yet appear on THA's balance sheet. The grants are on-lent to THA by the Government, although the rate, maturity, currency denomination and grace period of the on-lending contract have not yet been determined. As part of its new financial strategy, THA would repay the Government all grants under the ongoing project except those associated with technical assistance (i.e. a total of about US\$107 million equivalent) over the next twenty years. The interest rate would be 11% and the loans would be denominated in the currencies of the original grants, although payments would be made in TShs. Under these terms, the ongoing project grants would create a debt servicing obligation of US\$13.5 million equivalent p.a. from 1990 onwards. This would limit the amount of cash THA has available for expansion projects but should not place an unmanageable constraint on its capital investment program.

5.15. THA's cash position is comfortable and amounts currently to US\$35 million equivalent or nine months of operating revenues. More than 80% of the position is in TShs, which raises concerns, in so far as the real yield on cash holdings in TShs is negative (THA is receiving a nominal interest rate of 20-25%, while inflation is running at about 30% p.a.). Assuming a 20% p.a. real appreciation of the US Dollar, current cash management practices translate into losses of US\$5-6 million losses each year.

D. Corporate Financial Strategy

5.16. THA Board and the Government have agreed to the following changes in THA's financial policy: (i) repayment to the Government of the fixed asset component of existing donor grants, as well as all past and future World Bank funds on-lent to THA and all future grants; (ii) debt-to-equity ratio to be kept below 60:40; (iii) adoption of a dividend policy; (iv) institution of a well-funded but rigorously administered productivity incentive scheme; (v) investment of cash reserves in higher yielding assets; and (vi) tariff structure to be used as a means of altering the behavior of port users, as well as a cost recovery mechanism. A detailed description of the new policy is provided in Annex 5-6. The Project Agreement includes the provision that THA shall not make any changes to its Corporate Financial Strategy without the prior agreement of the Association.

5.17. Implementation of the policy changes described above will allow THA to become considerably more commercially minded in its strategic decision-making and in its day-to-day operating activities. In particular, it will have the following beneficial effects:

- (i) Capital investment decisions will be improved, since THA will be somewhat capital constrained and will have to prioritize among different investment possibilities. The uses to which donor grants are put will be more critically evaluated, both in terms of fixed asset investment and expenditure on technical assistance. This effect is already evident in THA's revisions of its technical assistance and training program;
- (ii) The incentive scheme will improve THA's administrative and operating efficiency. Given the physical constraints to further expansion of the port of Dar es Salaam, increased productivity is the only way the port will manage to handle the mounting traffic levels that are forecast to materialize over the next few years;
- (iii) In addition to achieving full cost recovery, pricing decisions will also take into account THA's long-term needs. Tariffs will be used as a strategic tool to influence the behavior of port users, so that the demand for scarce resources such as container storage space is dampened, without reducing its net contribution;
- (iv) Adherence to a target leverage ratio and a business-like dividend policy will have two effects: in bad times, it will prevent THA from taking on more debt than its operating cash flows justify; and, in good times, it will enable THA to decide its dividends based on its own financial performance and cash needs rather than on other extraneous factors. It was agreed at negotiations that THA would maintain a debt-to-equity ratio of less than 60:40; and

- (v) The Government will receive a relatively predictable stream of income which, from 1990/91, is forecast to be in excess of US\$25 million p.a.

E. Financial Forecast

5.18. Assuming the new financial policy is adopted and the project goes ahead, cash flow available for investment is expected to increase from US\$15 million in 1988-89 to US\$21 million in 1996-97, with a dip to US\$8 million in 1990-91, all in constant 1989 US Dollars (Table 5.2). Interest payments will rise substantially in 1990-91, when the grace period expires for the ongoing project's credits and grants (now all "loans"), and again in 1995-96 for the proposed project. Depreciation will rise dramatically over the next two years due to the asset revaluation and new investments. These projections demonstrate that THA has the financial capacity to repay all grants and credits to the Government, introduce the incentive scheme and still have enough cash for capital investments. Government receipts of taxation, interest and principal repayments are forecast to grow to at least US\$40 million p.a. by the late 1990s.

Table 5.2

THA CASH FLOW FORECAST
Constant 1989 US\$ million

| Year Ending 30/6: | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|------------------------------------|------|------|------|------|------|------|------|-------|-------|
| OPERATING REVENUES | 57.0 | 65.2 | 69.3 | 77.6 | 82.9 | 88.1 | 94.0 | 100.3 | 107.0 |
| OPERATING COSTS | 22.0 | 22.0 | 22.7 | 23.7 | 24.6 | 24.6 | 25.3 | 26.1 | 26.9 |
| INCENTIVE SCHEME | 0.0 | 9.2 | 9.2 | 9.2 | 9.2 | 9.2 | 9.2 | 9.2 | 9.2 |
| PRIOR INTEREST CHARGES | 1.0 | 0.8 | 4.5 | 4.1 | 3.8 | 3.5 | 3.2 | 3.0 | 2.8 |
| INTEREST ON GRANTS AND NEW IDA | 0.0 | 0.6 | 11.8 | 11.6 | 11.4 | 11.2 | 10.9 | 19.4 | 18.8 |
| DEPRECIATION | 0.9 | 4.7 | 7.0 | 8.5 | 8.9 | 9.0 | 9.0 | 9.0 | 9.0 |
| OPERATING SURPLUS | 33.1 | 28.5 | 14.1 | 20.5 | 25.1 | 30.6 | 36.4 | 33.6 | 40.3 |
| TAXATION | 16.6 | 14.2 | 7.0 | 10.3 | 12.5 | 15.3 | 18.2 | 16.8 | 20.2 |
| OPERATING SURPLUS AFTER TAXES | 16.6 | 14.2 | 7.0 | 10.3 | 12.5 | 15.3 | 18.2 | 16.8 | 20.2 |
| CASH FLOW FROM OPERATIONS | 17.5 | 18.9 | 14.0 | 18.8 | 21.4 | 24.3 | 27.1 | 25.8 | 29.1 |
| PRIOR PRINCIPAL REPAYED | 2.4 | 2.3 | 3.9 | 3.1 | 3.2 | 3.3 | 2.4 | 2.4 | 2.4 |
| PRINC. REPAYED ON GRANTS & NEW IDA | 0.0 | 0.0 | 1.7 | 1.9 | 2.1 | 2.3 | 2.5 | 5.1 | 5.6 |
| CASH AVAILABLE FOR INVESTMENTS | 15.1 | 16.6 | 8.4 | 13.8 | 16.1 | 18.7 | 22.2 | 18.3 | 21.1 |
| Payments To Treasury: | | | | | | | | | |
| TAXATION | 16.6 | 14.2 | 7.0 | 10.3 | 12.5 | 15.3 | 18.2 | 16.8 | 20.2 |
| INTEREST PAYMENTS | 0.2 | 0.1 | 15.7 | 15.2 | 14.8 | 14.4 | 14.0 | 22.2 | 21.5 |
| PRINCIPAL REPAYMENTS | 0.8 | 0.8 | 4.1 | 3.5 | 3.7 | 3.9 | 4.2 | 6.7 | 7.2 |
| TOTAL | 17.6 | 15.1 | 26.8 | 29.0 | 31.0 | 33.6 | 36.4 | 45.7 | 48.9 |

5.19. The cash flow forecasts described in Table 5.2 are based on the following assumptions:

- (i) The new tariff structure implemented in 1989 will increase revenues by 8%. As a result of Dar es Salaam port's increased efficiency and competitiveness versus other ports, and in cognizance of its relatively low tariffs by international standards, an additional tariff increase of 5% in real terms is assumed to take place in 1992;
- (ii) Revenues increase in line with total dry traffic growth;
- (iii) Until 1993-94, operating costs increase by the amount needed to maintain and operate the additional civil works and equipment included in the project; from 1994-5, total operating costs are assumed to grow at 3% p.a.;
- (iv) The incentive scheme is adopted, with annual payments of US\$9.2m;
- (v) THA's net fixed assets grow from US\$15 million in 1988 to US\$127 million in 1990, because of new investments, completion of capital work in progress and revaluation of old assets. Between 1990 and 1994, assets grow by a further US\$52 million due to the proposed project. From 1994 onwards, no asset growth is assumed. Average straight line depreciation period is 20 years; and
- (vi) The grants under the ongoing project are repaid from 1990-91; those under the proposed project are repaid from 1995-96.

These forecasts implicitly assume a constant real TSh/USD exchange rate. As noted in para. 5.06, a depreciation of the TSh versus the US Dollar would improve the profitability of operations.

5.20. Based on a simplified foreign exchange cash statement (Table 5.3), it appears that foreign exchange is not a binding constraint, assuming 65% of revenues are in foreign exchange and as long as THA is indeed able to retain 35% of its foreign exchange revenues. In 1986-87 and 1987-88, THA retained only 14% and 28% respectively of its foreign exchange earnings. THA's only recurrent obligations in foreign exchange relate to interest payments, spare parts and tug boat servicing in Mombasa, but foreign exchange is also needed for capital investments outside the scope of the IDA project. Investment capacity in foreign exchange will lie in the US\$8-13 million range in the period to 1995, which should be sufficient for THA's needs.

Table 5.3
Summarized Foreign Exchange Cash Statement
Constant US\$ million

| Year Ending 30/6: | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 |
|-----------------------------|------|------|------|------|------|------|------|------|
| | ACT | EST | FCST | FCST | FCST | FCST | FCST | FCST |
| TOTAL REVENUES | 55.6 | 57.0 | 65.2 | 69.3 | 77.6 | 82.9 | 88.1 | 94.0 |
| FX REVENUES | 38.2 | 37.1 | 42.4 | 45.0 | 50.4 | 53.9 | 57.3 | 61.1 |
| FX RETAINED (%) | 27.7 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 |
| FX RETAINED (AMOUNT) | 10.0 | 13.0 | 14.8 | 15.8 | 17.7 | 18.9 | 20.0 | 21.4 |
| SPARE PARTS | 3.5 | 5.0 | 5.0 | 6.0 | 6.0 | 7.0 | 7.0 | 7.0 |
| TUG SERVICING | 1.2 | 1.2 | 1.2 | 1.4 | 1.4 | 1.4 | 1.6 | 1.6 |
| FX INTEREST PAYMENTS | 0.9 | 0.8 | 0.7 | 0.6 | 0.5 | 0.4 | 0.3 | 0.2 |
| FX AVAILABLE FOR INVESTMENT | 5.3 | 6.8 | 8.6 | 8.4 | 10.3 | 10.6 | 11.4 | 12.8 |

F. Financial Rate of Return

5.21. The project's financial rate of return (FRR) is 14%. The FRR is less than the ERR because many of the project's economic benefits accrue to Tanzanian traders and consumers rather than to THA. Nevertheless, THA can acquire some of these benefits through higher tariffs; and, as a result of the project, it will have lower operating costs and the additional revenue generated by increased traffic. Table 5.4 below summarizes the project's financial costs and benefits.

5.22. In addition to those used in forecasting THA's cash flow (see para. 5.19), the following assumptions have been adopted in calculating the project's FRR. First, the project affects dry cargo at Dar es Salaam only, which is assumed to account for 77% of THA's total revenues and costs. Second, without the project, operating costs would rise at the same rate as traffic, probably an underestimate since operations would become increasingly complex as the port becomes more and more congested. Third, without the project, there would be no tariff increase in 1992. Indeed, congestion would be getting so dire by that date that shipowners would probably be charging the port substantial demurrage charges. Finally, the calculation of the FRR, like that of the ERR, has assumed that the project life is 15 years, after which there is zero salvage value. Since capacity expansions today will still be providing additional revenue to THA in 2005 and beyond, an FRR of 14% is clearly on the conservative side. In any event, although it is significantly less than the ERR, it still represents a net present value of US\$15 million at a 10% discount rate.

5.23. The financial rate of return is even more sensitive to total traffic growth than the economic rate of return, owing to the fact that its major benefit stream consists of higher revenues from additional traffic. If total traffic grows at 90% of the rate forecast (i.e. 5.9% p.a. instead of 6.5% p.a. between

1989 and 1997), the project has negative net present value from THA's financial standpoint. However, in addition to the conservative assumptions enumerated above, the same risk reducing features described in Chapter IV apply to the project's financial return as they do to its economic return.

Table 5.4

SUMMARY OF FINANCIAL COSTS AND BENEFITS

US\$ 000

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998-20 |
|---|---------|----------|----------|----------|---------|---------|---------|---------|---------|
| PROJECT COSTS: | | | | | | | | | |
| CAPITAL INVESTMENT | (6,467) | (15,644) | (42,061) | (13,612) | (8,429) | 0 | 0 | 0 | |
| MAINTENANCE AND OPERATING COSTS | (89) | (390) | (2,883) | (2,660) | (2,685) | (3,383) | (3,383) | (3,383) | (3,38) |
| PROJECT BENEFITS: | | | | | | | | | |
| REVENUES (Dry Cargo Through Dar) | | | | | | | | | |
| Without Project | 50,210 | 53,370 | 56,952 | 60,637 | 62,973 | 62,973 | 62,973 | 62,973 | 62,97 |
| With Project | 50,210 | 53,370 | 59,799 | 63,879 | 67,861 | 72,383 | 77,207 | 82,852 | 82,35 |
| Benefit | 0 | 0 | 2,848 | 3,042 | 4,888 | 9,411 | 14,235 | 19,880 | 19,38 |
| OPERATING COSTS | | | | | | | | | |
| Without Project | 17,448 | 18,548 | 19,791 | 21,141 | 21,863 | 21,863 | 21,863 | 21,863 | 21,68 |
| With Project | 16,940 | 16,940 | 16,940 | 16,940 | 16,940 | 17,448 | 18,321 | 19,237 | 19,23 |
| Saving | 508 | 1,608 | 2,851 | 4,201 | 4,943 | 4,435 | 3,563 | 2,647 | 2,64 |
| NET BENEFITS | (6,068) | (14,428) | (38,745) | (9,229) | 3,718 | 10,463 | 14,414 | 18,644 | 18,64 |
| | | | | | | | | FFR | 1 |
| | | | | | | | | NPV | 15,17 |

VI. AGREEMENTS REACHED AND RECOMMENDATIONS

6.01. During negotiations, agreements were reached on the following points:

- (a) The Incentive Scheme to be instituted by October 1, 1990 (para 2.29);
- (b) All investments not included in the Project, larger than US\$2 million equivalent for civil works and US\$ 500,000 equivalent for equipment to be undertaken only after consultation with IDA, and an annual financial plan to be jointly reviewed by IDA and THA by March 31 of each year before being effected (para 2.35);
- (c) No material change to be made in THA's Corporate Financial Strategy without prior agreement with IDA, including the commitment to repay, according to an agreed schedule, the principal and interest owed on all debts to the Government (para 2.35);

- (d) THA to attain annual productivity, equipment availability and container dwell time targets as agreed with IDA (para 3.07);
- (e) the Port Development Study to be completed and the recommended development plan submitted for IDA review by June 30, 1992 (para 3.14);
- (f) The Project implementation schedule (para 3.19);
- (g) Preparation by THA of quarterly reports and a project completion report (para 3.20);
- (h) Annual audits of THA's accounts, the Project accounts, the Special Accounts and Statements of Expenditure to be submitted to the Association no later than six months after the end of THA's fiscal year (para 3.26.; and
- (i) THA to maintain a debt-to-equity ratio of less than 60:40 (para 5.17).

6.02. Conditions of Credit effectiveness are as follows:

- (a) THA to conduct a thorough census of its workforce (para 2.29);
- (b) THA to submit to the Association the report and recommendations of its study on the operational guidelines for the Incentive Scheme (para 2.29); and
- (c) Execution of a subsidiary loan agreement between the Government and THA (para 3.18).

6.03. Subject to the above agreements and conditions, the project is suitable for a Credit to the Government in the amount of SDR 28.9 million (US\$37.0 million equivalent), on standard IDA terms.

TANZANIA

PORT MODERNIZATION PROJECT II

ANNEXES



UNITED REPUBLIC OF TANZANIA

PORT MODERNIZATION PROJECT II

Past Lending in the Transport Sector

PROJECT NAME First Highway Projects
 (Cr. 48-TA/Cr. 115-TA for US\$17.0 million)

PPAR NO. 791 of June 26, 1975

1. The US\$14 million credit (48-TA) of February 1964 was to finance the foreign exchange cost of engineering and construction of eight road sections. Shortly thereafter, most expatriate staff in the Roads and Aerodromes Division (RAD) of the Ministry of Communications and Works left the country. RAD's professional manpower was depleted and project implementation seriously delayed. In addition, the work quantities of the project, based on preliminary engineering, had been underestimated, and prices had escalated. IDA reappraised and revised the project, and provided a US\$ 3 million supplementary credit (115-TA) in March 1968. The revised project was to: retain detailed engineering and construction of 533 mi of six of the eight road sections, extend detailed engineering of the section of the Tanzam Highway between Morogoro and Iringa from 104 mi to 142 mi but omit construction; include detailed engineering of feeder roads (110 mi of four secondary roads and 98 mi of tertiary roads) on the Geita Peninsula as well as a five-year program of staffing and training for RAD; and omit construction of the Musoma-North Mara road section.

2. Road construction was completed satisfactorily by 1970, and the detailed engineering work was carried out as envisaged. Engineering of the Morogoro-Iringa section was subsequently implemented under the Second Highway Project. Engineering of the Geita Roads, after further revision, became the basis for their upgrading under the Third Highway Project. The staffing and training program was carried out to a limited extent because of slowness in recruiting expatriates and shortage of African staff to be trained. The actual cost of the revised project was US\$ 22.2 million, or 3% less than estimated. The Project was completed in July 1973.

PROJECT NAME Second Highway Project
 (Ln. 586-TA/Cr. 142-TA for US\$22.5 million)

PPAR NO. 4030 of June 30, 1982

3. The project approved in February 1969 assisted the construction of two difficult sections, aggregating 499 km, of the Tanzam Highway. The goal of providing Zambia with a reliable outlet to the sea was effectively achieved, contrary to appraisal expectations, Zambia traffic did not abandon the highway when the TAZARA railway was opened in 1975. The actual cost of the project was US\$35.2 million, or 7% less than estimated. The Project was completed in December 1978.

PROJECT NAME East Africa Community
 Second and Third Harbour Project
 (Loans 638 and 865-EA for US\$61.5 million)

PPAR NO. 4029 of June 30, 1982

4. The two projects approved in July 1969 and January 1972 were to help implement the East African Harbours Corporation (EAHC) 1969-72 and 1972-74 development programs. In addition to various smaller modernization and improvement works, the program included, at Mombasa, the construction of a specialized wharf to handle bulk cement, two deep-water berths, a single buoy tanker mooring, and the completion of three berths started under a previous Bank-financed project. In addition, at Tanga the programs included improvement of lighterage facilities.

5. Completion of the civil works significantly increased the capacity of these ports and assisted the East African Community, until its demise in 1977, in expediting its foreign trade. Without the projects the economies of Kenya and Tanzania, but also of Uganda, Zambia, Rwanda and Burundi, would have faced serious constraints, and congestion at both Mombasa and Dar es Salaam ports would have reached levels well beyond the proportions which prevailed in the early 1970s. The two projects had joint cost overruns of about 30% counting only the items which were completed by December 31, 1981. The actual project cost was about US\$136.7 million.

PROJECT NAME East Africa Community
 Third Railway Project
 (Lns. 638 and 865-EA for US\$42.4 million)

PPAR NO. 4533 of June 30, 1983

6. The project was approved to assist East African Railways (EAR) in implementing a policy package designed to streamline the Railway's tariff structure and bring down its costs to allow it to recoup profitable business it had lost to road transport and effectively compete with trucking in the future, while at the same time remaining a commercially viable operation. The project involved actions on two fronts: realignment of tariffs, and implementation of an investment and cost reduction program.

7. On completion the project had failed to achieve full implementation on either objective. Full implementation of a cost-based tariff structure was not achieved, because the economic, political and operational consequences of implementing the new tariff were not foreseen. Full implementation of the investment and the cost reduction programs failed to materialize because of the Borrower's financial troubles, caused by political differences among the Member Governments in the East African Community. The estimated project cost was US\$90.8 million; the actual cost is unknown.

PROJECT NAME Fifth Highway Project
(Cr. 876-TA for US\$20.5 million)

PPAR NO. 6938 of September 15, 1987

17. This project, approved in January 1979, was the second phase of the effort to establish a trunk road maintenance organization in the country. and the Fifth Project included the establishment of routine maintenance capability for about 5,100 km of primary roads in the northern half of the country, the rehabilitation and regraveling of about 2,040 km of trunk roads, procurement of road maintenance and rehabilitation equipment, construction of road maintenance camps, workshops, and housing and technical assistance and training.

18. Procurement of equipment, vehicles, and spares was affected by initial delays due to differences of views between the Government and IDA over the sufficiency of notification for ICB. When this was resolved and delivery was due, the 1983-1984 suspension of disbursements by IDA for all projects in the country caused further delays and most of the items of equipment did not arrive until late 1984. Two advisors were appoint on an individual basis and two key advisors were provided by a consulting firm. They all arrived separately over a period of two years. Thus, from the beginning it was difficult to adopt a coordinated approach.

19. The project fell short of completing its physical objectives and some of the works carried out have fallen into disrepair due mainly to the poor quality of the original works. Maintenance of roads has been instituted, but the quality of the work still does not keep the road in acceptable condition. Training at the Highway Authority's facilities at Morogoro improved, but local personnel were not yet able to take over as instructors at the end of the program. About 120 students graduated as engineers at Indian universities.

20. A major disappointment was that the quality of the roads did not improve as expected although the funds were spent. What went wrong was that a few critical elements needed to actually perform the maintenance work were missing. When the labor and material were available, the equipment was not operational for lack of spare parts or fuel or tires, etc. As a result, some of the roads have crumbled to the point where reconstruction at a high cost is required. The actual cost was US\$22.5 million, 88% of estimate. The project closed in December 1985.

PROJECT NAME Port Rehabilitation Project
(Cr. 1536 TA for US\$27.0 million)

PLANNED COMPLETION December 31, 1989

21. The project approved in was is designed to provide for the rehabilitation and modernization of the port of Dar-es-Salaam which, besides being Tanzania's major port, also serves as an important regional port for Burundi, Malawi, Zaire, Rwanda and Zambia. The project would provide special container handling facilities and equipment, replace some deteriorated general cargo equipment, modernize grain handling facilities rehabilitate lighterage facilities and the petroleum jetty, repave sections of berths, and provide for a review of additional rehabilitation requirements, technical assistance, training and consultancy services.

TANZANIA

PORT MODERNIZATION PROJECT II

Annex 2-1

DAR ES SALAAM PORT
GENERAL CARGO TRAFFIC

('000 TONS)

| IMPORTS | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | Growth Rate (%) |
|--------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------------|
| A. Dry Cargo | | | | | | | |
| (i) Tanzania | 516 | 667 | 709 | 561 | 724 | 570 | 1.02 |
| (ii) Transit - Zambia | 263 | 292 | 257 | 351 | 304 | 499 | 1.11 |
| - Zaire | 4 | 8 | 11 | 16 | 14 | 59 | 1.23 |
| - Burundi | 31 | 55 | 57 | 59 | 73 | 77 | 1.22 |
| - Rwanda | 5 | 6 | 23 | 19 | 35 | 69 | 1.09 |
| - Malawi | 25 | 13 | 19 | 4 | 9 | 30 | 1.06 |
| - Uganda | 21 | 25 | 5 | 1 | 43 | 22 | 1.01 |
| Sub-Total Transit | 350 | 399 | 372 | 480 | 478 | 670 | 1.14 |
| TOTAL DRY CARGO IMPORTS | 866 | 1,066 | 1,081 | 1,061 | 1,202 | 1,240 | 1.07 |
| B. Petroleum Products | | | | | | | |
| (i) Tanzania | 614 | 671 | 631 | 655 | 743 | | |
| (ii) Zambia | 381 | 468 | 247 | 207 | 498 | | |
| (iii) Others | 0 | 0 | 0 | 0 | 0 | | |
| Total Petroleum Products | 995 | 1,137 | 1,078 | 1,062 | 1,241 | 1,788 | 1.12 |
| C. Other Liquids | 17 | 8 | 15 | 12 | 9 | 14 | 0.96 |
| TOTAL IMPORTS | 1,878 | 2,211 | 2,174 | 2,135 | 2,452 | 3,028 | 1.10 |

| EXPORTS | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | Growth Rate (%) |
|--------------------------------|------------|------------|------------|------------|--------------|------------|-----------------|
| A. Dry Cargo | | | | | | | |
| (i) Tanzania | 108 | 159 | 148 | 155 | 274 | 280 | 1.21 |
| (ii) Transit - Zambia | 405 | 459 | 418 | 368 | 467 | 388 | 0.99 |
| - Zaire | 57 | 65 | 62 | 53 | 46 | 57 | 1.00 |
| - Burundi | 32 | 29 | 37 | 36 | 37 | 43 | 1.06 |
| - Rwanda | 0 | 0 | 0 | 0 | 1 | 0 | 1.00 |
| - Malawi | 3 | 8 | 25 | 12 | 12 | 11 | 1.22 |
| - Uganda | 0 | 13 | 18 | 16 | 43 | 37 | 1.22 |
| Sub-Total Transit | 497 | 574 | 560 | 515 | 606 | 538 | 1.02 |
| TOTAL DRY CARGO EXPORTS | 603 | 733 | 708 | 670 | 680 | 616 | 1.06 |
| B. Petroleum Products | | | | | | | |
| (i) Tanzania | 110 | 213 | 120 | 107 | 143 | 97 | 0.98 |
| C. Others | 12 | 28 | 7 | 20 | 12 | 13 | 1.02 |
| TOTAL EXPORTS | 727 | 974 | 635 | 797 | 1,035 | 626 | 1.06 |

| IMPORTS & EXPORTS | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | Growth Rate (%) |
|----------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------------|
| A. Dry Cargo | | | | | | | |
| (i) Tanzania | 624 | 826 | 857 | 736 | 968 | 660 | 1.08 |
| (ii) Transit - Zambia | 668 | 751 | 675 | 749 | 771 | 627 | 1.06 |
| - Zaire | 61 | 73 | 73 | 69 | 60 | 60 | 1.06 |
| - Burundi | 63 | 64 | 94 | 125 | 110 | 120 | 1.14 |
| - Rwanda | 5 | 6 | 23 | 19 | 36 | 69 | 1.09 |
| - Malawi | 29 | 21 | 44 | 16 | 21 | 41 | 1.07 |
| - Uganda | 21 | 38 | 23 | 17 | 66 | 59 | 1.23 |
| Sub-Total Transit | 847 | 973 | 932 | 965 | 1,064 | 1,206 | 1.07 |
| TOTAL DRY CARGO | 1,471 | 1,799 | 1,789 | 1,731 | 2,032 | 2,066 | 1.07 |
| B. Petroleum Products | 1,105 | 1,350 | 1,198 | 1,169 | 1,384 | 1,663 | 1.11 |
| C. Others | 29 | 36 | 22 | 32 | 21 | 27 | 0.99 |
| TOTAL IMPORT & EXPORT | 2,605 | 3,185 | 3,009 | 2,932 | 3,437 | 3,746 | 1.09 |

TANZANIA
PORT MODERNIZATION PROJECT II

Annex 2-2

DAR ES SALAAM PORT
CONTAINER CARGO TRAFFIC
(NUMBER OF BOXES)

| IMPORTS | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | (%) AVERAGE GROWTH RATE |
|--------------------------|--------|--------|--------|--------|--------|--------|----------------------------|
| A. HOUSE TO HOUSE | | | | | | | |
| (i) Tanzania | 5,754 | 7,424 | 9,809 | 12,199 | 15,574 | 15,019 | 1.21 |
| (ii) Transit - Zambia | 2,417 | 3,341 | 3,959 | 2,826 | 3,363 | 5,023 | 1.16 |
| - Malawi | 225 | 301 | 710 | 90 | 538 | 543 | 1.19 |
| - ZBR | 918 | 1,308 | 1,489 | 1,142 | 2,295 | 3,180 | 1.28 |
| - Uganda | 54 | 21 | 49 | 61 | 265 | 193 | 1.29 |
| Sub-Total Transit | 3,614 | 4,871 | 6,207 | 4,119 | 6,481 | 8,939 | 1.20 |
| TOTAL HOUSE TO HOUSE | 9,368 | 12,295 | 16,016 | 16,318 | 22,055 | 23,958 | 1.21 |
| B. PORT TO PORT | | | | | | | |
| (i) Full | 2,857 | 3,681 | 6,036 | 6,048 | 4,793 | 4,982 | 1.12 |
| (ii) Empty | 1,649 | 2,230 | 562 | 488 | 1,869 | 2,149 | 1.03 |
| TOTAL PORT TO PORT | 4,706 | 6,111 | 6,598 | 6,536 | 6,662 | 7,131 | 1.09 |
| TOTAL IMPORT CONTAINERS | 14,074 | 18,406 | 22,614 | 22,854 | 28,717 | 31,089 | 1.17 |
| <hr/> | | | | | | | |
| EXPORTS | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | (%) AVERAGE GROWTH RATE |
| A. HOUSE TO HOUSE | | | | | | | |
| (i) Tanzania | 4,638 | 4,696 | 5,031 | 4,728 | 6,251 | 9,291 | 1.15 |
| (ii) Transit - Zambia | 944 | 1,522 | 2,228 | 3,241 | 3,098 | 4,658 | 1.38 |
| - Malawi | 286 | 1,000 | 1,766 | 592 | 971 | 623 | 1.17 |
| - ZBR | 1,518 | 2,647 | 2,577 | 2,037 | 1,864 | 2,770 | 1.13 |
| - Uganda | 0 | 600 | 817 | 632 | 1,558 | 1,870 | 1.26 |
| Sub-Total Transit | 2,748 | 5,769 | 7,388 | 6,502 | 7,491 | 9,921 | 1.29 |
| TOTAL HOUSE TO HOUSE | 7,384 | 10,465 | 12,419 | 11,230 | 13,742 | 19,212 | 1.21 |
| B. PORT TO PORT | | | | | | | |
| (i) Full | 0 | 0 | 0 | 0 | 0 | 0 | --- |
| (ii) Empty | 4,958 | 3,569 | 5,679 | 6,309 | 4,242 | 6,397 | 1.05 |
| TOTAL PORT TO PORT | 4,958 | 3,569 | 5,679 | 6,309 | 4,242 | 6,397 | 1.05 |
| TOTAL EXPORT CONTAINERS | 12,342 | 14,034 | 13,096 | 17,539 | 17,984 | 25,609 | 1.16 |
| <hr/> | | | | | | | |
| IMPORTS & EXPORTS | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | (%) AVERAGE GROWTH RATE |
| A. HOUSE TO HOUSE | | | | | | | |
| (i) Tanzania | 10,390 | 12,120 | 14,840 | 18,927 | 21,825 | 24,310 | 1.19 |
| (ii) Transit - Zambia | 3,361 | 4,863 | 6,187 | 6,067 | 6,481 | 9,681 | 1.24 |
| - Malawi | 511 | 1,301 | 2,476 | 682 | 1,509 | 1,168 | 1.18 |
| - ZBR | 2,436 | 3,855 | 4,066 | 3,179 | 4,159 | 5,950 | 1.30 |
| - Uganda | 54 | 621 | 866 | 693 | 1,823 | 2,063 | 1.27 |
| Sub-Total Transit | 6,362 | 10,640 | 13,595 | 10,621 | 13,972 | 18,860 | 1.24 |
| TOTAL HOUSE TO HOUSE | 16,752 | 22,760 | 28,435 | 27,548 | 35,797 | 43,170 | 1.21 |
| B. PORT TO PORT | | | | | | | |
| (i) Full | 2,857 | 3,681 | 6,036 | 6,048 | 4,793 | 4,982 | 1.05 |
| (ii) Empty | 6,807 | 5,799 | 6,241 | 6,797 | 6,111 | 6,546 | 1.05 |
| TOTAL PORT TO PORT | 9,664 | 9,680 | 12,277 | 12,845 | 10,904 | 11,528 | 1.07 |
| TOTAL CONTAINERS | 26,416 | 32,440 | 40,712 | 40,393 | 46,701 | 54,698 | 1.17 |
| A. Full | 19,609 | 26,641 | 34,471 | 33,596 | 40,590 | 48,182 | 1.13 |
| B. Empty | 6,807 | 5,799 | 6,241 | 6,797 | 6,111 | 6,546 | 1.05 |

TANZANIA

PORT MODERNIZATION PROJECT II

DAR ES SALAAM PORT
DISTRIBUTION BY HANDLING METHODS

('000 tons)

| Item | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | Annual Growth Rate |
|----------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------------------|
| Exports: | | | | | | | | | | |
| Containers | 33 | 62 | 91 | 114 | 161 | 194 | 187 | 219 | 277 | 1.30 |
| Break-Bulk | 674 | 611 | 555 | 489 | 569 | 514 | 483 | 661 | 539 | 0.97 |
| Total Exports | 707 | 673 | 646 | 603 | 730 | 708 | 670 | 880 | 816 | 1.02 |
| Imports: | | | | | | | | | | |
| Containers | 86 | 96 | 162 | 157 | 220 | 311 | 323 | 378 | 397 | 1.21 |
| Break-Bulk | 1,066 | 937 | 1,000 | 706 | 847 | 777 | 738 | 824 | 843 | 0.97 |
| Total Imports | 1,152 | 1,033 | 1,162 | 863 | 1,067 | 1,088 | 1,061 | 1,202 | 1,240 | 1.01 |
| Total Containers: | | | | | | | | | | |
| Containers | 119 | 158 | 253 | 271 | 381 | 505 | 510 | 597 | 674 | 1.24 |
| Break-Bulk | 1,740 | 1,548 | 1,555 | 1,195 | 1,416 | 1,291 | 1,221 | 1,485 | 1,382 | 0.97 |
| TOTAL | 1,859 | 1,706 | 1,808 | 1,468 | 1,797 | 1,796 | 1,731 | 2,082 | 2,056 | 1.01 |
| Percentage Containerized: | | | | | | | | | | |
| Exports | 5 | 9 | 14 | 19 | 22 | 27 | 28 | 25 | 34 | 1.28 |
| Imports | 7 | 9 | 14 | 18 | 21 | 29 | 30 | 31 | 32 | 1.20 |
| TOTAL | 6 | 9 | 14 | 18 | 21 | 28 | 29 | 29 | 33 | 1.23 |

TANZANIA HARBOURS AUTHORITY
PORT MODERNIZATION PROJECT II
CONTAINER PENETRATION RATE

('000 TONS)

| | 1983 | | | | | | | | | 1988 | | | | | | | | |
|----------|---------|------|----|---------|------|-----|-------|------|----|---------|------|----|---------|------|----|-------|------|----|
| | IMPORTS | | | EXPORTS | | | TOTAL | | | IMPORTS | | | EXPORTS | | | TOTAL | | |
| | G.C. | CONT | % | G.C. | CONT | % | G.C. | CONT | % | G.C. | CONT | % | G.C. | CONT | % | G.C. | CONT | % |
| TANZANIA | 516 | 111 | 22 | 108 | 72 | 67 | 624 | 183 | 29 | 570 | 274 | 48 | 280 | 184 | 48 | 850 | 408 | 48 |
| ZAMBIA | 268 | 81 | 12 | 405 | 15 | 4 | 668 | 48 | 7 | 499 | 69 | 16 | 388 | 67 | 17 | 827 | 186 | 18 |
| ZAIRE | 4 | | | 57 | | | 61 | | | 33 | | | 57 | | | 90 | | |
| BURUNDI | 31 | 12 | 30 | 82 | 23 | 28 | 63 | 35 | 27 | 77 | 44 | 25 | 43 | 40 | 40 | 120 | 84 | 30 |
| RWANDA | 5 | | | 0 | | | 5 | | | 69 | | | 0 | | | 69 | | |
| MALAWI | 28 | 4 | 15 | 4 | 4 | 100 | 30 | 8 | 27 | 30 | 7 | 23 | 11 | 9 | 82 | 41 | 16 | 36 |
| UGANDA | 21 | 1 | 5 | 0 | 0 | 0 | 21 | 1 | 5 | 22 | 3 | 14 | 37 | 27 | 73 | 59 | 30 | 51 |
| TOTAL | 666 | 159 | 18 | 606 | 114 | 19 | 1472 | 273 | 19 | 1240 | 397 | 32 | 618 | 277 | 34 | 2058 | 674 | 33 |

AVERAGE ANNUAL GROWTH RATE (%)

| | IMPORTS | | | EXPORTS | | | TOTAL | | |
|--|---------|------|------|---------|------|------|-------|------|------|
| | G.C. | CONT | CPGR | G.C. | CONT | CPGR | G.C. | CONT | CPGR |
| | 1.02 | 1.20 | 1.17 | 1.21 | 1.13 | 0.94 | 1.06 | 1.17 | 1.10 |
| | 1.11 | 1.17 | 1.06 | 0.99 | 1.35 | 1.36 | 1.04 | 1.24 | 1.19 |
| | 1.63 | | | 1.00 | | | 1.08 | | |
| | 1.20 | 1.30 | 0.98 | 1.03 | 1.12 | 1.09 | 1.14 | 1.19 | 1.02 |
| | 1.69 | | | 0 | | | 1.69 | | |
| | 1.03 | 1.12 | 1.09 | 1.22 | 1.18 | 0.98 | 1.06 | 1.15 | 1.08 |
| | 1.01 | 1.25 | 1.23 | 3.70 | 2.70 | 7.70 | 1.23 | 1.97 | 1.61 |
| | 1.07 | 1.20 | 1.12 | 1.06 | 1.19 | 1.13 | 1.07 | 1.20 | 1.12 |

G.C. = TOTAL GENERAL CARGO TRAFFIC
CONT = CONTAINER TRAFFIC
CPGR = CONTAINER PENETRATION GROWTH RATE

TANZANIA

PORT MODERNIZATION PROJECT II

TECHNICAL WORKING PAPERS 1

OPERATIONAL ANALYSIS

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I. Cargo Forecast

Based on the cargo forecast, the total dry cargo, the container cargo and the break bulk cargo for 1988 and 1993 are tabulated in the table below. The Total dry cargo in 1993 is about 2.6 million tons, and the containerized cargo and break bulk cargo are 1.4 and 1.2 million tons respectively.

Table 1 - Cargo Forecast
(Unit: 1000 metric tons)

| | 1993 | | | | 1988 | | | |
|----------------------------|--------------|--------------|--------------|----------------|--------------|------------|--------------|---------------|
| | Dry Cargo | Container | Break Bulk | Number of TEU | Dry Cargo | Container | Break Bulk | Number of TEU |
| Export | | | | | | | | |
| Tanzania | 449 | 247 | 202 | 17,022 | 206 | 134 | 146 | |
| Transit | 737 | 415 | 323 | 20,617 | 537 | 143 | 394 | |
| Total Export | 1,186 | 662 | 525 | 48,639 | 817 | 277 | 540 | 19,212 |
| Import | | | | | | | | |
| Tanzania | 639 | 352 | 288 | 27,644 | 576 | 249 | 321 | |
| Transit | 774 | 397 | 376 | 30,599 | 676 | 140 | 522 | |
| Total Import | 1,413 | 749 | 664 | 57,643 | 1,240 | 397 | 843 | 20,940 |
| Total Export/Import | | | | | | | | |
| Tanzania | 1,088 | 599 | 490 | 44,666 | 850 | 383 | 467 | |
| Transit | 1,511 | 813 | 699 | 59,216 | 1,207 | 291 | 916 | |
| Grand Total | 2,599 | 1,411 | 1,189 | 108,282 | 2,057 | 674 | 1,383 | 40,152 |

II. Cargo Handling Capacity at berths

Introduction.

The cargo handling activity in this port is roughly divided into two categories, i.e. the container handling at the container terminal in berths 9 to 11 and handling of break bulk cargo and containers, which are carried mainly by conventional cargo vessels, in berths 1 to 8. Therefore, the estimated cargo is divided into two groups, one for container terminal and the other for break bulk berths as shown in Table 2 below.

Table 2 - Allocation of Cargo to Container and General Cargo Berths (1993)
(Unit: metric tons)

| <u>Cargo Volume</u> | <u>(1993)</u> | <u>Berth 1-8</u> | <u>Berth 9-11</u> |
|---------------------|---------------|------------------|-------------------|
| 1. Total Dry Cargo | 2,599,000 | 1,284,000 | 1,315,000 |
| 2. Container Cargo | 1,411,000 | 96,000* | 1,315,000 |
| 3. Break Bulk Cargo | 1,188,000 | 1,188,000 | - |

* 6.8% of container is assumed to be carried by RO/RO vessels (3.1%) and conventional vessels (3.7%)

Container berth

Berths from No. 9 to No. 11 are about 540 m long in total and will be used as two container berths, each of which is able to accommodate about a 1200 TEU container vessel. Due to a restriction of ship size in the harbour entrance channel, these berths are used as three berths by smaller vessels at present. Whether these berths will be used as three berths or two berths, annual throughput per berth is less than 700,000 tons, while an annual handling capacity for a container berth is considered to be between 800,000 ton and 1,500,000 tons per berth.

General cargo berth.

The berth capacity for general cargo berths is assessed according to the following steps.

- 1) to estimate cargo configuration in 1993 based on 1987 data;
- 2) to assume cargo handling speed for various kinds of commodities in 1993 based on the productivity in 1987 (see Table 10);
- 3) to estimate total berth-day required to handle the forecast cargo ;
- 4) to estimate a compound productivity and berth capacity assuming that maximum berth occupancy ratio is 70/80 percent.

The calculation is summarized in the table below and it clearly indicates that the forecast cargo can be handled by the berths No. 1 to No. 8 notwithstanding tie-up of operation at one of the eight berths caused by the rehabilitation work. The berth occupancy rates will be 0,52 for 7 berths.

Table 3 - Calculation of Berth Capacity in 1993.

| Cargo Type | Cargo Volume (ton) | Productivity c/ (ton/berth day) | Berth-days (days) | Total Berth Capacity |
|------------------------------------|--------------------|---------------------------------|-------------------|--|
| RO/RO containerized | 44,000 b/ | 3,200 | 14 | |
| RO/RO non-containerized | 67,000 a/ | 3,200 | 21 | |
| Container on General cargo vessels | 52,000 | 1,920 | 27 | |
| Grain Bulk | 126,000 | 2,000 | 63 | |
| Copper non/container | 269,000 | 1,455 | 149 | |
| Other | 766,000 | 750 | 1,048 | |
| Total Cargo | 1,284,000 | 971d/ | 1,322 | 266,000 t/per berth (75% berth occupanc; 1,000,000 t/7 berths |

- a/ Configuration for break bulk cargo is based on the mid-term review report; Ro/Ro non-contain'd, 5.64%; Grain bulk, 16.57%; Copper, 17.6%; other, 60.19
- b/ 3.1% of container cargo is carried by Ro/Ro vessels and 3.7% by general cargo vessels. (The mid-term review report.)
- c/ Based on the performance indicator (Section V of working paper) and the mid-term review report
- d/ Compound productivity in 1993

III. Traffic Forecast and Storage Requirement for container.

Container storage capacity in different stages is shown in Table 4. Including additional storage capacity in Kurasini and Ubungo depots, the present capacity is around 2,500 TEU at a given moment. By the expansion of storage area in proposed project, storage capacity of about 1200 TEU will be added in 1992 and about the same amount in 1993, making a total capacity of 3,800 TEU in 1992 and 5,100 TEU in 1993.

Based on the traffic forecast, a dwell time reduction plan and storage capacity, sufficiency of storage capacity is shown for both "with" and "without" project cases during a period from 1989 to 1995. In case of "with the project", deficit is not anticipated because of the additional storage capacity obtained in the open storage area at berth 7. In case of "without the project" deficit will arise in 1993.

Table 4 - Container Storage Capacity in the Terminal and Depots

| ROW No. | Present | | Phase II-1 (1992) | | Phase II-2 (1993) | |
|-------------------------------------|------------|------------|-------------------|------------|-------------------|------------|
| | South (37) | North (40) | South (37) | North (40) | South (37) | North (40) |
| Stack E Ground slot | | | 37x6 | | | 40x6 |
| Stack D Ground Slot | | | 37x6 | | | 40x6 |
| Stack C Ground Slot | 37x6 | | | | 16x6 | 30x6 |
| Stack B Ground Slot | 37x6 | 20x6 | | | 12x6 | |
| Stack A Ground Slot | 37x6 | 31x6 | | | 9x6 | |
| <hr/> | | | | | | |
| Slot No. | 666 | 354 | 444 | 186 | | 660 |
| Total Slot No. | | 1,020 | | 630 | | 660 |
| Storage Capacity in Tema* | | 2,042 | | 1,262 | | 1,322 |
| Storage Capacity in Kurasini/Ubungo | | 465 | | 0 | | 0 |
| <hr/> | | | | | | |
| Additional Capacity | | 0 | | 1,262 | | 1,322 |
| Existing Capacity | | 2,507 | | 2,507 | | 3,769 |
| <hr/> | | | | | | |
| Total Capacity | | 2,507 | | 3,769 | | 5,091 |

* Average stacking height is 2.67 boxes and 75 percent of storage capacity is an actual working capacity.

Table 5 - Traffic Forecast and Storage Requirements

| | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 |
|---|--------|--------|--------|--------|---------|---------|---------|---------|
| Import (TEU) | 25,940 | 31,855 | 35,894 | 41,080 | 47,993 | 57,648 | 62,632 | 69,087 |
| Export (TEU) | 19,212 | 21,953 | 26,181 | 31,381 | 37,739 | 45,639 | 50,956 | 57,094 |
| Loaded (TEU) | 48,152 | 53,808 | 62,075 | 72,461 | 85,733 | 103,282 | 113,589 | 125,182 |
| Empty (TEU) | 8,488 | 9,492 | 10,955 | 12,779 | 15,127 | 18,228 | 20,041 | 22,088 |
| Total (TEU) | 56,650 | 63,300 | 73,030 | 85,000 | 100,860 | 121,510 | 133,630 | 147,270 |
| Import Ratio % | 60.0 | 59.2 | 57.02 | 56.7 | 55.87 | 55.81 | 55.13 | 53.3 |
| Average Dwell | | | | | | | | |
| Time Targets: | | | | | | | | |
| Imports (Day) | 37 | 31 | 25 | 22 | 20 | 18 | 16 | 15 |
| Exports (Day) | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| ADT Loaded Ctr (Day) | 23.8 | 20 | 16.0 | 14.2 | 13 | 11.8 | 10.6 | 9.9 |
| Required Loaded Container Storage (TEU) | 3,140 | 2,950 | 2,720 | 2,620 | 3,050 | 3,340 | 3,300 | 3,400 |
| Available Storage Capacity | | | | | | | | |
| i) With the Project | | | | | | | | |
| DCT and ICDe Berth 7 (TEU) | 2,507 | 2,507 | 2,507 | 2,507 | 3,769 | 5,091 | 5,091 | 5,091 |
| (TEU) | | 0 | 700 | 700 | 700 | 700 | 700 | 700 |
| Total (TEU) | 2,507 | 2,507 | 3,207 | 3,207 | 4,469 | 5,791 | 5,791 | 5791 |
| Surplus/(Deficit) | (633) | (440) | 490 | 390 | 1,420 | 2,450 | 2,400 | 2,390 |
| ii) Without the Project | | | | | | | | |
| Total (TEU) | 2,507 | 2,507 | 3,207 | 3,207 | 3,207 | 3,207 | 3,207 | 3,207 |
| Surplus/(Deficit) | (633) | (440) | 490 | 390 | 160 | (130) | (90) | (190) |

IV. Break Bulk Cargo Storage requirement.

(1) Existing Storage Facilities. In accordance with the UNCTAD handbook "Port Development", the required stacking area is determined by dividing the actual net stacking area by an allowance factor of 1.2 for broken stowage. Design holding capacity is defined as 75% of actual holding capacity, in order to provide a reserve of storage capacity to handle variation in demand.

Details of the areas and holding capacities of the existing covered and open storage space at each of the berths No. 1 to No. 8 are presented in Table 6 and Table 7. They show that the existing design holding capacity of covered and of open storage areas are about 35,000 tons and 30,000 tons, respectively.

Table 6 - Open Storage Capacity at Berths 1-8

| | Berth | Berth | Berth | Berth | Berth | Berth | Berth a/ | Berth a/ | 1-8 |
|-------------------------|-------------------|---------|--------|-------|-------|-------|----------|----------|--------|
| | 1 | 2/3 | 4 | 5 | 6 | 7 | 8 | | |
| Stacking Area | m ² | 120,600 | 10,600 | 5,310 | 0,510 | 0,300 | 2,600 | 0,300 | 52,440 |
| Broken Stowage 16.7% | | 2,100 | 1,700 | 800 | 1,000 | 1,050 | 445 | 1,400 | |
| Actual Stacking Area | m ² | 10,700 | 8,900 | 4,420 | 5,420 | 5,250 | 2,215 | 0,900 | 43,885 |
| Stacking Height | m | 1.75 | 1.75 | 1.75 | 1.75 | 1.75 | 1.75 | 1.75 | |
| Storage Factor | m ³ /t | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |
| Actual Holding Capacity | tons | 9,360 | 7,700 | 3,070 | 4,740 | 4,590 | 1,930 | 6,110 | 30,400 |
| 75% Holding Capacity | tons | 7,020 | 5,840 | 2,300 | 3,560 | 3,440 | 1,455 | 4,580 | 28,000 |

a/ Partly used for container storage (2,000 m²)

Table 7 - Covered Storage Capacity at Berths 1-8

| | | TRANSIT SHED | | | | | BACK OF PORT SHEDS | | | 1-8 |
|-------------------------|-------------------|--------------|--------|-------|-------|--------|--------------------|-----------------|----------------------|--------|
| | | Berth | Berth | Berth | Berth | Berth | Berth | Berth | Berth | |
| | | 1 | 2/3/4 | 5 | 6 | 7/8 | 2 (back port) | 2 (mid-port) | 8 (van days shed) | |
| Overall area | m ² | 11,700 | 16,900 | 7,800 | 7,800 | 16,640 | 6,200 | 10,500 | 4,500 | 61,040 |
| Less Alleys and Offices | | 2,800 | 3,630 | 1,480 | 1,480 | 2,750 | 1,400 | 2,940 | 820 | |
| Net Stacking Area | m ² | 8,900 | 13,270 | 6,340 | 6,340 | 12,890 | 4,710 | 7,560 | 3,680 | |
| Actual Stacking Area | m ² | 7,410 | 11,060 | 5,280 | 5,280 | 10,740 | 3,920 | 6,330 | 3,070 | 53,000 |
| Stacking Height | m | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |
| Storage Factor | m ³ /t | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 | |
| Actual Holding Capacity | t | 6,590 | 9,620 | 4,600 | 4,600 | 9,550 | 3,480 | 5,630 | 2,730 | |
| 75% Holding Capacity | t | 4,940 | 7,370 | 3,520 | 3,520 | 7,160 | 2,610 | 4,220 | 2,050 | 35,300 |

(2) Dwell time Assumptions

It is assumed that containers handled at berths 1-8 will be transferred very fast to the container terminal. The annual conventional cargo capacity is calculated by assuming the following dwell times.

| | |
|---------------------|---------|
| 1) Tanzania imports | 30 days |
| 2) Transit imports | 10 days |
| 3) Tanzania exports | 5 days |
| 4) Transit exports | 3 days |

Assumptions 2) and 4) are considered on the safe side. The situation in the conventional cargo terminal has been quite extraordinary in 1987. Because of the construction works in the Container Terminal, most of the break bulk storage area has been used for stacking containers.

A survey in October 1987 showed that about 1,600 units were placed in break bulk cargo terminals occupying about 50% of the total open storage area. It is assumed that with the opening of the Container Terminal, most containers will be moved to the proper stacking yard, relieving the congested situation in the break bulk part of the port .

Table 8 summarizes the dwell time assumptions.

Table 8 - Dwell Time Assumption

| | Break Bulk Cargo Volume (tons) | % | Dwell Time (days) |
|-----------------|--------------------------------------|--------|----------------------|
| Tanzania Import | 343,000 | 27.2 | 30 |
| Transit Import | 392,000 | 31.1 | 10 |
| Tanzania Export | 161,000 | 12.8 | 5 |
| Transit Export | 365,000 | 28.9 | 3 |
| | ----- | ----- | --- |
| Grand Total | 1,261,000 | 100.0% | 13 |

Cargo Configuration 1993

(3) Annual Storage Capacity

Table 9 contains the annual storage capacity under the given assumption.

Table 9 - Annual Storage Capacity

| Port Section | Type of Storage | Available Holding Capacity (tons) | Annual Storage Capacity (tons) |
|--------------|-----------------|-----------------------------------|--------------------------------|
| Berth 1-8 | covered | 35,390 | 993,600 |
| | open | 28,800 | 808,600 |
| | Total | 58,190 | 1,634,200 |

Reduced Storage Area*

* Holding capacity is assumed to be reduced by 6,000 tons, due to the rehabilitation works.

This indicates that the storage capacity is approximately 1,600,000 tons with an average dwell time of 13 days. The annual storage requirement is 1,200,000 tons, which is about 75 percent of the storage capacity in 1993. The storage area is sufficient up to 1993.

V. Performance Indicator

In order to improve efficiency of port operation, three kinds of performance indicators are to be monitored, i.e. cargo handling speed, equipment availability and cargo dwell time. As for the first category, the speed indicator is divided into two sub-categories, one for general cargo berths and the other for the container terminal. The handling speed in general cargo berth is given as (a) tons per berth day and (b) tons per gang shift or tons per shift. This dual definition is because this indicator will be used for long-term planning purposes such as berth capacity assessment as well as for day-to-day administration purposes, e.g. performance monitoring and an incentive scheme. The target in 1993 is decided based on the discussions with THA officials.

Table 10 - PERFORMANCE INDICATORS

| | | 1987 | 1992 | |
|--------------------------------|--------------------|----------------------|--------------------|--------|
| | | ACTUAL | TARGET | |
| A. GENERAL CARGO BERTHS | | | | |
| ----- | | | | |
| 1. Dry Bulk | (a) | 900 t/berth day 1/2/ | 2,000 t/berth day | |
| | (b) | 100 t/grab shift | 220 t/grab shift | |
| 2. Copper (non-containerized) | (a) | 1,000 t/berth day 2/ | 1,400 t/berth day | |
| | (b) | 250 t/gang shift | 350 t/gang shift | |
| 3. Containers on Cargo Ships | (a) | 960 t/berth day 2/ | 1,920 t/berth day | |
| | (b) | 5 box/gang hour | 10 box/gang hour | |
| 4. RO/RO (containerized) | (a) | 1560 t/berth day | 3200 t/berth day | |
| | (b) | 42 box/shift | 89 box/shift | |
| 5. RO/RO (non-containerized) | (a) | 1,300 t/berth day 2/ | 3,200 t/berth day | |
| | (b) | 433 t/shift | 1,066 t/shift | |
| 6. All Other Break Bulk | (a) | 479 t/berth day 2/ | 750 t/berth day | |
| | (b) | 60 t/gang shift | 95 t/gang shift | |
| | | 1989 Q1 | 1992 | |
| | | ACTUAL | TARGET | |
| ----- | | | | |
| 1. Ship-to-Shore Gantries | | 16 box gang/hour | 20 box/gang hour | |
| 2. Ship's Gear | | 5 box/gang hour | 10 box/gang hour | |
| 3. Rubber Tyred Gantries | | 10 box/gang hour | 12.5 box/gang hour | |
| | | 1989 Q1 | 1992 | |
| | | ACTUAL | TARGET | |
| ----- | | | | |
| 1. Forklifts | | 59% | 70% | |
| 2. Ship-to-Shore Gantries | | 75% | 80% | |
| 3. Rubber Tyred Gantries | | 80% | 70% | |
| 4. Rail Mounted Gantry | | 100% | 70% | |
| 5. Tractors | | 61% | 70% | |
| 6. Trailers | | 94% | 70% | |
| D. DWELL TIME | | | | |
| ----- | | | | |
| | | 1989 | 1991 | 1993 |
| | | TARGET | TARGET | TARGET |
| 1. Containers | | | | |
| | (a) Imports | 31.0 | 22.0 | 18.0 |
| | (b) Exports | 4.0 | 4.0 | 4.0 |
| | (c) Empties | 27.0 | 21.0 | 15.0 |
| | (d) Average Loaded | 19.4 | 14.3 | 12.0 |
| 2. Stripped Cargo (Ubungo) | | 30.0 | 7.0 | 7.0 |
| ----- | | | | |

1/ 3 gangs/shift, 3 shifts/day

2/ mid-term review report

(Source: Mid/term review report and THA)

VI. Justification of Cargo Handling Equipment for Container Terminal

Two SSG have been installed in the container terminal. In view of the abrupt increase of container traffic, it has become a major issue when the third SSG will be required. This is because an insufficient handling capacity will eventually choke container flow. On the other hand, the total investment for equipment will become substantial since, in addition to cost of SSG, an auxiliary equipment such as Rubber Tyre Gantry cranes (RTG) and terminal tractor/trailers needs to be purchased at the same time. The procurement timing is discussed according to the following steps: First, the annual throughput for two SSG is estimated based on present work conditions. Secondly, the range of annual throughput fluctuation due to possible changes of work conditions is estimated. Thirdly, the number of container handled by SSG is estimated for alternative scenario, in which a degree of ships' crane usage and percentage of gearless container vessels to visit this port are chosen as parameters.

6.1. Loading and discharging capacity for ship to shore gantry cranes (SSG).

The following assumptions have been adopted:

- 1) SSG is to operate 3 shifts every working day, Saturday 1,5 and Sunday 2 shifts. Total 920 shifts per year.
- 2) The effective working time of a shift is less than the nominal hours, due to work environment, or for a purpose of synchronizing the entire container operation system. An effective working time has been estimated at 67% on average throughout the shifts.
- 3) the availability of the equipment has been estimated at 70% on average due to:
 - breakdown
 - accidental damage
 - planned maintenance
 - waiting for service and/or spare parts
- 4) 10% of the boxes (movements) are 40 foot containers
- 5) Design rate for the SSG's is equal to 20 boxes per hour
- 6) Berth occupancy at 2 berths is 40%

Based on the above assumptions the average handling rate per year for 2 SSG is:

$$2 \times 920 \times 8 \times 0,67 \times 0,7 \times 1,1 \times 20 \times 0,4 = 60.750 \text{ TEU's}$$

With different working intensity (effective working time) and technical availability of the equipment, the handling rates will vary as follows :

Table 11: SSG Capacity Change (1)
(Unit: TEU/Year)

| | Technical availability | | | |
|------------------------|------------------------|--------|--------|--------|
| | 60% | 70% | 80% | |
| Effective working time | 80% | 62.180 | 72.540 | 82.900 |
| | 67% | 52.070 | 60.750 | 69.430 |
| | 50% | 38.860 | 45.340 | 51.810 |

With different design rate for the SSG and berth occupancy, the handling rate will vary as follows (effective working time 67%, equipment availability 80% in TEU's):

Table 12: SSG Capacity Change (2)

| | | (Unit: TEU/year) | | |
|-------------|-------------|----------------------------|---------|---------|
| | | Berth occupancy (2 berths) | | |
| | | 40% | 50% | 60% |
| Design rate | 30 box/hour | 104,100 | 130,200 | 156,200 |
| | 25 box/hour | 86,800 | 108,500 | 130,200 |
| | 20 box/hour | 69,430 | 86,800 | 104,145 |

Effective working time: 67%. equipment availability: 80%

The opinion is that the most likely capacity of the 2 SSG is approximately 61,000 TEU per year for the rest of 1989 and the capacity might gradually increase to between 90,000 - 104,145 TEU's by 1991-1992.

In table 13, number of container to be handled by SSG is estimated assuming 20 percent of loading and discharging is done by ships' gear and also assuming various percentage of gearless container vessels visiting this container terminal. The alternative 1 represents a case where all ships visiting are gearless vessels while the alternative 5 represents a case where all ship visiting are equipped with cranes.

Table 13: Number of Containers Handled by SSG
(20% of loading/discharging is made by vessel's own gear)

| | TRAFFIC FORCAST | Berth 1-8 conv.ship + RO/RO | ALT 1 gearless 100% | ALT 2 gearless 75% | ALT 3 gearless 50% | ALT 4 gearless 25% | ALT 5 gearless 0% |
|------|-----------------|-----------------------------------|---------------------------|--------------------------|--------------------------|--------------------------|-------------------------|
| 1988 | 56,650 TEU | 3,852 | 52,798 | 56,158 | 47,518 | 44,878 | 42,238 |
| 1989 | 63,300 TEU | 4,304 | 58,996 | 56,646 | 53,096 | 50,146 | 47,196 |
| 1990 | 73,030 TEU | 4,966 | 68,064 | 64,661 | 61,258 | 57,854 | 54,451 |
| 1991 | 85,220 TEU | 5,795 | 79,425 | 75,500 | 71,500 | 67,500 | 63,540 |
| 1992 | 100,800 TEU | 6,858 | 94,002 | 89,300 | 84,800 | 79,900 | 75,200 |
| 1993 | 121,510 TEU | 8,263 | 113,327 | 107,800 | 101,900 | 96,200 | 90,600 |

The change of the container requirement is calculated in case that the handling speed by ship gear increases to 10 TEUs per hour.

Table 14: Number of Containers Handled by SSG
(33% of loading/discharging is made by vessel's own gear)

| | TRAFFIC FORCAST | Berth 1-8 conv.ship + RO/RO | ALT 1 gearless 100% | ALT 2 gearless 75% | ALT 3 gearless 50% | ALT 4 gearless 25% | ALT 5 gearless 0% |
|------|-----------------|-----------------------------------|---------------------------|--------------------------|--------------------------|--------------------------|-------------------------|
| 1988 | 56,650 TEU | 3,852 | 52,800 | 48,400 | 44,100 | 39,700 | 35,300 |
| 1989 | 63,300 TEU | 4,304 | 59,000 | 54,100 | 49,200 | 44,400 | 39,500 |
| 1990 | 73,030 TEU | 4,966 | 68,000 | 62,400 | 56,800 | 51,200 | 45,600 |
| 1991 | 85,220 TEU | 5,795 | 79,400 | 72,900 | 66,300 | 59,700 | 53,200 |
| 1992 | 100,800 TEU | 6,858 | 94,000 | 86,200 | 76,300 | 66,700 | 56,200 |
| 1993 | 121,510 TEU | 8,263 | 113,300 | 103,900 | 94,500 | 85,200 | 75,800 |

Based on alternative 3 (50% of all vessels with own ship gear) a 3rd ship to shore crane will be needed when traffic reaches 94,000-101,900 TEU i.e. in 1993. Due to the delivery time (18-24 months), this order should be placed not later than 1991.

6.2. Loading and discharging capacity for rubber tired gantry (RTG) cranes.

The following traffic is projected to go through RTG stack:

- all loaded import container but approximately 5% which are unsuitable for RTG handling.
- about 20% of export boxes

This represents approximately 62% of the total container traffic. The handling capacity of the RTG has been calculated based on the following work condition:

- 1) design rate of a RTG is between 10-15 moves per hour, in average 12.5
- 2) 10% of boxes are 40 foot container
- 3) each box is moved in average 3.5 times in the stacking yard
- 4) 80% of container yard stacking work is carried out within 1.5 shifts which are 50% of a whole work hours per day, i.e. a peak ratio is 1.6
- 5) technical availability is 70%
- 6) effective working time is 67% for whole work hour
- 7) terminal is operated three shifts every working day, 1.5 shifts per Saturday, 2 shifts per Sunday, total 920 shifts per year.

The average handling ratio per shift for one RTG is:
 $0.7 \times 0.67 \times 12.5 \times 8 = 46.9$ moves per shift

The following table shows number of movements within the stacking yards for various traffic level and a required number of RTG.

Table 15: RTG requirements

| | TRAFFIC FORECAST (TEU) | TOTAL MOVEMENT (BOX) | MOVEMENT PER SHIFT (BOX) | RTG REQUIREMENT (NOS) |
|------|------------------------|----------------------|--------------------------|-----------------------|
| 1988 | 56,650 | 111,800 | 121.4 | 4 |
| 1989 | 63,300 | 124,900 | 135.8 | 5 |
| 1990 | 73,030 | 144,100 | 156.7 | 5 |
| 1991 | 85,220 | 168,100 | 182.3 | 6 |
| 1992 | 100,860 | 199,000 | 216.3 | 7 |
| 1993 | 121,510 | 239,700 | 260.5 | 9 |

6.3. Terminal Tractors and Trailers

In calculating a required number of terminal tractors and trailers, the following several assumptions are made:

- 1) one terminal tractor will be able to carry out between 2-3 moves per hour in average 2.5 and carries two TEU per move.
- 2) 75 percent of all transfer within the terminal will be carried out during 1.5 shifts, meaning a peak ratio of 1.5
- 3) one TEU requires in average 2 horizontal transfers inside the port area. 95 percent of all containers within the port are to be carried by trailers and tractors.
- 4) technical availability is 70%
- 5) effective working time is 67%

The capacity of one terminal tractor during a shift is:

$$2.5 \times 2 \times 8 \times 0.70 \times 0.67 = 18.76 \text{ (TEU movements)}$$

Table 16: Terminal tractor and Trailer requirements

| | TRAFFIC FORECAST (TEU) | TOTAL MOVEMENT (TEU) | NOS OF MOVEMENTS PER PEAK PERIOD | TERMINAL TRACTOR REQUIRED |
|------|------------------------|----------------------|----------------------------------|---------------------------|
| 1989 | 63,300 | 120,270 | 196 | 11 |
| 1990 | 73,030 | 138,757 | 226 | 12 |
| 1991 | 85,220 | 161,918 | 264 | 14 |
| 1992 | 100,860 | 191,634 | 312 | 17 |
| 1993 | 121,510 | 230,869 | 376 | 20 |

However, as an alternative approach to determine a number of tractor and trailer, their movements for various cargo activities are assumed based on past experience and the equipment requirement is calculated aggregating requirements for various activities for 1993. This estimate is adopted as a final estimate.

- 1) operation of three SSGs; each crane needs 4 tractors and trailers; 12 units
- 2) operation of three ships lifting gear; each gear needs 2 tractors and trailers; 6 units
- 3) transportation from a stacking area to a customer inspection area; 50% of import containers are inspected during day time; 4 units
- 4) operation of railway mounted gantry crane; 2 units
- 5) transportation between berths 1-8 and container terminal; 7% of containers are transported during day time and cycle time is assumed to be 24 minutes; 4 units
- 6) 28 units in total

TANZANIA HARBOURS AUTHORITY

(4) SUMMARY OF EQUIPMENT REQUIREMENTS: CONTAINER TERMINAL & ICD'S DAR ES SALAAM
(OPERATIONAL CAPACITY 122,000 TEU'S)

TABLE 17: COST TABLE OF CONTAINER HANDLING EQUIPMENT

| TYPE OF EQUIPMENT | NUMBERS | | | | COSTING | | PROGRAMME OF AVAILABILITY (WEEKS) |
|-------------------------------|-------------------|----------------------|---------------------|---------|----------------------|-----------------------|-----------------------------------|
| | TOTAL REQUIREMENT | EXISTING SERVICEABLE | FINANCING IDENTIFIE | DEFICIT | PRICE/UNIT US\$ | TOTAL COST US\$ | |
| 1. PORT TERMINAL | | | | | | | |
| 1.1. Ship to Shore Gentries | 3 | 2 | 0 | 1 | 7,000,000 | 7,000,000 | 58-66 |
| 1.2. Rail Terminal Gentries | 1 | 1 | - | - | 1,500,000 | 1,500,000 | - |
| 1.3. Rubber Tyred Gentries | 9 | 5 | 1 | 3 | 2,400,000 | 2,400,000 | 58-66 |
| 1.4. Terminal Tractors | 28 | 15 | 0 | 13 | 100,000 | 1,300,000 | 16-30 |
| 1.5. Terminal Trailers | 28 | 15 | 0 | 13 | 25,000 | 325,000 | 16-30 |
| 1.6. Highway Tractors | 12 | 12 | 0 | 0 | 100,000 | 0 | 16-30 |
| 1.7. Highway Trailers | 12 | 12 | 0 | 0 | 25,000 | 0 | 16-30 |
| 1.8. Empty Container Handler | 3 | 1 | 0 | 2 | 150,000 | 300,000 | 16-20 |
| 1.9. 42 ton Container Handler | 1 | 1 | - | - | - | - | - |
| 2. UBUNGO ICD | | | | | | | |
| 2.1. 42 ton Container Handler | 2 | 2 | 0 | 0 | 400,000 | 0 | 16-20 |
| 2.2. Empty Container Handler | 2 | 1 | 0 | 1 | 150,000 | 150,000 | 16-20 |
| 2.3. Stuffing FLTS | 20 | 10 | 4 | 0 | - | - | - |
| 2.4. Terminal Tractors | 5 | 5 | 0 | 0 | 100,000 | 0 | 16-20 |
| 2.5. Terminal Trailers | 5 | 5 | 0 | 0 | 25,000 | 0 | 16-20 |
| 2.6. Roll Trailers | 17 | 17 | - | - | - | - | - |
| 3. KURASINI WAREHOUSE | | | | | | | |
| 3.1. 42 ton Container Handler | 2 | 2 | - | - | - | - | - |
| 3.2. Empty Container Handler | 2 | 2 | - | - | - | - | - |
| 3.3. Stuffing FLTS | 16 | 12 | 0 | 4 | 30,000 | 120,000 | 12-16 |
| 3.4. Mobile Crane (IOT) | 2 | 0 | 2 | 0 | - | - | - |
| SUBTOTAL | | | | | | 15,100,000 | |
| CONTINGENCY @ | | | | | | 0 | |
| TOTAL | | | | | | 15,100,000 | |

VII. Justification of General Cargo Handling equipment

7.1. Loading/Discharging operation

The following assumption has been made:

- 1) Cranes operate 3 shifts every working day, Saturday 1.5 and Sunday 2 shifts, total 920 shifts per year.
- 2) The effective working time of a shift is estimated at 75%.
- 3) The availability of cranes depends on
 - breakdown
 - accidental damage
 - planned maintenance
 - modification
 - waiting for service and spare partsThe availability ratio is estimated at 85%.
- 4) Berth occupancy ratio is estimated at 65%
- 5) In average, vessels are discharged/loaded by four cranes, three of which are quay cranes and one is a ship's own gear. Four gangs are engaged per shift.
- 6) A crane operates at a pace of six minutes per cycles or ten cycles per hour.
- 7) An average sling weight is 1.3 tons.

Based on the above assumptions, annual throughput for the general cargo berths for No.1 to No.8 is roughly estimated as;

$920 \times 0.65 \times 8 \times 0.75 \times 10 \times 1.3 \times 4 \times 0.85 \times 8 = 1,270,000$ tons
The required quay cranes are 24 (3x8) in total.

7.2. In order to calculate necessary equipment for cargo handling in a berth apron, transit shed and open storage yard, the conceptual cargo flow pattern is illustrated. The export flow is assumed to be identical to one for import except a reciprocal flow direction. (Fig. 1)

7.3. Transfer operation

(a) Forklift

The assumption is;

- 1) 60% of the vessel sling load will be picked up and loaded to trailer by fork lift trucks. The rest (40%) will be discharged directly to trailer.
- 2) a unit weight transferred by a forklift truck is 1.3 tons
- 3) a cycle time of forklift truck is less than six minutes.

To synchronize with a crane operation, number of forklifts required is

$$4 \times 10 \times 0.6 \times 1/10 = 2.4$$

These would be mainly of the 3-4 ton capacity. A supplementary forklift of the 2-3 ton capacity would be required to work in the vessel hatches. This number is assumed to be 2.4

(b) Tractor/Trailer

It is assumed that the average transported tonnage per cycles is 20 tons for a tractor/trailer, the cycle time is 24 minutes for tractor and three trailers is allocated to a tractor for maximum efficiency.

The required numbers of tractor and trailer per berth are:

$$1.3 \times 10 \times 4 \times 1/20 \times 1/2.5 = 1.04 \quad (\text{tractor})$$

$$1.04 \times 3 = 3.12 \quad (\text{trailer})$$

7.4. Storage Operation

(a) Transit shed. It is assumed that 40 percent of total tonnage from a vessel is stored in a transit shed and the rest in an open storage area. The required number of forklifts is 1.6 forklifts per berth.

(b) Open storage yard. Out of 60% of total tonnage from a vessel, 30% is discharged from trailer by a crane and 30% by a bigger capacity forklift.

- 1) a 10 ton capacity crane will operate a 6 minute cycle carrying a 1.3 ton load in average. The required number of forklift is:

$$0.3 \times 1.3 \times 10 \times 4 \times 1/1.3 \times 1/10 = 1.2$$

- 2) the bigger capacity forklift with special attachment will handle the rest of the cargo. The required number required is:

$$0.3 \times 1.3 \times 10 \times 4 \times 1/1.3 \times 1/10 = 1.2$$

7.5. Delivery Operation from transit shed and open storage yard.

(a) transit shed. 1.6 forklifts per berth is necessary for delivery to a truck and railway wagon.

(b) open storage yard: all delivery to a truck and a railway wagon will be done by a bigger capacity forklift truck:

$$0.6 \times 1.3 \times 10 \times 4 \times 1/1.3 \times 1/10 = 2.4$$

7.6. Bigger Capacity Forklift and other special equipment

- (a) Bigger Capacity Forklift. From the experience at the Dar es Salaam port, the most suitable composition of bigger capacity fork lifts mentioned in 7.4(b)2) and 7.5(b) is proposed as follows:

Table 18 - Bigger Capacity Forklift

| Calculated Nos. | Proposed Breakdown Type of Equipment |
|--------------------------|---|
| Bigger capacity forklift | 6 ton FLT 6 |
| 7.4 (b)2) 1.2 | 10 ton FLT 2 |
| 7.5(b) 2.4 | 3 ton Bale Clamp FLT 8 |
| ----- | 3 ton Paper Roll Clamp FLT 8 |
| Subtotal: 3.6 | 10 tons Coil Handling FLT 2 |
| for 8 berth: 29 | 42 tone Front Loader 3 |
| | ----- 29 |

(b) Other Special Equipment

Following equipment is necessary to handle 40 foot container

40 ton/40 foot tractor/trailer 5
40 ton mobil crane 3

7.7. Summary

Table 19 - General Cargo Handling Equipment

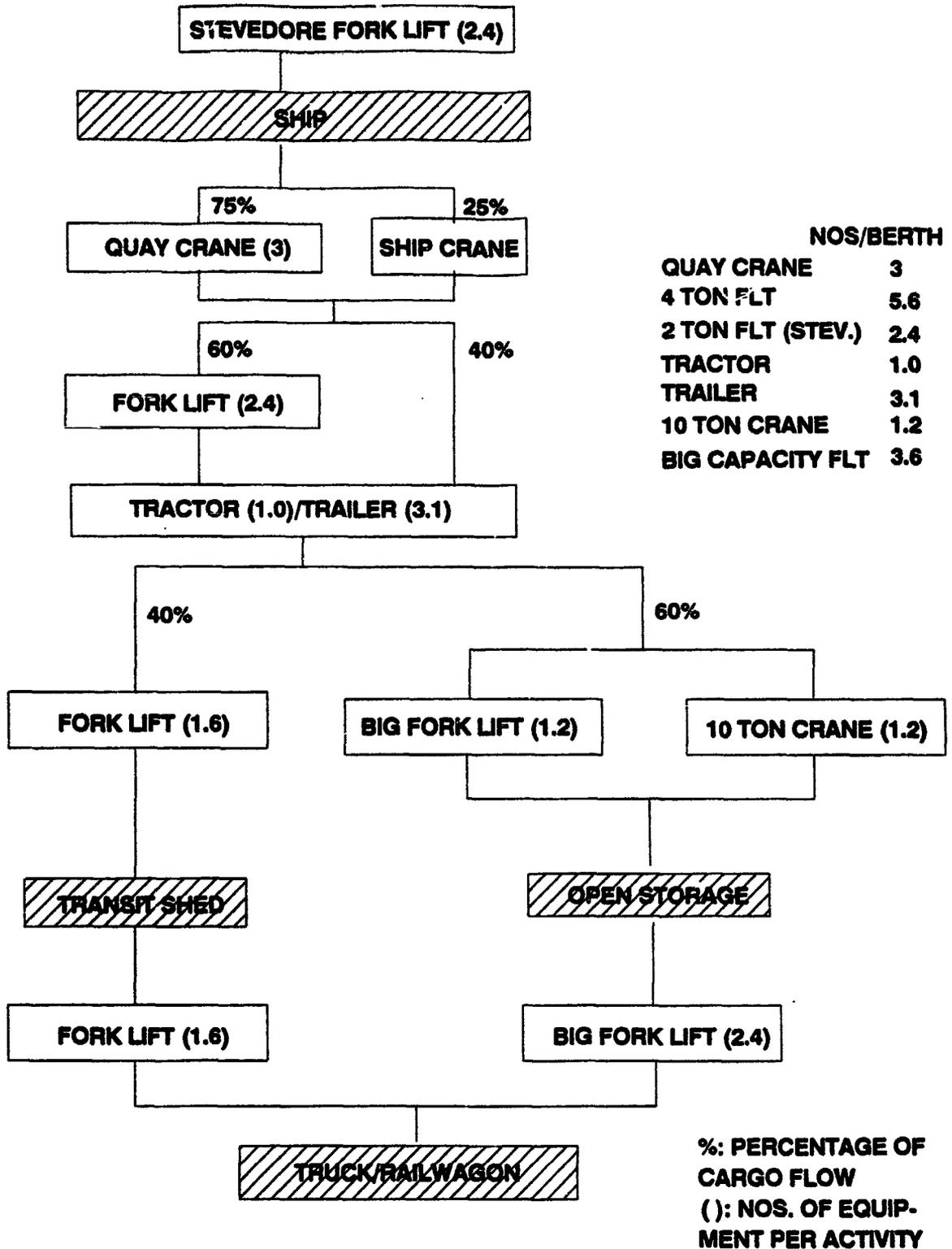
| Type of Equipment | Requirement | Allowance for Round -off error | Total Requirement |
|-----------------------------|-------------|--------------------------------------|----------------------|
| 1. Standard 3-4 ton FLT | 45 | 8 | 53 |
| 2. Stevedoring 2.5 ton FL | 20 | 8 | 28 |
| 3. 6 ton FLT | 6 | 0 | 6 |
| 4. 10 ton FLT | 2 | 0 | 2 |
| 5. 10 ton coil handling FLT | 2 | 0 | 2 |
| 6. 3 ton Bail cramp FLT | 8 | 0 | 8 |
| 7. 3 ton Paper Roll Clamp | 8 | 0 | 8 |
| 8. Front Loader | 3 | 0 | 3 |
| 9. Tractors 20 ton | 9 | 8 | 17 |
| 40 ton | 5 | 0 | 5 |
| 10. Trailer 20 ton | 25 | 8 | 33 |
| 40 ton | 5 | 0 | 5 |
| 11. 10 ton Mobile Crane | 10 | 8 | 18 |
| 12. 40ton Mobile Crane | 3 | 0 | 3 |

7.8 Cost Table. The additional investment is tabulated based on the requirement, the existing equipment and the commitment made by donors.

Table 20 - Cost Table for General Cargo Equipment

| TYPE OF EQUIPMENT | TOTAL REQUI-REMENT | EXISTING SERVICE-ABLE | FINANCING IDENTI-FIED | DEFICIT | PRICE/UNIT US\$ | TOTAL COST US\$ | PROGRAMME OF AVAILAB ILITY(WEEK |
|---------------------------------|--------------------|-----------------------|-----------------------|---------|-----------------|-----------------|---------------------------------|
| DAR ES SALAAM | | | | | | | |
| 1. fork lift trucks | 107 | 44 | 39 | 24 | 35,000 | 840,000 | 36-40 |
| 2. tractors | 22 | 19 | 26 | 0 | 85,000 | 0 | - |
| 3. trailers | 38 | 39 | 54 | 0 | 22,000 | 0 | 36 |
| 4. mobile cranes (10t) | 18 | 5 | 13 | 0 | 240,000 | | 30-40 |
| 5. top lift trucks | 3 | 5 | 0 | 0 | 390,000 | 0 | - |
| 6. truck mobile cranes (30-40t) | 3 | 0 | 0 | 3 | 390,000 | 1,170,000 | 30-40 |
| 7. spare part | | | | | | 2,945,000 | |
| SUB TOTAL | | | | | | 4,955,000 | |
| Contingency 0% | | | | | | 0 | |
| TOTAL | | | | | | 4,955,000 | |

**FIGURE 1
DAR ES SALAAM PORT
CARGO FLOW PATTERN AND HANDLING EQUIPMENT**



TANZANIA
PORT MODERNIZATION PROJECT II

SCHEDULE OF TECHNICAL ASSISTANCE AND TRAINING

| DEPARTMENTS | Current Commitments | | Proposed Additions | | TOTAL | | SPENT | | LEFT | |
|-----------------------|---------------------|-----------|--------------------|-----------|-------------|------------|------------|-----------|-------------|-----------|
| | T.A. | Training | T.A. | Training | T.A. | Training | T.A. | Training | T.A. | Training |
| ENGINEERING | 1107 | 27 | 372 | 24 | 1479 | 51 | 452 | 25 | 1027 | 26 |
| PURCHASE AND SUPPLIES | 94 | 3 | 0 | 3 | 94 | 3 | 0 | 0 | 94 | 6 |
| HANPOWER | 48 | 0 | 0 | 12 | 48 | 12 | 0 | 0 | 48 | 12 |
| OPERATIONS | 378 | 30 | 86 | 22 | 464 | 52 | 94 | 18 | 370 | 24 |
| PCU | 217 | 0 | 114 | 0 | 331 | 0 | 122 | 0 | 209 | 0 |
| PLANNING/EDP | 18 | 0 | 36 | 4 | 54 | 4 | 0 | 0 | 54 | 4 |
| FINANCE | 83 | 0 | 48 | 0 | 131 | 0 | 60 | 0 | 71 | 0 |
| BANDARI COLLEGE | 198 | 0 | 38 | 0 | 174 | 0 | 4 | 0 | 170 | 0 |
| TOTAL | 2073 | 60 | 692 | 65 | 2765 | 125 | 732 | 43 | 2033 | 72 |

SCHEDULE OF DONOR CONTRIBUTION TO T.A.

| DEPARTMENTS | ODA | | SIDA | | FINNIDA | | DANIDA | | HOLLAND | | CIDA | | IDA | | NORAD | | UNCTAD | | TOTAL | | |
|-----------------------|-----------|----------|------------|-----------|-------------|------------|-----------|----------|------------|-----------|------------|----------|------------|------------|------------|-----------|-----------|----------|-------------|------------|---|
| | COMMIT | PROP | COMMIT | PROP | COMMIT | PROP | COMMIT | PROP | COMMIT | PROP | COMMIT | PROP | COMMIT | PROP | COMMIT | PROP | COMMIT | PROP | COMMIT | PROP | |
| ENGINEERING | 12 | 0 | 94 | 12 | 796 | 48 | 12 | 0 | 44 | 0 | 80 | 0 | 60 | 312 | 9 | 0 | 0 | 0 | 1107 | 372 | |
| PURCHASE AND SUPPLIES | 0 | 0 | 0 | 0 | 54 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 84 | 0 |
| HANPOWER | 0 | 0 | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 48 | 0 |
| OPERATIONS | 0 | 0 | 72 | 0 | 172 | 18 | 0 | 0 | 40 | 0 | 0 | 0 | 52 | 68 | 80 | 0 | 12 | 0 | 378 | 86 | |
| PCU | 58 | 0 | 89 | 51 | 34 | 63 | 0 | 0 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 217 | 114 | |
| PLANNING/EDP | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 24 | 0 | 0 | 18 | 0 | 18 | 36 | |
| FINANCE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 48 | 0 | 0 | 65 | 0 | 83 | 48 | | |
| BANDARI COLLEGE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 188 | 36 | 0 | 0 | 138 | 36 | | |
| TOTAL | 70 | 0 | 303 | 63 | 1056 | 129 | 12 | 0 | 120 | 12 | 110 | 0 | 130 | 452 | 177 | 86 | 95 | 0 | 2073 | 692 | |

COM = COMMITMENT
PROP = NEW PROPOSAL

TANZANIA
PORT MODERNIZATION PROJECT II
TECHNICAL ASSISTANCE PROGRAM

(man-months)

| | IDA | SIDA | HOLLAND | NORAD | FINNIDA | TOTAL |
|--|------------|-----------|-----------|----------|------------|------------|
| 1. ENGINEERING | | | | | | |
| 100 Civil Engineering Expert | 36 | | | | | 36 |
| 101 Equipment Expert | 24 | | | | | 24 |
| 102 Computer Expert (Equip. Maint.) | 24 | | | | | 24 |
| 103 Central Workshop Manager | | | | | 48 | 48 |
| 104 Base Workshop Manager | 36 | | | | | 36 |
| 107 Superintendent Electrical | 36 | | | | | 36 |
| 108 Superintendent Light Vehicle | 24 | | | | | 24 |
| 110 Superintendent Tractors | | 12 | | | | 12 |
| 111 Technician Electrical | 24 | | | | | 24 |
| 112 Technician Top Forklift | 24 | | | | | 24 |
| 113 Technician Machine Shop | 24 | | | | | 24 |
| 114 Technician Light Vehicles | 24 | | | | | 24 |
| 115 Equipment Trainer | 12 | | | | | 12 |
| 116 Spare Parts Expert | 24 | | | | | 24 |
| 117 Instructors * | 12 | | | | | 12 |
| 120 Engineering Manager (Container) | | | | | 48 | 48 |
| 121 Electrical Engineer | | | | | 48 | 48 |
| 122 Mechanical Engineer | | | | | 48 | 48 |
| 123 Mechanical Engineer | | | | | 48 | 48 |
| 125 Training Electrical Maintenance | | | | | 42 | 42 |
| 126 Training Mechanical Maintenance | | | | | 42 | 42 |
| 127 Other Trainers (Container) | | | | | 32 | 32 |
| 129 Civil Engineering Maintenance | | 36 | | | | 36 |
| Civil Engineering Maintenance * | | 12 | | | | 12 |
| 130 Engineer (Grain Terminal) | | | 36 | | | 36 |
| 135 Technician Satellite Workshop | | 12 | | | | 12 |
| SUB-TOTAL | 324 | 72 | 36 | 0 | 356 | 788 |
| 2. PURCHASE AND SUPPLIES | | | | | | |
| 201 Stores/Supply Specialist | | | | | 36 | 36 |
| Stores/Supply Training * | | | | | 3 | 3 |
| 202 Stores Expert | | | | | 18 | 18 |
| SUB-TOTAL | 0 | 0 | 0 | 0 | 57 | 57 |
| 3. Manpower | | | | | | |
| 300 Manpower Planning | | 24 | | | | 24 |
| Manpower Planning * | | 12 | | | | 12 |
| 301 Incentive Scheme Specialist | | 24 | | | | 24 |
| SUB-TOTAL | 0 | 60 | 0 | 0 | 0 | 60 |
| 4. OPERATIONS | | | | | | |
| 400 Operations Expert | 36 | | | | | 36 |
| 401 Computer Expert | 12 | | | | | 12 |
| 402 Short Term Consultancy | 20 | | | | | 20 |
| 403 Manager (Container Terminal) | | | | | 48 | 48 |
| 404 Operations Advisor * | 6 | | | | | 6 |
| 405 Principal Operations Officer | | | | | 36 | 36 |
| 410 General Cargo Manager | | 36 | | | | 36 |
| General Cargo Manager * | | 4 | | | | 4 |
| 411 Planning/Performance Specialist | | 36 | | | | 36 |
| 412 Grain Terminal Manager | | | 36 | | | 36 |
| Grain Terminal Manager * | | | 2 | | | 2 |
| 413 Operations Expert (Grain Terminal) | | | 4 | | | 4 |
| 418 Unallocated Operations T.A. | | | | | 18 | 18 |
| SUB-TOTAL | 74 | 76 | 42 | 0 | 102 | 294 |

| | IDA | SIDA | HOLLAND | NORAD | FINNIDA | TOTAL |
|-------------------------------------|------------|------------|------------|-----------|------------|-------------|
| | ---- | ---- | ----- | ----- | ----- | ----- |
| 5. Project Coordination Unit | | | | | | |
| 501 Sr. Civil Engineer | | 48 | | | | 48 |
| 502 TA & T Coordinator | | | | | 48 | 48 |
| 503 Senior Civil Engineer | | | 12 | | | 12 |
| 504 Associate Civil Engineer | | 12 | | | | 12 |
| 505 Short Term Consultancy | | 15 | | | | 15 |
| 506 Short Term Consultancy | | | | | 15 | 15 |
| SUB-TOTAL | 0 | 75 | 12 | 0 | 63 | 150 |
| 6. PLANNING/EDP | | | | | | |
| 600 Planning/MIS Specialist | 24 | | | | | 24 |
| 601 Transport Economist | | | 24 | | | 24 |
| 602 EDP System Analyst | | | 18 | | | 18 |
| EDP Training * | 4 | | | | | 4 |
| SUB-TOTAL | 28 | 0 | 42 | 0 | 0 | 70 |
| 7. FINANCE | | | | | | |
| 700 Accounting Expert | 24 | | | | | 24 |
| 701 Computer Expert | 24 | | | | | 24 |
| Management Training * | 12 | | | | | 12 |
| SUB-TOTAL | 60 | 0 | 0 | 0 | 0 | 60 |
| 8. BANDARI COLLEGE | | | | | | |
| 800 Training Methods Expert | | | | 36 | | 36 |
| SUB-TOTAL | 0 | 0 | 0 | 36 | 0 | 36 |
| GRAND TOTAL | 488 | 283 | 132 | 36 | 578 | 1515 |
| of which Training | 34 | 28 | 2 | 0 | 3 | 67 |

TANZANIA
PORT MODERNIZATION PROJECT II
IDA FUNDED TECHNICAL ASSISTANCE

| <u>Technical Assistance</u> | <u>Department</u> | <u>Man-months</u> |
|--------------------------------|-------------------|-------------------|
| Operations Management Expert | Operations | 36 mm |
| Computer Expert | = | 12 mm |
| Short Term Consultants | = | 20 mm |
| Operations Advisor (training) | = | 6 mm |
| Civil Engineering Expert | Engineering | 36 mm |
| Equipment Expert | = | 24 mm |
| Computer Expert/Equip. Maint. | = | 24 mm |
| Base Workshop Manager | = | 36 mm |
| Superintendent - Electrical | = | 36 mm |
| Superintendent - Light Vehicle | = | 24 mm |
| Technician - Electrical | = | 24 mm |
| Technician - Top Lift FLT | = | 24 mm |
| Technician - Machine Shop | = | 24 mm |
| Technician - Light Vehicle | = | 24 mm |
| Equipment Trainer | = | 12 mm |
| Spare Parts Expert | = | 24 mm |
| Instructor (training) | = | 12 mm |
| Planning and MIS Expert | Planning/EDP | 24 mm |
| EDP System (training) | = | 4 mm |
| Accounting Expert | Finance | 24 mm |
| Computer Expert | = | 24 mm |
| Management Training | = | 12 mm |
| | | 486 mm |
| TOTAL | | 486 mm |

Training: US\$600,000 for short term courses and visit to other ports.

TANZANIA

PORT MODERNIZATION PROJECT II

DAR ES SALAAM PORT DEVELOPMENT STUDY: 1994 - 2004

DRAFT TERMS OF REFERENCE

I. INTRODUCTION

1.01 The Tanzania Harbours Authority (THA) was incorporated in 1977 after the demise of the former East Africa Harbours Corporation. The Authority is charged with the responsibility of developing, managing and operating Tanzania coastal ports on a commercial basis. Major port operated by the Authority includes Dar es Salaam, Tanga and Mtwara. With a throughput of 2.1 million tons of dry cargo (including 674,000 tons of containerized cargo) and 1.8 million tons of petroleum products, the port of Dar es Salaam is one of the largest ports on the eastern coast of Africa. Neighboring landlocked countries of Zambia, Burundi, Rwanda, Uganda, Malawi and Zaire also make extensive use of the port of Dar es Salaam, with foreign traffic composing nearly 60% of the total traffic.

1.02 The overriding goals and objective of the Authority are to optimize the use of existing facilities and to develop the port infrastructure and acquisition of equipment to cater to existing traffic as well as anticipated growth. The strategy envisaged to attain these goals are based on retaining and attracting more traffic, increased productivity and generating sufficient revenues to achieve an acceptable economic and financial returns on the investments. Cost control also is a major input in evolving a competitive tariff to maintain the market share and hence better earnings.

1.03 Since its inception, THA has made great strides in adopting its operations and management to cater to the changing international environment. These include, development of container terminal and associated Inland Container Depots (ICD) to service containerized traffic which is growing at a rapid rate, acquisition of modern cargo handling equipment and bulk handling facilities to expand and expedite cargo handling, and structural adjustment to the Oil berthing jetty to take larger and more modern petroleum tankers. Because of the fast changing international shipping technology and pattern of business, the port of Dar es Salaam has been under construction for over five years, and is expected to continue for at least another five years. It is the intention of the Authority to reexamine the current situation both in terms of infrastructural and equipment requirements and the expected increase in demand for port services to determine a longer term strategy for comprehensive development of the port of Dar es Salaam.

II. OBJECTIVE OF THE STUDY

- 2.01 The purpose of the proposed study is to:
- (a) prepare an overall port development program for years 1994 to 2004;
 - (b) prepare a program for improvement in operations; and
 - (c) recommend an appropriate financial strategy to expand its profitability.

In this regard, the study will undertake detailed traffic forecast, operational analysis, preliminary engineering and hydrological investigation, financial impact study, and an economic assessment of various development options available to THA, in order to determine the necessary improvements and expansion required in the port of Dar es Salaam to enable it to handle the anticipate traffic to year 2004. The study will also examine the need for diversification with the view to generating greater revenues.

III. SCOPE OF CONSULTING SERVICES

A. General

3.01 The consultant shall conduct all engineering work, physical surveys, the collection and analysis of operational, economic and financial data and other work herein described, as required to attain the objectives stated above. In the conduct of their work, the consultants shall collaborate closely with the Planning Departments of THA and the Ministry of Communications and Works, which has agreed to assign counterpart staff to work with the consultants and provide the data, services and facilities outline in Part IV herein. The consultants shall be solely responsible, however, for the interpretation of all data and services received and for the findings and recommendations contained in their reports.

3.02 The geographic scope of this study for traffic forecasts shall include Tanzania, as well as, all of the countries which currently use the port of Dar es Salaam as a transit port (these include Zambia, Burundi, Rwanda, Uganda, Malawi and Zaire) and the shipping routes serving Dar es Salaam in maritime foreign trade. The geographic scope of this study for operation analysis and advisory services shall cover the terminal under the port of Dar es Salaam.

B. Traffic Forecasts and Cost Analysis

Commodity Flow Forecasts

3.03 The consultants shall produce a detailed traffic flow projections for Tanzania, as well as the neighboring countries which currently use the port of Dar es Salaam, based on the current and expected macroeconomic environment of each country and the expected routing of respective country' import/export traffic. The consultants will also take into consideration the behavior of the major shipping lines and their plans for the port of Dar es Salaam into estimating the competitive position of the port. Based on this review, the consultants shall prepare forecasts of Dar es Salaam's traffic for the years between 1994 and year 2004. The forecasts shall indicate the countries of origin and destination by major commodity groups.

Estimates of Containerized Cargo

3.04 Using the above forecasts of commodity flows, the consultants shall estimate the amounts of traffic that could be containerized. For this purpose, two estimates shall be prepared: (i) a low estimate, based on assumptions that port terminal would be improved for container transfer but that inland movement of containers would be difficult due to lack of inland facilities to expedite container movements; and (ii) a high estimate, based on assumption that both ports and inland transport modes would provide efficient services for cargo movement in containers.

3.05 Three areas require particular attention in the preparation of estimates of container traffic: (i) containerization of coffee exports; (ii) containerization of copper exports; and (iii) containerization of miscellaneous general cargo imports and exports. Regarding categories (i) and (ii), the consultants shall make inquiries with principal producers, shippers and ocean carriers, to determine current shipping trends in these trades and the services likely to be offered to exporters.

3.06 Estimates of containerizable cargo shall be expressed in tonnes of export and imports, and in number of outbound and inbound container units (TEUs), including movements of empty containers).

Inland Traffic Flow Analysis

3.07 The analysis of inland traffic flows under this study shall be limited to review of work done by others and a general assessment of the impact of prospective developments in Tanzania's transport modes. It is not expected that a mathematical model for simulation of inland traffic flows will be available to the consultants for purposes of this analysis. To the extent necessary for forecasting movements of containers under alternative systems, the consultants shall make assumptions on the future characteristics and costs of inland transport modes, based on their own assessment of material to be made

available by others; the main assumptions, however, shall be discussed and agreed with the Planning Office prior to their incorporation in the analysis.

C. Analysis of Present Port Operations

Review of Current Practices

4.01 For the analysis of present operations at Dar es Salaam, the consultants shall review all available data on terminal activities at the ports, observe and analyze current operating procedures and practices, and discuss present and prospective operational problems with personnel responsible for terminal management and with port users. The consultants shall also review inventories and existing port facilities and equipment and assess the present conditions and future utility of major components.

4.02 The consultants shall study the movement of cargo and of bulk grain handled at the Dar es Salaam terminal facilities. This shall include an analysis of the facilities, equipment and procedures used in receiving transit storage, long-term storage and loading of cargo. Particular consideration shall be given to:

- (i) the present and prospective use of containers in international trade and their implications for customs and port services;
- (ii) the interaction of inland transport modes with shipside and transit operations;

Study of Alternatives for Improvement

4.03 Based on the foregoing, the consultants shall study and discuss with THA and other agencies concerned the alternatives for improvement that could be introduced at the existing terminal facilities. This shall result in preparation of a detailed program of recommended actions designed to increase port efficiency and throughput capacity. The program shall comprise (but not necessarily be limited to) the following:

- (i) operational improvements that could be introduced without alterations to existing facilities and equipment;
- (ii) operational improvements requiring minor alterations and/or the acquisition of new equipment that could be introduced within one year;
- (iii) change in THA's administration and management systems that should be implemented without delay;
- (iv) changes in THA's administration and management system that should be tested in small scale (pilot) operation prior to general adoption; and

- (v) desirability of introducing private sector involvement in port operation (e.g. privatization of stevedoring, privatization of warehousing).

4.04 The above program shall be presented in preliminary form in the Interim Report of this study and in final form at the final report stage. The program shall comprise a proposed time schedule of the steps necessary for effective implementation. For all facility alterations and equipment acquisitions that are recommended, the program shall include schematic plans and layouts, performance specification and cost estimates. For organizational changes recommended in the program, the consultants shall assess the operational impact to be achieved, define the roles of the affected institutions, identify staff training and recruitment needs, and estimate the initial and recurrent costs.

Review of Financial Aspects

4.05 The consultants shall review the financial reports of THA for 1980 through 1990 and discuss with the management and staff of THA the principles and procedures used in the financial administration of individual ports and of the port system as a whole (including such topics as management reporting and control, auditing, revision of port tariff structure, and forecast of port revenues and costs). Based on the foregoing, the consultants shall analyze the financial implications of the program of actions recommended in this section.

D. Port Expansion Study

5.01 Based on the traffic and operational analysis carried out in the foregoing, the consultants shall investigate the need to expand the port facilities at Dar es Salaam. The investigation will cover the possible need for: (i) berth expansion; (ii) container terminal expansion; (iii) break bulk storage facility expansion; and (iv) widening of the entrance channel.

Physical Survey

5.02 The consultants shall review: all available data on topographic, hydrographic, weather, drainage and subsurface conditions in the port area of Dar es Salaam, plans of existing facilities; records of dredging operations; and construction records of pile-supported structures. Based on this review, the consultants shall define the scope of additional field surveys (including subsurface investigations and laboratory soil tests) required for the study of alternatives, and the preparation of development plans, and preliminary engineering designs for the required expansion of the port capacity. The survey is carried out for the purposes of estimating the costs of various options for capacity expansion and the economic and financial returns of the respective options.

Preliminary Engineering and Economic Analysis

5.03 Preliminary engineering designs shall be based on an analysis of alternative construction methods, taking into account the specific site conditions. Preliminary designs for the recommended expansion shall be carried out to the degree of detail required to: (i) estimate principle quantities of construction materials with an accuracy of $\pm 15\%$; and (ii) provide a sound basis for proceeding with detailed engineering and preparation of contract documents for construction.

5.04 The preliminary analysis of economic benefits and costs for the proposed port development shall be based on the forecast projection of traffic, with and without the capacity expansion. Benefits to be considered shall include the increase in the port's capacity to handle larger traffic volume, reduction in the ships' turnaround time, and acceptance of larger ships. Other quantifiable benefits from increased economic activities attributable to the project may also be included. Costs shall include final engineering, construction, equipment acquisition, physical contingencies and administration.

E. Environmental Impact Assessment

6.01 The consultant shall carry out a comprehensive environmental impact assessment of the proposed alteration and expansion of the existing facilities. The three areas of concern are the impact on the environment of: (i) new berth construction; (ii) widening of the channel; and (iii) disposal of dredged materials. In addition, the consultants shall investigate the current practices of THA in regard to treatment of hazardous materials and cargo (including gases, liquids and solids); treatment of ships' discharge; and treatment of petroleum products. The consultants shall be guided by a Technical Paper produced by the World Bank entitled "Environmental Considerations for Port and Harbor Developments" Report INUS January 1989 which will be made available by THA to the consultants.

6.02 In carrying out the assessment, the consultants shall outline the potential impact of various recommended physical works to be undertaken, the alternatives available to mitigate, if not eliminate, any harmful impact or alteration to the environment. The consultants will also recommend facilities improvements and operational changes to improve THA's handling of hazardous materials and ships' waste (discharge).

6.03 In addition to the above, consultants shall review THA's operating practices regarding control of discharge of pollutants in the port (including oily ballast, bilge water and sewage, as well as its contingency plans in case of oil spillage and fire. The consultants shall review THA's facilities and operating practices in light of the regulations stipulated under the International Convention for the Prevention of Pollution from Ships (1973, as modified by the Protocol of 1978 - MARPOL 73/78). The consultants shall assess the facilities and operating adjustment required for THA to join MARPOL, and the costs related to any investments required.

7. Time Schedule and Reporting Requirements

7.01 The consultants shall mobilize their team in Dar es Salaam within one month of the starting date.

7.02 The consultants shall prepare and submit the following report to THA, the Government and the Bank within the time periods and in quantities indicated (all reports shall be in English):

| | <u>Number of Copies to</u> | | | <u>Time (in months from starting date)</u> |
|--------------------|----------------------------|------------|-------------|--|
| | <u>Government</u> | <u>THA</u> | <u>Bank</u> | |
| Inception Report | 5 | 10 | 3 | 1-1/2 |
| Progress Report | 5 | 10 | 3 | every two months |
| Interim Report | 5 | 10 | 3 | 6 |
| Draft Final Report | 20 | 30 | 5 | 9 |
| Final Report | 50 | 100 | 5 | * |

(*) Within thirty calendar days of receipt of comments on the Draft Final Report from the Government, THA and the Bank.

7.03 The Inception Report shall summarize the consultant's initial findings; reflect a first assessment of available data and of site conditions at the port; in addition, it shall contain:

- (i) an outline of the methodology the consultants propose to use in traffic forecasting and economic analysis;
- (ii) the proposed program and budget for physical data collection and field surveys;
- (iii) an outline of work expected to be completed up to presentation of the first Progress Report.

7.04 The Progress Report shall contain a brief summary of the work accomplished in the preceding two months, an outline of work expected to be completed during the next progress reporting period, and the consultant's comments or recommendations on any unforeseen conditions that may affect the progress or quality of their work.

7.05 The Interim Report shall contain a summary of the findings and recommendations of the consultants on operational studies in the ports, options on facility expansion and traffic forecasts.

7.06 The Final Report shall reflect all revisions the consultants deem appropriate after receipt of comments from the Government and the Bank of the Draft Final Report.

G. Training

8.01 The consultants will be expected to make every effort to transfer their skills to the local personnel with whom they are working. In particular, the consultants undertake the following training activity. Once a month, the consultant will give a one-day seminar for THA staff covering the results of work undertaken in the previous month; the design of work plan for the coming month; and the relationship between cost, progress and total work remaining. The seminar will also cover the methodology, and in the feasibility studies, relevant techniques. Whenever possible, the consultants will arrange for at least one topic to be introduced by a member of the counterpart team.

H. Data, Services and Facilities to be Provided by THA**Data**

9.01 THA has agreed to provide the consultants with access to all available data relevant to the services and provide an inventory of such data. The data shall include (but not be limited to) the following:

- (i) past reports prepared by or for THA on development of Dar es Salaam port, waterborne transport, railways, roads, port operations and related supporting data;
- (ii) detailed information on the operations, data inputs and results of past and current traffic analysis;
- (iii) operating maintenance and traffic data and operating accounts of THA;
- (iv) general plans of all port facilities to be studied;
- (v) an inventory of all existing shore facilities and equipment in the port of Dar es Salaam;
- (vi) all engineering data available on shore facilities, channel, including construction plans and records, equipment, surveys, test boring logs and soil laboratory test; and
- (vii) results of recent condition surveys and proposed repair work on existing facilities.

9.02 In addition, THA will make arrangements for access by the consultants to all port facilities to be studied and to key officials in public and private agencies concerned with sector or regional planning, inland transport, shipping, ports and operations and services related to ports.

FINANCING PLAN

(US\$ million)

| COMPONENT | Total Cost | IDA | FINNIDA | DANIDA | NORAD | HOLLAND | SIDA | THA |
|---|------------------|-----------------|-----------------|----------------|-----------------|----------------|-----------------|-----------------|
| A. Civil Works | | | | | | | | |
| A.1 Port Container Terminal | 12,681.0 | 9,271.1 | | | | | | 3,409.9 |
| Kurasini Depot | 7,133.6 | 5,523.6 | | | | | | 1,610.0 |
| Ubungo Depot Paving | 2,178.4 | 1,639.1 | | | | | | 548.4 |
| Sub-Total A.1 | 21,989.1 | 16,424.2 | | | | | | 5,568.9 |
| A.2 Copper Road | 1,284.7 | 1,121.7 | | | | | | 763.0 |
| A.3 Berth 9, 10, and 11 | 5,413.6 | | | 4,659.8 | | | | 1,353.3 |
| A.4 Lighterage Wharf Paving & Utilities | 4,286.5 | | | | | 3,216.4 | | 1,070.1 |
| A.5 Belgian Wharf Rehabilitation | 1,971.3 | | | | | | | 1,971.3 |
| A.6 Port Central Workshop | 922.2 | | | | | | 595.3 | 396.9 |
| A.7 Kurasini Oil Jetty Strengthening | 11,864.9 | | | | 16,625.6 | | | 1,839.9 |
| A.8 Berth 1-8 Rehabilitation | 17,824.7 | | | | | | 12,471.6 | 4,812.9 |
| Subtotal Part A Total Cost | 65,499.4 | 17,545.9 | 0.0 | 4,659.8 | 16,625.6 | 3,216.4 | 13,667.1 | 17,591.2 |
| B. Equipment | | | | | | | | |
| B.1 General Cargo Equipment | 4,968.1 | 4,968.1 | | | | | | |
| B.2 Container Terminal Equipment | 16,178.3 | | 16,178.3 | | | | | |
| B.3 Ship-to-Shore Gantry | 8,692.1 | | | | | | | 8,692.1 |
| B.4 Office Equipment | 1,241.7 | 1,241.7 | | | | | | |
| B.5 Central Workshop Equipment | 2,421.4 | 2,421.4 | | | | | | |
| Subtotal Part B Total Cost | 27,561.6 | 8,631.2 | 16,178.3 | 0.0 | 0.0 | 0.0 | 0.0 | 8,692.1 |
| C. Design/Supervision | | | | | | | | |
| C.1 Design for A1,A2 | 434.5 | | 434.5 | | | | | 0.0 |
| C.2 Supervision for A1,A2 | 1,669.4 | 1,335.6 | | | | | | 333.9 |
| C.3 Design/Supervision for A3 | 237.5 | | | 196.6 | | | | 47.5 |
| C.4 Design/Supervision for A4 | 332.5 | | | | | 266.6 | | 66.5 |
| C.5 Design/Supervision for A5 | 149.5 | | | | 119.6 | | | 29.9 |
| C.6 Design/Supervision for A6 | 216.6 | | | | | | 174.4 | 43.6 |
| C.7 Design/Supervision for A7 | 696.9 | | | | 717.5 | | | 179.4 |
| C.8 Port Development Study | 1,212.7 | 976.2 | | | | | | 242.5 |
| C.9 Workshop Study | 217.3 | | 217.3 | | | | | 0.0 |
| Subtotal Part C Total Cost | 5,368.2 | 2,365.7 | 651.8 | 196.6 | 837.1 | 266.6 | 174.4 | 943.3 |
| D. Institutional Development | | | | | | | | |
| D.1 Project Coordination Unit | 2,662.8 | | 763.2 | | | 165.0 | 1,134.5 | 0.0 |
| D.2 Management Technical Assistance | 19,476.9 | 6,155.6 | 6,331.0 | | 584.4 | 1,753.2 | 3,116.8 | 1,538.9 |
| D.3 Technical Assistance To Customs | 2,428.2 | 2,428.2 | | | | | | 0.0 |
| Subtotal Part D Total Cost | 25,978.9 | 8,589.9 | 7,094.2 | 0.0 | 584.4 | 1,918.2 | 4,251.3 | 1,538.9 |
| TOTAL COST | 122,348.1 | 37,666.7 | 17,924.3 | 4,249.8 | 11,446.6 | 5,394.6 | 17,492.8 | 28,765.3 |

Estimated Schedule of Disbursement
(US\$ million)

| IDA Fiscal Year and Quarter Ending | Quarterly Disbursement | Cumulative Disbursement |
|---------------------------------------|---------------------------|----------------------------|
| <u>FY1990-91</u> | | |
| September 30, 1990 | 0.18 | 0.18 |
| December 31, 1990 | 0.18 | 0.4 |
| March 31, 1991 | 0.4 | 0.8 |
| June 30, 1991 | 0.4 | 1.2 |
| <u>FY1991-92</u> | | |
| September 30, 1991 | 1.4 | 2.6 |
| December 31, 1991 | 1.2 | 3.8 |
| March 31, 1992 | 1.9 | 5.7 |
| June 30, 1992 | 1.9 | 7.6 |
| <u>FY1992-93</u> | | |
| September 30, 1992 | 2.6 | 10.2 |
| December 31, 1992 | 2.6 | 12.8 |
| March 31, 1993 | 2.8 | 15.6 |
| June 30, 1993 | 2.7 | 18.3 |
| <u>FY1993-94</u> | | |
| September 30, 1993 | 1.9 | 20.2 |
| December 31, 1993 | 1.9 | 22.1 |
| March 31, 1994 | 1.9 | 24.0 |
| June 30, 1994 | 1.9 | 25.9 |
| <u>FY1994-95</u> | | |
| September 30, 1994 | 1.4 | 27.3 |
| December 31, 1994 | 1.2 | 28.5 |
| March 31, 1995 | 1.4 | 29.9 |
| June 30, 1995 | 1.2 | 31.1 |
| <u>FY1995-96</u> | | |
| September 30, 1995 | 1.4 | 32.5 |
| December 31, 1995 | 1.2 | 33.7 |
| March 31, 1996 | 1.05 | 34.7 |
| June 30, 1996 | 1.05 | 35.8 |
| <u>FY1996-97</u> | | |
| September 30, 1996 | 0.62 | 36.4 |
| December 31, 1996 | 0.62 | 37.0 |

Closing Date: June 30, 1997

Source: Standard Disbursement Profile, April 22, 1989

TANZANIA
PORT MODERNIZATION PROJECT II

GENERAL CARGO TRAFFIC FORECAST (1988-1995)
('000 TONS)

| | ACTUAL | | | | | | A.A.C. (%) (1983-1988) | FORECAST | | | | | | A.A.C. (%) (1988-1995) | |
|----------------------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------------------|-------------|
| | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | | 1995 |
| EXPORTS | | | | | | | | | | | | | | | |
| TANZANIA | 108 | 159 | 148 | 155 | 274 | 280 | 1.21 | 305 | 340 | 378 | 416 | 449 | 485 | 521 | 1.09 |
| TRANSIT - ZAMBIA | 405 | 459 | 418 | 398 | 467 | 388 | 0.99 | 404 | 420 | 436 | 454 | 472 | 491 | 511 | 1.04 |
| - MALAWI | 4 | 15 | 28 | 12 | 15 | 11 | 1.22 | 15 | 22 | 30 | 42 | 59 | 63 | 68 | 1.30 |
| - ZAIRE | 57 | 65 | 62 | 53 | 46 | 57 | 1.00 | 59 | 61 | 63 | 66 | 68 | 70 | 73 | 1.04 |
| - BURUNDI | 32 | 29 | 37 | 36 | 37 | 43 | 1.06 | 42 | 42 | 41 | 40 | 39 | 39 | 38 | 0.98 |
| - RWANDA | 0 | 0 | 0 | 0 | 1 | 1 | 1.00 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1.10 |
| - UGANDA | 0 | 13 | 18 | 16 | 43 | 37 | 1.30 | 45 | 54 | 66 | 80 | 97 | 118 | 143 | 1.21 |
| TOTAL EXPORTS | 606 | 740 | 711 | 670 | 883 | 817 | 1.06 | 871 | 940 | 1,014 | 1,099 | 1,186 | 1,268 | 1,356 | 1.08 |
| IMPORTS | | | | | | | | | | | | | | | |
| TANZANIA | 516 | 667 | 709 | 581 | 724 | 570 | 1.02 | 579 | 591 | 606 | 621 | 639 | 658 | 681 | 1.03 |
| TRANSIT - ZAMBIA | 263 | 292 | 257 | 351 | 304 | 439 | 1.11 | 325 | 341 | 358 | 376 | 395 | 415 | 436 | 1.00 |
| - MALAWI | 26 | 13 | 19 | 4 | 9 | 30 | 1.03 | 36 | 43 | 52 | 62 | 75 | 80 | 85 | 1.16 |
| - ZAIRE | 4 | 8 | 11 | 16 | 14 | 33 | 1.53 | 29 | 26 | 23 | 20 | 18 | 16 | 14 | 0.88 |
| - BURUNDI | 31 | 55 | 57 | 69 | 73 | 77 | 1.20 | 84 | 92 | 100 | 110 | 120 | 131 | 143 | 1.09 |
| - RWANDA | 5 | 6 | 23 | 19 | 35 | 69 | 1.69 | 72 | 74 | 77 | 80 | 83 | 87 | 90 | 1.04 |
| - UGANDA | 21 | 25 | 5 | 1 | 43 | 22 | 1.01 | 29 | 37 | 49 | 63 | 88 | 108 | 140 | 1.30 |
| TOTAL IMPORTS | 892 | 1,066 | 1,061 | 1,061 | 1,202 | 1,240 | 1.07 | 1,154 | 1,205 | 1,266 | 1,334 | 1,413 | 1,493 | 1,589 | 1.04 |
| TOTAL IMPORT/EXPORT | | | | | | | | | | | | | | | |
| TANZANIA | 624 | 826 | 857 | 736 | 998 | 850 | 1.06 | 884 | 932 | 982 | 1,037 | 1,068 | 1,142 | 1,203 | 1.05 |
| TRANSIT - ZAMBIA | 668 | 751 | 675 | 749 | 771 | 827 | 1.04 | 729 | 761 | 795 | 830 | 867 | 906 | 946 | 1.02 |
| - MALAWI | 30 | 28 | 47 | 16 | 24 | 41 | 1.06 | 51 | 65 | 82 | 105 | 134 | 143 | 153 | 1.21 |
| - ZAIRE | 61 | 73 | 73 | 69 | 60 | 90 | 1.08 | 68 | 67 | 66 | 66 | 66 | 66 | 67 | 1.00 |
| - BURUNDI | 63 | 84 | 94 | 125 | 110 | 120 | 1.14 | 126 | 133 | 141 | 150 | 159 | 170 | 181 | 1.06 |
| - RWANDA | 5 | 6 | 23 | 19 | 36 | 70 | 1.70 | 73 | 76 | 79 | 82 | 85 | 88 | 92 | 1.04 |
| - UGANDA | 21 | 38 | 23 | 17 | 86 | 59 | 1.23 | 74 | 92 | 115 | 144 | 180 | 226 | 283 | 1.25 |
| GRAND TOTAL | 1,472 | 1,806 | 1,792 | 1,731 | 2,085 | 2,057 | 1.07 | 2,025 | 2,145 | 2,280 | 2,433 | 2,599 | 2,761 | 2,945 | 1.05 |

* Average import traffic over the past four years has been used to estimate the 1989 volume and allowed to increase at 5% per annum

TANZANIA
PORT MODERNIZATION PROJECT II

CONTAINER CARGO TRAFFIC FORECAST (1988-1995)
(TEU)

| | ACTUAL | | | | | | A.A.G. (%) (1988-1995) | FORECAST | | | | | | A.A.G. (%) (1988-1995) | |
|--|---------------|---------------|---------------|---------------|---------------|---------------|---------------------------|---------------|---------------|---------------|----------------|----------------|----------------|---------------------------|-------------|
| | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | | 1995 |
| EXPORTS | | | | | | | | | | | | | | | |
| TANZANIA | 4,636 | 4,696 | 5,031 | 4,728 | 6,251 | 9,291 | 1.18 | 10,824 | 11,868 | 13,884 | 15,004 | 17,022 | 19,165 | 21,579 | 1.18 |
| TRANSIT - ZAMBIA | 944 | 1,822 | 2,228 | 3,261 | 3,098 | 4,888 | 1.88 | 5,866 | 7,089 | 9,030 | 11,502 | 14,650 | 18,080 | 17,808 | 1.21 |
| - MALAWI | 286 | 1,000 | 1,756 | 592 | 971 | 628 | 1.17 | 671 | 1,248 | 1,788 | 2,568 | 3,672 | 3,929 | 4,204 | 1.31 |
| - ZER | 1,518 | 2,847 | 2,577 | 2,037 | 1,864 | 2,770 | 1.13 | 2,825 | 3,300 | 3,856 | 4,505 | 5,264 | 5,859 | 5,455 | 1.10 |
| - UGANDA | 0 | 600 | 817 | 632 | 1,558 | 1,670 | 1.83 | 2,167 | 2,675 | 3,302 | 4,076 | 5,031 | 6,443 | 8,250 | 1.24 |
| TOTAL EXPORTS | 7,384 | 10,465 | 12,419 | 11,230 | 13,742 | 19,212 | 1.21 | 21,958 | 26,181 | 31,361 | 37,739 | 45,639 | 50,958 | 57,094 | 1.17 |
| IMPORTS | | | | | | | | | | | | | | | |
| TANZANIA | 5,724 | 7,424 | 9,809 | 12,199 | 13,574 | 15,019 | 1.21 | 22,274 | 23,381 | 24,543 | 25,764 | 27,044 | 29,185 | 31,451 | 1.11 |
| TRANSIT - ZAMBIA | 2,417 | 3,341 | 3,959 | 2,826 | 3,383 | 5,023 | 1.16 | 5,000 | 6,430 | 8,269 | 10,633 | 13,674 | 15,185 | 16,751 | 1.19 |
| - MALAWI | 225 | 301 | 710 | 90 | 538 | 543 | 1.19 | 693 | 990 | 1,414 | 2,019 | 2,885 | 3,364 | 3,923 | 1.33 |
| - ZER | 918 | 1,208 | 1,489 | 1,142 | 2,295 | 3,180 | 1.28 | 3,558 | 4,424 | 5,501 | 6,841 | 8,507 | 8,990 | 9,500 | 1.17 |
| - UGANDA | 54 | 21 | 49 | 61 | 265 | 193 | 1.29 | 331 | 689 | 1,353 | 2,738 | 5,533 | 5,979 | 6,482 | 1.35 |
| - PORT TO PORT | 2,857 | 3,681 | 5,036 | 5,048 | 4,793 | 4,982 | 1.12 | -- | -- | -- | -- | -- | -- | -- | -- |
| TOTAL IMPORTS | 12,225 | 16,178 | 22,072 | 22,366 | 26,848 | 28,940 | 1.19 | 31,655 | 35,894 | 41,080 | 47,993 | 57,843 | 62,632 | 68,067 | 1.13 |
| TOTAL IMPORT/EXPORT | | | | | | | | | | | | | | | |
| TANZANIA | 10,390 | 12,120 | 14,840 | 16,927 | 21,825 | 24,310 | 1.19 | 32,798 | 35,249 | 37,928 | 40,857 | 44,068 | 48,330 | 53,030 | 1.12 |
| TRANSIT - ZAMBIA | 3,361 | 4,863 | 6,187 | 5,067 | 6,481 | 9,681 | 1.24 | 10,566 | 13,519 | 17,299 | 22,135 | 28,325 | 31,193 | 34,357 | 1.20 |
| - MALAWI | 511 | 1,301 | 2,476 | 682 | 1,509 | 1,166 | 1.16 | 1,564 | 2,288 | 3,202 | 4,582 | 6,557 | 7,293 | 8,127 | 1.32 |
| - ZER | 2,436 | 3,855 | 4,066 | 3,179 | 4,159 | 5,950 | 1.20 | 6,382 | 7,724 | 9,357 | 11,346 | 13,771 | 14,348 | 14,955 | 1.14 |
| - UGANDA | 54 | 621 | 866 | 593 | 1,623 | 2,063 | 2.07 | 2,498 | 3,344 | 4,655 | 6,612 | 10,564 | 12,422 | 14,712 | 1.32 |
| - PORT TO PORT | 2,857 | 3,681 | 5,036 | 5,048 | 4,793 | 4,982 | 1.12 | -- | -- | -- | -- | -- | -- | -- | -- |
| GRAND TOTAL (LOADED CONTAINERS) | 19,609 | 28,641 | 34,471 | 33,596 | 40,590 | 48,152 | 1.20 | 53,608 | 62,075 | 72,441 | 85,733 | 103,282 | 113,589 | 125,162 | 1.15 |
| TOTAL EMPTIES | 6,807 | 5,799 | 5,241 | 6,797 | 6,111 | 8,548 | 1.05 | 9,496 | 10,984 | 12,784 | 15,129 | 18,228 | 20,045 | 22,091 | 1.15 |
| GRAND TOTAL (CONTAINERS) | 26,416 | 32,440 | 40,712 | 40,393 | 46,701 | 56,698 | 1.17 | 63,104 | 73,059 | 85,224 | 100,862 | 121,508 | 133,634 | 147,272 | 1.15 |

TANZANIA

PORT MODERNIZATION PROJECT II

DETAILED DESCRIPTION OF TRAFFIC PROJECTION

TANZANIA

1. **Exports.** Although it is highly unlikely that Tanzanian exports will continue to grow at the rate experienced over the past five years (21% p.a.), recent economic reforms under the Economic Recovery Program have generated substantial economic response, particularly in the agricultural sector, and strong export performance is likely to continue. Also, during the forecast period, Tanzania will embark on a massive rehabilitation of its road network (proposed Integrated Roads Project - FY90) and continue the rehabilitation of agricultural processing facilities. These are the two major physical constraints which had impeded a stronger export response over the past three years. Overall, Tanzanian export traffic is forecast to rise from 280,000 tonnes in 1988 to 449,000 tonnes in 1993 and 521,000 tonnes in 1995 (representing an average growth of 9% p.a.). The overall growth rate of Tanzanian exports is consistent with the projection made under the Tanzania Public Expenditure Review completed in May 1989 (Report No. 7559-TA).¹

2. **Imports.** After falling precipitously from a peak of about 900,000 tonnes in the mid-1970's to 516,000 tonnes in 1983, the past five years have shown a slow recovery, fluctuating between 570,000 and 724,000 tonnes p.a. Although there is considerable suppressed demand for imports, the actual volume will continue to be restricted by the availability of foreign exchange. The overall growth rate is projected at 3% p.a., leading to a recovery to about 681,000 tonnes per annum by 1995. The assumed growth rate is consistent with the projection made under the Tanzania Public Expenditure Review.

ZAMBIA

3. **Exports.** The main Zambian export is copper and both total exports and the share of traffic transitting Dar es Salaam have declined sharply (over 40%) from the levels of the mid-1970's. However, since 1983, a modest revival has been experienced, with total exports increasing at about 2% p.a. Given the recent increase in world copper prices, copper exports are forecast to recover at a modest pace, with total exports regaining the 1980-81 level of 472,000

| ¹ Projection: | <u>1989</u> | <u>1990</u> | <u>1991</u> | <u>1993</u> | <u>1995</u> | <u>1997</u> |
|--------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Exports | 8.9% | 11.5% | 10.5% | 8.0% | 7.6% | 7.0% |
| Imports | 1.6% | 2.1% | 2.5% | 2.9% | 3.6% | 4.0% |

Source: Tanzania Public Expenditure Review (7559-TA)

tonnes in 1993 and rising to 511,000 tonnes in 1995 (overall growth of 4% p.a.). This projection does not take into consideration any major changes to Zambia's current macroeconomic policy. If a major currency devaluation occurs, along with structural changes in the productive sectors, Zambian exports could conceivably increase at a much faster pace than projected, as has been experienced in Tanzania.

4. Imports. Two critical factors determining the volume of Zambian imports through Dar es Salaam are: (i) the total volume of imports (in turn dependent upon Zambian economic conditions); and (ii) the ability of the Dar es Salaam route to provide a service comparable to the southern routes (through Mozambique or the Republic of South Africa (RSA)). For the purposes of the project, it has been assumed that no major change is made in the macroeconomic management of Zambia and that the import volume through Dar es Salaam will essentially stay at the current level of about 440,000 tonnes p.a. through to 1995. As for the Dar es Salaam route providing a competitive service vis a vis the southern routes, port pricing at Dar es Salaam is about the same as it is at the southern ports, while land transport costs for imports to Lusaka and the eastern half of Zambia, are lower from Dar es Salaam than from the southern routes. It is likely that Zambia will continue to use Dar es Salaam as its main port. If Zambia embarks on a major economic reform program, and if substantial donor funding can be secured to support the undertaking, then it is highly possible that much more Zambian traffic would transit through Dar es Salaam. Consequently, the forecast for Zambian traffic would be on the conservative side.

MALAWI

5. The level of Malawi transit traffic is a function of: (i) completion of the Malawi Cargo Centers (MCC) in Dar es Salaam and Mbeya (Northern Transport Corridor (NTC) Project - Cr. 1879 - MAI); and (ii) the possible opening of Malawi's traditional export routes through Mozambique (the Beira and Nacala Corridors). Currently, due to closure of both the Nacala and Beira lines, the majority of Malawi import/export traffic is routed to the South African route, which is three to four times longer than the Mozambique routes and twice as long as the Dar es Salaam route. Expanded use of the Dar es Salaam route is planned to begin after the required transshipment depots and road link between Malawi and Tanzania have been completed under the on-going Malawi NTC project. The MCCs are inland container and general cargo depots dedicated to serving Malawi cargo and are designed to expedite the flow of Malawian traffic. The construction of the MCCs has commenced and their opening is planned for 1990/1991. Regarding the possibility of Malawi's traditional routes being reopened, there has been some reduction in insurgency activities around the Nacala Corridor, and this may provide an additional transit route for Malawi.

6. Traffic projections for Malawi are based on the analysis carried out in the NTC project. Under the NTC project, the traffic forecast assumes diversion of nearly 30% of total Malawian import/export traffic to the port of Dar es Salaam, equivalent to 125,000 tonnes for exports and 121,000 tonnes for non-fuel imports. The underlying assumption is that both the Beira and Nacala Corridors would open partially in 1988 and by 1993 would accommodate traffic

equal to half the potential capacity of those two routes (both routes combined have sufficient capacity to serve the entire Malawian import/export traffic). In mid-1989, however, neither of the Corridors had opened. Nevertheless, for forecasting purposes, the Port Modernization II project has adopted the assumption that only 65% of the traffic projected to be diverted to the port of Dar es Salaam under the Malawi NTC project will in fact be so: i.e. it is assumed that the Mozambique routes will reopen fully in 1990 and remain open thereafter (an assumption which was used in the sensitivity analysis of the NTC project). As a result, the Malawi traffic projected to transit Dar es Salaam port is 134,000 tonnes in 1993 and 153,000 tonnes in 1995 (up from 41,000 tonnes in 1988).

ZAIRE, BURUNDI, RWANDA AND UGANDA

7. The total transit traffic of these countries has increased from 150,000 tonnes in 1983 to 340,000 tonnes in 1988, and they now hold an 18% share of the total dry cargo throughput of Dar es Salaam. In recent years, due to efficiency improvements at the port of Dar es Salaam relative to Mombasa (their alternative port), shippers have shown preference for using the former. The major constraint, however, has been a lack of efficient inland transport services: TRC and their lake transshipment points have experienced severe problems in meeting the growing demand; the road network leading to Dar es Salaam is in a dilapidated condition, often impassable during the rainy season; and a lack of road/rail transshipment points in the north-western part of the country has effectively precluded the use of rail even when service has been available. The future increase of transit traffic from these countries will depend therefore on: (i) improvements in the efficiency and effectiveness of inland transport; and (ii) each country's decision on the use of Dar es Salaam or Mombasa as its main route.

8. Major improvements in inland transport are planned over the project period. Under the proposed Integrated Roads Project (FY1990), the main artery from Dar es Salaam via Isaka to Mwanza, which is the main throughway for transit traffic, will be rehabilitated to paved standard. Under the proposed Railways Restructuring Project (FY1991), significant physical as well as management improvements are planned to increase the capacity of TRC to meet its domestic, as well as transit, traffic demand. Also, operational arrangements are being made in TRC for transit traffic to be transported in unit trains, thus cutting down on cost and reducing travel time. Construction of Isaka road/rail transshipment depot has begun with EEC financing and is expected to be in operation in 1990. With these activities, Tanzania's inland transport system is expected to improve significantly beginning in about 1992/1993.

9. The traffic forecast for these countries has been based on a detailed study of their transport requirements under the Great Lakes Corridor Study (Green Cover, November 1988). It is projected that: (i) Burundi will continue to utilize Dar es Salaam as its main transit port; (ii) Rwanda will continue to use Mombasa as its main transit port; (iii) Uganda, which has expressed its desire to balance the use of the two ports, will divert a greater share of its traffic to Dar es Salaam (equal to half of its non-petroleum traffic); and (iv) Zaire

will continue to use both ports, splitting the traffic equally. Based on these assumptions, the total traffic of ZBR and Uganda will increase to 643,000 tonnes by 1995, with Uganda traffic increasing at a rate of 25% p.a., Burundi and Rwanda traffic increasing at 6% and 4%, respectively, and Zaire traffic roughly constant at its current level of 90,000 tonnes p.a.

SOUTH AFRICAN BORDER CLOSURE

10. Although the fluid political situation in Southern Africa makes a scenario of South African border closure uncertain, the impact of such a move on traffic through Dar es Salaam port has been considered. The effect on traffic through Dar es Salaam of a closure of the South African border would depend heavily on its timing and on the availability of other transport corridors. The interim report of an ongoing Southern Africa Transport and Communications Commission project (Study of the Capacity of the Port of Dar es Salaam, SATCC Project No.3.7.2) forecasts that, if the RSA border were closed, dry cargo through Dar es Salaam in 1990 would range from 2.5 million tonnes if all other transport routes in the SADCC region were open, to 5.9 million tonnes if the TAZARA route to Dar es Salaam alone were open. An intermediate scenario, in which the Benguela, Limpopo and Beira-Malawi railways are closed, suggests traffic levels of 2.8 million tonnes in 1990 rising to 3.1 million tonnes in 1995 (see Table 4.1).

Table 4.1
Port of Dar es Salaam
Dry Cargo Forecasts Assuming South African Border Closure
(Tonnes 000)

| <u>Year</u> | <u>Corridors Open</u> | | |
|-------------|-----------------------|-------------|--------------------|
| | <u>All</u> | <u>Some</u> | <u>TAZARA Only</u> |
| 1990 | 2,496 | 2,781 | 5,854 |
| 1992 | 2,624 | 2,909 | 6,035 |
| 1995 | 2,816 | 3,102 | 6,306 |
| 2000 | 3,103 | 3,388 | 6,848 |

Note: "Some" corridors equals all except Benguela, Limpopo and Beira.
Source: SATCC Project No.3.7.2, Interim Report.

These forecasts are corroborated by an UNCTAD report, dated December 1988 (RAF/86/046), which suggests that demand for dry cargo traffic through Dar es Salaam could be as high as 4.7 million tonnes p.a. if there were a sudden RSA border closure before mid-1990, but only 2.7 million tonnes p.a. if there were a "planned disengagement" after 1990-91 (i.e assuming that most alternative routes were open).

11. Compared with the project's base case forecasts (which assumed no border closures), the intermediate scenario projections imply that an RSA border closure would divert to Dar es Salaam additional traffic of 650,000 tonnes in 1990, falling to 150,000 tonnes in 1995. With the planned implementation of the proposed project, an additional 650,000 tonnes in 1990 would just barely be manageable, as long as no more than 300,000 tonnes were in containerized form and no more than 400,000 tonnes in break-bulk form. In succeeding years, the additional traffic could be handled more easily. If the project does not go ahead, however, approximately 200,000 additional tonnes could be handled in 1990, assuming it were all in break-bulk form; in 1991, this would fall to less than 100,000 tonnes and in future years there would be no capacity at all for traffic diverted from the RSA routes.

TANZANIA

PORT MODERNIZATION PROJECT II

SUMMARY DRY CARGO TRAFFIC FORECASTS FOR DSM PORT WITH AND WITHOUT PROJECT

All tonnages in 000 Tonnes:

| | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|----------------------------------|---------------|---------------|---------------|---------------|----------------|----------------|----------------|----------------|----------------|
| ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| WITH PROJECT: | | | | | | | | | |
| Container Terminal | | | | | | | | | |
| Loaded TEUs | 60,149 | 67,854 | 67,515 | 79,908 | 96,259 | 105,885 | 116,670 | 128,577 | 141,700 |
| Container Tonnes | 682 | 788 | 922 | 1,091 | 1,815 | 1,447 | 1,597 | 1,761 | 1,942 |
| Conventional Terminal | | | | | | | | | |
| Loaded TEUs | 3,659 | 4,221 | 4,925 | 5,830 | 7,023 | 7,724 | 8,512 | 9,391 | 10,339 |
| Container Tonnes | 50 | 58 | 67 | 80 | 96 | 108 | 116 | 128 | 142 |
| Other Dry Cargo Tonnes | 1,298 | 1,299 | 1,291 | 1,262 | 1,188 | 1,205 | 1,232 | 1,252 | 1,266 |
| Total Tonnes | 1,848 | 1,857 | 1,858 | 1,842 | 1,284 | 1,514 | 1,848 | 1,890 | 1,408 |
| Total Dry Cargo Tonnes | 2,025 | 2,145 | 2,280 | 2,438 | 2,599 | 2,761 | 2,945 | 3,141 | 3,851 |
| Total Loaded TEUs | 63,808 | 62,075 | 72,441 | 85,738 | 103,282 | 113,589 | 125,182 | 137,958 | 152,038 |
| Total Container Tonnes | 732 | 846 | 989 | 1,171 | 1,411 | 1,553 | 1,713 | 1,889 | 2,084 |
| Share Containerized Cargo | 36.1% | 39.4% | 43.4% | 48.1% | 54.3% | 56.2% | 58.2% | 60.2% | 62.2% |
| WITHOUT PROJECT: | | | | | | | | | |
| Container Terminal | | | | | | | | | |
| Loaded TEUs | 60,149 | 67,854 | 60,300 | 60,300 | 60,300 | 60,300 | 60,300 | 60,300 | 60,300 |
| Container Tonnes | 682 | 788 | 822 | 822 | 822 | 822 | 822 | 822 | 822 |
| Conventional Terminal | | | | | | | | | |
| Loaded TEUs | 3,659 | 4,221 | 4,400 | 4,400 | 4,400 | 4,400 | 4,400 | 4,400 | 4,400 |
| Container Tonnes | 50 | 58 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| Other Dry Cargo Tonnes | 1,298 | 1,299 | 1,398 | 1,551 | 1,717 | 1,808 | 1,808 | 1,808 | 1,808 |
| Total Tonnes | 1,848 | 1,857 | 1,458 | 1,611 | 1,777 | 1,868 | 1,868 | 1,868 | 1,868 |
| Total Dry Cargo Tonnes | 2,025 | 2,145 | 2,280 | 2,438 | 2,599 | 2,690 | 2,690 | 2,690 | 2,690 |
| Total Loaded TEUs | 63,808 | 62,075 | 64,700 | 64,700 | 64,700 | 64,700 | 64,700 | 64,700 | 64,700 |
| Total Container Tonnes | 732 | 846 | 882 | 882 | 882 | 882 | 882 | 882 | 882 |
| Share Containerized Cargo | 36.1% | 39.4% | 38.7% | 36.2% | 33.9% | 32.8% | 32.8% | 32.8% | 32.8% |
| Reassigned Tonnes | 0 | 0 | 100 | 270 | 483 | 555 | 520 | 488 | 460 |
| Diverted Tonnes | 0 | 0 | 0 | 0 | 0 | 71 | 255 | 451 | 660 |

Notes:

1. With or without the project, 93.2% of TEUs go through the Container Terminal, 6.8% through the Conventional Terminal.
2. Constrained by storage space, loaded container capacity is 188,000 TEUs p.a. with the project, 64,700 TEUs p.a. without.
3. With 6 berths and a 90% berth occupancy limit, conventional terminal capacity is 1,858,000 tonnes without the project, rising to 2,549,000 tonnes with the project.
4. "Reassigned tonnage" is cargo which would have used the Container Terminal with the project but has to use the Conventional Terminal without the project.
5. "Diverted tonnage" is cargo which would have used Dar with project but has to use another port without the project.

TANZANIA

PORT MODERNIZATION PROJECT II

SHIPS' SERVICE TIME AND SHIPS' WAITING TIME AT DSM PORT WITH THE PROJECT

WITH THE PROJECT

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|----------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| CONTAINER TERMINAL: | | | | | | | | |
| Loaded TEUs Handled | 57,854 | 67,515 | 79,903 | 90,259 | 105,865 | 116,670 | 128,577 | 141,700 |
| Total TEUs Handled | 69,809 | 80,299 | 95,032 | 114,485 | 125,910 | 138,761 | 152,923 | 168,530 |
| Productivity (TEUs/gang hour) | 23 | 28 | 33 | 38 | 44 | 44 | 44 | 44 |
| Handling Capacity (TEUs p.a.) | 170,126 | 207,110 | 260,367 | 299,817 | 347,156 | 347,156 | 347,156 | 347,156 |
| Berth Occupancy (%) | 40% | 39% | 36% | 38% | 36% | 40% | 44% | 49% |
| TEUs Handled per Ship | 370 | 387 | 405 | 424 | 444 | 465 | 486 | 509 |
| Average Service Time (Days) | 2.09 | 1.23 | 1.64 | 1.53 | 1.43 | 1.49 | 1.52 | 1.57 |
| Ships' Service Time (Days) | 388 | 387 | 384 | 414 | 407 | 441 | 479 | 520 |
| Cost Ships' Service Time US\$000 | 5,164 | 5,143 | 5,103 | 5,502 | 5,408 | 5,867 | 6,368 | 6,918 |
| Ships' Waiting Time (Days) | 23 | 15 | 12 | 17 | 12 | 22 | 38 | 52 |
| Cost Ships' Waiting Time US\$000 | 310 | 208 | 153 | 220 | 162 | 293 | 509 | 692 |

CONVENTIONAL TERMINAL:

| | | | | | | | | |
|-------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| Tonnes Handled (000 Tonnes) | 1,357 | 1,358 | 1,342 | 1,284 | 1,314 | 1,348 | 1,380 | 1,408 |
| Productivity (Tonnes/berth day) | 776 | 840 | 905 | 971 | 971 | 971 | 971 | 971 |
| Handling Capacity (000 Tonnes p.a.) | 1,983 | 2,146 | 2,312 | 2,481 | 2,835 | 2,835 | 2,835 | 2,835 |
| Berth Occupancy (%) | 68% | 63% | 58% | 52% | 46% | 48% | 49% | 50% |
| Tonnes Handled per Ship | 1,860 | 1,880 | 1,860 | 1,860 | 1,860 | 1,860 | 1,860 | 1,860 |
| Average Service Time (Days) | 2.40 | 2.21 | 2.06 | 1.92 | 1.92 | 1.92 | 1.92 | 1.92 |
| Ships' Service Time (Days) | 1,748 | 1,617 | 1,482 | 1,322 | 1,353 | 1,389 | 1,421 | 1,450 |
| Cost Ships' Service Time US\$000 | 15,208 | 14,068 | 12,897 | 11,504 | 11,770 | 12,082 | 12,367 | 12,617 |
| Ships' Waiting Time (Days) | 157 | 97 | 59 | 26 | 14 | 14 | 14 | 15 |
| Cost Ships' Waiting Time US\$000 | 1,369 | 844 | 516 | 230 | 118 | 121 | 124 | 126 |

TOTAL:

| | | | | | | | | |
|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| Ships' Service Time (Days) | 2,136 | 2,004 | 1,866 | 1,736 | 1,759 | 1,830 | 1,900 | 1,970 |
| Cost Ships' Service Time US\$000 | 20,372 | 19,211 | 18,000 | 17,006 | 17,177 | 17,949 | 18,735 | 19,533 |
| Ships' Waiting Time (Days) | 181 | 112 | 71 | 43 | 26 | 36 | 53 | 67 |
| Cost Ships' Waiting Time US\$000 | 1,679 | 1,050 | 669 | 450 | 260 | 414 | 633 | 818 |

NOTE:

1. See Notes at foot of Annex 4-8.

TANZANIA

PORT MODERNIZATION PROJECT II

SHIPS' SERVICE TIME AND SHIPS' WAITING TIME AT DSM PORT WITHOUT THE PROJECT

WITHOUT THE PROJECT

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|-------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| CONTAINER TERMINAL: | | | | | | | | |
| Loaded TEUs Handled | 57,854 | 60,300 | 60,300 | 60,300 | 60,300 | 60,300 | 60,300 | 60,300 |
| Total TEUs Handled | 68,608 | 70,941 | 70,941 | 70,941 | 70,941 | 70,941 | 70,941 | 70,941 |
| Productivity (TEUs/gang hour) | 28 | 24 | 28 | 28 | 30 | 30 | 30 | 30 |
| Handling Capacity (TEUs p.a.) | 170,128 | 177,528 | 192,317 | 207,110 | 221,904 | 221,904 | 221,904 | 221,904 |
| Berth Occupancy (%) | 40% | 40% | 37% | 34% | 32% | 32% | 32% | 32% |
| Storage Capacity (TEUs p.a.) | 60,300 | 60,300 | 60,300 | 60,300 | 60,300 | 60,300 | 60,300 | 60,300 |
| Storage "Berth Occupancy" (%) | 98% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |
| TEUs Handled per Ship | 370 | 370 | 370 | 370 | 370 | 370 | 370 | 370 |
| Average Service Time (Days) | 2.09 | 2.40 | 2.40 | 2.40 | 2.40 | 2.40 | 2.40 | 2.40 |
| Ships' Service Time (Days) | 388 | 461 | 461 | 461 | 461 | 461 | 461 | 461 |
| Cost Ships' Service Time US\$000 | 5,184 | 6,129 | 6,129 | 6,129 | 6,129 | 6,129 | 6,129 | 6,129 |
| Ships' Waiting Time (Days) | 28 | 2,009 | 2,009 | 2,009 | 2,009 | 2,009 | 2,009 | 2,009 |
| Cost Ships' Waiting Time US\$000 | 310 | 26,725 | 26,725 | 26,725 | 26,725 | 26,725 | 26,725 | 26,725 |
| CONVENTIONAL TERMINAL: | | | | | | | | |
| Tonnes Handled (000 Tonnes) | 1,357 | 1,458 | 1,611 | 1,777 | 1,868 | 1,868 | 1,868 | 1,868 |
| Productivity (Tonnes/berth day) | 711 | 711 | 711 | 711 | 711 | 711 | 711 | 711 |
| Handling Capacity (000 Tonnes p.a.) | 1,817 | 1,817 | 2,078 | 2,078 | 2,078 | 2,078 | 2,078 | 2,078 |
| Berth Occupancy (%) | 75% | 80% | 78% | 86% | 90% | 90% | 90% | 90% |
| Tonnes Handled per Ship | 1,860 | 1,860 | 1,860 | 1,860 | 1,860 | 1,860 | 1,860 | 1,860 |
| Average Service Time (Days) | 2.62 | 2.62 | 2.62 | 2.62 | 2.62 | 2.62 | 2.62 | 2.62 |
| Ships' Service Time (Days) | 1,908 | 2,051 | 2,266 | 2,500 | 2,628 | 2,628 | 2,628 | 2,628 |
| Cost Ships' Service Time US\$000 | 18,599 | 17,843 | 19,715 | 21,746 | 22,862 | 22,862 | 22,862 | 22,862 |
| Ships' Waiting Time (Days) | 305 | 554 | 885 | 950 | 1,524 | 1,524 | 1,524 | 1,524 |
| Cost Ships' Waiting Time US\$000 | 2,656 | 4,818 | 8,352 | 6,264 | 18,260 | 18,260 | 18,260 | 18,260 |
| TOTAL: | | | | | | | | |
| Ships' Service Time (Days) | 2,296 | 2,512 | 2,727 | 2,960 | 3,089 | 3,089 | 3,089 | 3,089 |
| Cost Ships' Service Time US\$000 | 21,762 | 28,972 | 26,844 | 27,876 | 28,992 | 28,992 | 28,992 | 28,992 |
| Ships' Waiting Time (Days) | 329 | 2,563 | 2,895 | 2,959 | 3,534 | 3,534 | 3,534 | 3,534 |
| Cost Ships' Waiting Time US\$000 | 2,966 | 31,542 | 30,076 | 34,988 | 39,985 | 39,985 | 39,985 | 39,985 |

NOTE:

1. See Notes at foot of Annex 4-8.

TANZANIA

PORT MODERNIZATION PROJECT II

SAVINGS IN SHIPS' SERVICE TIME AND SHIPS' WAITING TIME AT DSM PORT DUE TO PROJECT

| US\$ 000: | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|--------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| WITH THE PROJECT: | | | | | | | | |
| Cost Ships' Service Time | 20,372 | 19,211 | 18,000 | 17,006 | 17,177 | 17,949 | 18,735 | 19,533 |
| Cost Ships' Waiting Time | 1,679 | 1,050 | 669 | 450 | 280 | 414 | 633 | 818 |
| WITHOUT THE PROJECT: | | | | | | | | |
| Cost Ships' Service Time | 21,762 | 23,972 | 25,844 | 27,876 | 28,992 | 28,992 | 28,992 | 28,992 |
| Cost Ships' Waiting Time | 2,966 | 31,542 | 30,076 | 34,988 | 39,985 | 39,985 | 39,985 | 39,985 |
| SAVINGS: | | | | | | | | |
| Cost Ships' Service Time (SST) | 1,390 | 4,761 | 7,844 | 10,869 | 11,815 | 11,043 | 10,254 | 9,459 |
| Cost Ships' Waiting Time (SWT) | 1,287 | 30,492 | 29,407 | 34,538 | 39,705 | 39,571 | 39,352 | 39,167 |
| Tanzanian Share of Total Traffic (%) | 43.4% | 43.1% | 42.6% | 41.9% | 41.4% | 40.6% | 40.6% | 40.6% |
| Tanzanian Share of SST Saving | 0 | 302 | 1,026 | 1,671 | 2,277 | 2,446 | 2,253 | 2,092 |
| Tanzanian Share of SWT Saving | 0 | 279 | 6,571 | 6,264 | 7,236 | 8,219 | 8,072 | 8,028 |

NOTES:

Both Scenarios:

1. All empty containers handled at Container Terminal.
2. "Handling Capacity" is theoretical maximum capacity, i.e. 100% occupancy.
3. Container handling capacity assumes: 67% effective working time; one gang per ship; two berths.
4. Container ships' service time includes 0.5 day per ship for mooring/unmooring.
5. Conventional Terminal productivity rates take into account mooring/unmooring times.
6. Tonnes handled per conventional ship assumed to remain at 1,880.
7. Ship costs: Container Ship = US\$18,300 per day; Conventional Ship = US\$8,800 per day.
8. Waiting time at Container Terminal assumes intervals between arrivals and service times are best described by an Erlang 2 distribution.
9. Waiting time at Conv. Terminal assumes random intervals between arrivals and Erlang-2 distributed service times.
10. 50% of savings accrue to shipowners; 50% to Tanzania and neighboring countries, lagged by one year.
11. Tanzanian share of region's savings = share of total traffic.

With Project:

12. Container Terminal productivity assumes: third SSG is in operation from 1993 onwards; SSG productivity rises from 16 boxes/gang hour to 20 boxes by 1992; ship's gear productivity rises from 5 boxes/gang hour to 10 boxes by 1992.
13. Conventional Terminal productivity assumes: tonnes per berth day rise from 776 to 970 by 1993.
14. Crane availability assumed to be 75% in 1990 and 1991; 80% from 1992 onwards.
15. TEUs handled per container ship assumed to grow at one third the rate of total TEU growth.
16. Conventional Terminal has 7 berths until 1993 while rehabilitation work takes place, 8 from 1994 onwards.

Without Project:

17. Container Terminal productivity assumes: third SSG is not purchased; SSG productivity rises from 16 boxes/gang hour to 20 boxes by 1994; ship's gear productivity rises from 5 boxes/gang hour to 7 boxes by 1994.
18. Conventional Terminal productivity assumes: tonnes per berth day stays at 1989 level of 711.
19. Crane availability assumed to stay at 75%.
20. Total TEUs handled per container ship assumed to stay at 370. NB: Loaded TEUs handled per ship equals 315.
21. Conventional Terminal has 7 berths until 1991, 8 from 1992 onwards. Rehabilitation work finished two years sooner.
22. From 1991, since storage space is the binding constraint, ships' waiting time in the Container Terminal is based on a 1 berth scenario, with service time dependent on speed of delivery of TEUs from the storage area and the number of loaded TEUs handled per ship. Although storage space is completely full (i.e. 100% storage "berth occupancy"), ships' waiting time conservatively assumes 90% storage occupancy. The 90% storage occupancy in 1990 conservatively assumed not to affect handling rates.

TANZANIA

PORT MODERNIZATION PROJECT

Container Dwell Time and Customs Assistance

A. Introduction

1. In April/May 1989, a World Bank mission team and a Customs specialist from UNCTAD both separately examined the issue of trade facilitation at Dar es Salaam: the World Bank in the context of the proposed Port Modernization Project II, and UNCTAD as part of their Regional Transit Traffic Project. A joint World Bank/UNCTAD team held further discussions with representatives of THA, Customs, NASACO and the Board of External Trade in June 1989. The focus of these discussions was the extremely high dwell time of containers in the port of Dar es Salaam and how it might best be reduced. This note describes the current situation and its costs, and proposals for improving it.

B. Current Situation

2. The latest available figures (July 1989) indicate that inward-bound containers spend 37 days on average in the port. Of these, local imports have an average dwell time of 34 days and transit traffic 40 days. These figures are lower than those prevailing a few months ago (in June 1988 the average dwell time for inward-bound containers was 57 days), but they are still very high by international standards. The total number of containers on hand is considerably higher than the technical capacity of the container terminal and Kurasini and Ubungu depots combined, making complete congestion a serious threat.

3. High dwell time is expensive. Each additional day that a full import container spends in the port costs the economy an estimated US\$5 for the opportunity cost of the capital tied up in the goods, and as much as US\$14 in demurrage charges to the container owner (assuming the container is not returned within 28 days of discharge): i.e. a total of US\$19. Assuming a domestic import volume of 24,000 TEUs per annum, this represents a cost to the Tanzanian economy of US\$456,000 per annum for each additional day of dwell time. In addition, the costs are just as great for importers from neighboring land-locked countries who use Dar es Salaam port.

4. More importantly in the long run, high dwell time reduces the effective capacity of the container terminal and therefore of the port as a whole. Ships' waiting time and freight costs would both rise and, once the port had reached full capacity, it would lose all additional traffic completely.

C. Proposals

5. The Bank's and UNCTAD's recommendations fall into three categories: sanctions against those who misuse the port in one way or another (e.g. traders who misdeclare the contents of containers or who effectively use the port as a warehouse); improvements to Customs procedures and the whole document processing

system; and institutional strengthening of TANPRO, the Tanzania Trade Facilitation Council. The World Bank and UNCTAD will provide technical assistance and training to Customs and to TANPRO, subject to these proposals being adopted. US\$2 million of IDA's contribution to the proposed Port Modernization Project II has been allocated for this purpose (see Table A at the end of this annex for a preliminary breakdown. This is in addition to any assistance UNCTAD may provide prior to effectiveness of the IDA Credit (i.e. about June 1990).

D. Sanctions

6. The sanctions recommended below are all accepted practice in ports around the world. Some of them in fact are considerably less stringent than typically found elsewhere. Together they should substantially reduce the number of containers in the port.

(a) Storage Fees

The fees which traders are charged by THA for storing their containers in the port should be increased so that there is a strong incentive to use storage space outside the port. For import containers, after a free period of four days, the storage fee is currently just Tsh 2,000 per day. A higher rate (say, Tsh 4,000 per day) should be charged after 14 days in the port.

(b) Empty Containers

Regional trade flows create a net surplus of empty containers in Dar es Salaam, which ship-owners (who also own the containers) like to keep in the port ready for loading if the opportunity should arise. As from 1/7/89, empties will be given ten days free in the port, followed by ten days at US\$4 per day and then US\$8 per day until loading or delivery. We propose treating empties more strictly: they should only be admitted to the port five days prior to loading. If they stay longer, they should be charged US\$8 per day immediately. Empties which are due to be stuffed should be delivered to Kurasini depot rather than to the Container Terminal.

(c) Unmanifested Containers

The installation of a Fax machine at Nasaco and increased vigilance on their part should reduce the number of unmanifested containers arriving (they currently account for about 5% of the containers in the port). THA should either refuse to discharge unmanifested containers or else inform ship-owners that punitive fines will be levied for each unmanifested container that arrives in the port of Dar es Salaam.

(d) Auctions

Containers whose customs entries have not been lodged 21 days after discharge and those whose import duties have not been paid 21 days after payment became due should become the property of Customs and be auctioned by them as soon as possible thereafter. If Customs' facilities in the port are too small to do this on an ongoing basis, they should set up a secure warehouse outside

the port in which auctions can take place. The Commissioner of Customs has agreed to hold at least three auctions per month of the contents of these containers. This is a condition for including assistance to Customs as a project component.

(e) Fines for Misdeclaration

Fines for misdeclaration have historically provided very little disincentive to traders not to cheat. In the June 1989 Budget, the maximum fine for misdeclaration was increased from Tsh 3,000 to 50% of the tax evaded or 50% of the value of the goods, whichever is greater. This is a move in the right direction, but a further increase should be instituted, at least to the level where the fine equals the amount of tax the importer is trying to evade.

E. Customs and Cargo Clearance Procedures

7. Significant progress has recently been made in simplifying documentation. A new Export Entry Form which replaces five previous forms and a Road Customs Transit Declaration which replaces seven forms have just been introduced. A new Standard Shipping Note is ready to be introduced and a combined Import Duty and Sales Tax Entry Form is currently being designed. These changes are forecast to reduce Customs' processing time by up to one week. Furthermore, a decision has been taken to deal with all transit containers in the port rather than routing their paperwork through the Customs Long Room, and a softening of bond requirements is being contemplated.

8. These are encouraging signs and suggest that Customs is moving from a mode of maximum tariff generation to one where broader aspects of trade facilitation and the economy as a whole are taken into account. Below a few ways are outlined in which Customs can build on recent developments as well as institute additional improvements. Some of these suggestions involve the World Bank and UNCTAD; some can be achieved independently.

(a) Documentation Simplification

Final adjustments to the Import Duty and Sales Tax Entry Form and implementation of the new Standard Shipping Note will be coordinated by TANPRO working closely with THA, Customs, NASACO and the Central Freight Bureau. Mr. Roos, the Coordinator of UNCTAD's Trade Facilitation Programme (FALPRO) will advise TANPRO in these matters. The second phase of the document simplification process should take place after the various port users have digested the new forms. This phase will concentrate more on the documentation process rather than on the forms themselves, although certain format improvements might be warranted based on experience to that date. Process issues include the required number of copies of each form, their precise routing, the sequencing of administrative steps etc. UNCTAD have offered to provide an expert in these matters for up to two months.

(b) Logistical Improvements

Related to the issue of document routing is the layout of the Customs Long Room. Customs sensibly plans to create specialized desks for the different classes of imports: government, parastatal, commercial and exempted. There should also be an increase from 10 to 15 in the number of officers qualified to examine documents. Transit goods should be dealt with entirely within the port and their documentation should bypass the Long Room completely. These logistical improvements would be greatly facilitated if Customs were able to occupy more office space in the port, of which there is a great shortage. Not only would this alleviate pressure in the Long Room, but it would also allow greater coordination between the payment and verification stages.

(c) Sampling

Institution of the 100% verification policy was one of the key reasons for the exceptionally high dwell time figures recorded last year. In conjunction with the stiffer fines for misdeclaration, a random sampling process should be introduced both at the verification stage and in the Long Room. By verifying, say, one in three of the consignments, considerably fewer containers would be held up at the verification stage. Since the stiffer fines would reduce the incidence of misdeclaration, the combination of high fines and sampling might even increase Customs' revenue at the same time as reducing average dwell time. Customs would still be able to estimate the incidence of misdeclaration from those containers it samples. In the unlikely event that misdeclaration were to increase, Customs could revert to verifying a higher proportion of consignments. Reducing the proportion sampled could also be used as a means of relieving especially tight bottlenecks. Customs has committed to reducing the effective verification rate to one container in three at most.

(d) Customs-bonded Warehouses

Dwell time of local imports could be significantly reduced by increasing the number of customs-bonded warehouses in Dar es Salaam. The Commissioner of Customs has agreed to write to the General Manager of every parastatal, informing them of the procedures for setting up customs-bonded warehouses and encouraging them to do so.

(e) Training in Basic Customs Techniques

There are a number of technical skills which Customs could improve with relatively minor training, for example the following: where and how to seal transit containers; assessment and release of bond cover for transit containers; knowledge of the Harmonized System which is replacing the Brussels Tariff Nomenclature as the basis for tariffs; and use of a loose-leaf tariff document which can be easily updated. UNCTAD have offered to provide an specialist in customs techniques who would spend one to two months in Dar es Salaam training a core group

of Customs officers in these basic skills who could then train their fellow officers.

(f) Long-Term Skill Development

New graduates currently receive six weeks initial training, which is very short by any standards. Customs have suggested a one-year programme, comprising four months at the Institute of Tax Administration, four months on the job and four months back at the Institute. This would require expanding the Institute, which can only hold 110 students at the moment. Regional heads and section heads would also benefit from a series of four to six week seminars. Subject to analysis of Customs' training needs by an UNCTAD mission in late 1989, the Bank will include resources for these activities as a component in the proposed Port project.

(g) Hardware

Customs are in need of some fairly basic hardware, such as sealing tongs, calculators, perforating machines etc. The UNCTAD technical expert will be able to assess precisely what is needed and the purchase of such items will be financed through UNCTAD or the Bank.

(h) ASYCUDA

UNCTAD have developed a computerized system for customs administration (ASYCUDA), which is being adopted in a great many developed and developing countries around the world and is likely to be accepted as a standard by the PTA region. Among other things, the system checks all data, calculates the duties and taxes to be paid, handles day-to-day accounting and produces statistics based on verified customs data. If Tanzania were to request this system, UNCTAD would provide the software and training and the Bank would include the hardware necessary to operate the system (mainly printers and terminals) as part of the Port project.

E. TANPRO

9. The Tanzania Trade Facilitation Council has been in existence eight years, with the Board of External Trade acting as its secretariat. Like similar bodies in other countries, it is the only organization in the country whose sole purpose is to facilitate both imports and exports. It is therefore in an unique position to coordinate the simplification of documentation and the speeding up of the whole cargo clearance process. Unfortunately, it is currently understaffed and underfunded, with only one person working part-time and attendance at its governing council sporadic at best. The following steps should allow TANPRO to become the central force in improving trade facilitation in Dar es Salaam.

(a) Governing Council

Customs should be given a higher profile within TANPRO so that their support is gained early on in any new initiative. They are the organization whose day-to-day activities are most

clearly affected by TANPRO's work and it is not surprising that they might try to resist reforms which they have little hand in developing. A representative from Customs should be given a more responsible role on TANPRO's governing council. Members of the rejuvenated governing council should be middle level managers with sound operating knowledge of their respective organizations and support from senior management.

(b) Manual and Workshop

The Board of External Trade (BET) are publishing a "Tanzania Trade Facilitation Manual" to coincide with their tenth anniversary at the end of June. UNCTAD will assist BET in printing the manual and will also run a workshop to coincide with its publication. The workshop is planned to last one week, with about 30-50 participants from the private and public sectors.

(c) Technical Assistance

The Bank and UNCTAD will provide technical assistance to strengthen TANPRO. This assistance will take the form of a number of short-term consultants (including Tanzanians), rather than a full-time employee of TANPRO. This will allow resources to be matched to the needs of the moment. For instance, a documentation specialist would be most useful early on, while a transit specialist would be more appropriate once the documentation simplification has been completed. If automation becomes the focus, a systems expert would be hired. The total assistance will be of the order of one to two man-years. As requested, TANPRO has drawn up terms of reference for a local customs specialist and an expatriate documentation specialist. Essential hardware (such as word processing and reproduction equipment) will also be provided to TANPRO.

INSTITUTIONAL SUPPORT AND EQUIPMENT FOR CUSTOMS AND TANPRO

| <u>Activity/Item</u> | <u>Man-months</u> | <u>Base Cost (US\$000)</u> |
|---|-------------------|--------------------------------|
| A. <u>Customs</u> | | |
| 1. Basic Customs Techniques | 12 | 150 |
| 2. Customs Equipment | - | 50 |
| 3. Long-term Skill Development Program | - | 900 |
| 4. Harmonized System/Documentation | 15 | 180 |
| 5. H.S./Documentation Workshops | - | 50 |
| 6. Hardware for Computerized System (ASYCUDA) | - | 400 |
| | <u>27</u> | <u>1730</u> |
| B. <u>TANPRO</u> | | |
| 1. Trade Facilitation Adviser | 12 | 150 |
| 2. Local Legal Expert | 12 | 20 |
| 3. Training | - | 70 |
| 4. Equipment | - | 30 |
| | <u>24</u> | <u>270</u> |
| TOTAL | <u>51</u> | <u>2000</u> |

NOTES:

1. TANPRO = Tanzania Trade Facilitation Council.
2. ASYCUDA = Automated System for Customs Data, developed by UNCTAD.
3. Design of long-term skill development program to be based on findings of initial UNCTAD missions concerning basic customs techniques.
4. Amounts may be reallocated between categories, subject to IDA approval.

TANZANIA

PORT MODERNIZATION PROJECT II

SAVINGS FROM CONTAINER DWELL TIME REDUCTION AT DSM PORT

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|--|--------|--------|--------|--------|--------|--------|--------|--------|
| | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| TOTAL LOADED IMPORT CONTAINERS (TEUs) | 85,894 | 41,080 | 47,993 | 57,643 | 62,632 | 68,087 | 74,017 | 80,464 |
| TANZANIAN SHARE OF IMPORT TEUs (%) | 65.1% | 59.7% | 53.7% | 46.9% | 46.6% | 46.2% | 45.4% | 44.6% |
| TANZANIAN IMPORT CONTAINERS (TEUs) | 23,881 | 24,543 | 25,764 | 27,044 | 29,165 | 31,451 | 33,585 | 35,894 |
| AVERAGE DWELL TIME OF LOCAL IMPORTS WITHOUT THE PROJECT (DAYS) | 31 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| AVERAGE DWELL TIME WITH THE PROJECT LAGGED ONE YEAR (DAYS) | 31 | 25 | 22 | 20 | 18 | 16 | 15 | 15 |
| AVERAGE DWELL TIME SAVED (DAYS) | 0 | 5 | 8 | 10 | 12 | 14 | 15 | 15 |
| TOTAL DWELL TIME SAVED (000 DAYS) | 0 | 123 | 208 | 210 | 350 | 440 | 504 | 538 |
| TOTAL SAVINGS (US\$ 000) | 0 | 614 | 1,031 | 1,352 | 1,750 | 2,202 | 2,519 | 2,690 |
| LAGGED BENEFIT TO TANZANIA (US\$ 000) | 0 | 307 | 522 | 1,191 | 1,551 | 1,976 | 2,360 | 2,604 |

NOTES:

1. Total loaded import containers includes Tanzanian and transit traffic.
2. Without the project, average dwell time for Tanzanian imports (both containerized and break-bulk) assumed to be 30 days, the current average for break-bulk imports and lower than the best figure achieved in the Container Terminal (31 days).
3. With the project, average dwell time corresponds to targets agreed by THA, lagged by one year.
4. Savings equal US\$5 per TEU per day, the opportunity cost (10%) of the capital tied up in US\$18,200 worth of goods in each TEU (assuming US\$1400 per tonne and 13 tonnes per import TEU). Demurrage charges excluded.
5. Tanzania assumed to gain benefits only from reduced dwell time on domestic imports.
6. Savings lagged by half a year.

TANZANIA

PORT MODERNIZATION PROJECT II

SAVINGS RELATING TO REASSIGNED AND DIVERTED TRAFFIC

| | <u>1990</u> | <u>1991</u> | <u>1992</u> | <u>1993</u> | <u>1994</u> | <u>1995</u> | <u>1996</u> | <u>1997</u> |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| INSURANCE COSTS: | | | | | | | | |
| Reassigned Traffic (Tonnes 000) | 0 | 100 | 270 | 493 | 555 | 520 | 489 | 460 |
| Value of Reassigned Traffic (US\$000) | 0 | 139,907 | 377,380 | 690,532 | 776,714 | 727,882 | 683,392 | 644,315 |
| Additional Insurance Costs (US\$000) | 0 | 560 | 1,510 | 2,762 | 3,107 | 2,912 | 2,734 | 2,577 |
| Tanzanian Share of Containers (%) | 56.8% | 52.4% | 47.7% | 42.7% | 42.5% | 42.4% | 41.3% | 40.2% |
| Tanzanian Share of Costs (US\$000) | 0 | 293 | 719 | 1,178 | 1,322 | 1,233 | 1,128 | 1,038 |
| COSTS OF DIVERSION: | | | | | | | | |
| Option A: Traffic Diverted to Tanga | | | | | | | | |
| Diverted Traffic (Tonnes 000) | 0 | 0 | 0 | 0 | 71 | 255 | 451 | 660 |
| Add. Transport Costs (US\$000) | 0 | 0 | 0 | 0 | 6,371 | 22,931 | 40,594 | 59,435 |
| Tanzanian Share (US\$000) [A] | 0 | 0 | 0 | 0 | 2,711 | 9,714 | 16,748 | 23,882 |
| Option B: Traffic Diverted to Foreign Port | | | | | | | | |
| Diverted Traffic (Tonnes 000) | 0 | 0 | 0 | 0 | 71 | 255 | 451 | 660 |
| Diverted Traffic (TEUs) | 0 | 0 | 0 | 0 | 6,161 | 18,635 | 32,961 | 49,217 |
| Lost Contribution (US\$000) [B] | 0 | 0 | 0 | 0 | 1,295 | 4,659 | 8,240 | 12,054 |
| Lower of [A] or [B] (US\$000) | 0 | 0 | 0 | 0 | 1,295 | 4,659 | 8,240 | 12,054 |

NOTES:

1. Value of reassigned goods = US\$1400 per tonne.
2. Due to higher risk of damage and pilferage when cargo is not containerized, insurance costs are assumed to rise by 0.5% of the value of imported goods and by 0.25% of the value of exported goods.
3. Assumed that Tanzanian share of reassigned traffic is the same as its share of loaded containers.
4. Costs of diversion are the lower of: (i) road/rail transport costs to Dar assuming all diverted traffic goes to Tanga; or (ii) lost revenue as a result of diverted traffic going to Mombasa or another foreign port.
5. Road/rail transport Tanga to Dar estimated at US\$90 per tonne.
6. Conservative estimate of lost contribution is US\$150 per TEU for wharfage and US\$100 per TEU for stevedoring.

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PORT MODERNIZATION PROJECT II

ECONOMIC COSTS OF PROJECT

| US\$000: | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | TOTAL |
|--|--------------|---------------|---------------|---------------|--------------|--------------|--------------|--------------|---------------|
| | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| CAPITAL COSTS | | | | | | | | | |
| Civil Works | | | | | | | | | |
| FX Costs | 2,256 | 6,142 | 9,977 | 4,806 | 819 | 0 | 0 | 0 | 24,000 |
| Local Costs | 911 | 2,858 | 2,904 | 984 | 339 | 0 | 0 | 0 | 7,476 |
| Adjusted Local Costs | 710 | 1,887 | 2,282 | 751 | 284 | 0 | 0 | 0 | 5,824 |
| Total | 2,967 | 7,979 | 12,239 | 5,557 | 1,083 | 0 | 0 | 0 | 29,824 |
| Equipment | | | | | | | | | |
| FX Costs | 0 | 1,295 | 17,506 | 1,295 | 0 | 0 | 0 | 0 | 20,096 |
| Local Costs | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 1,295 | 17,506 | 1,295 | 0 | 0 | 0 | 0 | 20,096 |
| Technical Assistance / Training | | | | | | | | | |
| FX Costs | 3,640 | 4,674 | 4,716 | 3,782 | 560 | 0 | 0 | 0 | 17,372 |
| Local Costs | 316 | 725 | 735 | 502 | 140 | 0 | 0 | 0 | 2,418 |
| Adjusted Local Costs | 246 | 555 | 573 | 391 | 109 | 0 | 0 | 0 | 1,884 |
| Total | 3,886 | 5,239 | 5,289 | 4,173 | 669 | 0 | 0 | 0 | 19,256 |
| Total | 6,852 | 14,513 | 35,034 | 11,025 | 1,752 | 0 | 0 | 0 | 69,175 |
| RECURRENT COSTS | | | | | | | | | |
| Infrastructure Maintenance | 55 | 202 | 426 | 526 | 546 | 546 | 546 | 546 | 3,893 |
| Equipment Maintenance | 0 | 63 | 909 | 971 | 971 | 1,554 | 1,554 | 1,554 | 7,578 |
| Additional Operating Costs | 0 | 35 | 514 | 550 | 550 | 550 | 550 | 550 | 3,298 |
| Total | 55 | 300 | 1,849 | 2,047 | 2,067 | 2,650 | 2,650 | 2,650 | 14,269 |
| TOTAL | 6,907 | 14,813 | 36,883 | 13,072 | 3,819 | 2,650 | 2,650 | 2,650 | 83,444 |

NOTES:

1. Costs include physical contingencies but not price contingencies.
2. Non-tradeable goods (to which a S.C.F. of 0.8 has been applied) are assumed to make up 90% of all local costs.
3. Local taxes and duties excluded. Tax component of local costs assumed to be 5%.
4. Capital costs exclude Oil Jetty strengthening, but include oil pollution equipment.
5. Infrastructure maintenance assumed to be 2% of capital cost. FX component is 40%.
6. Equipment maintenance assumed to be 5% of capital cost for first five years, 8% thereafter. FX component is 85%.
7. Additional operating costs (mainly fuel and higher skill mix of operators) assumed to be 3% of equipment costs; FX component is 60%.

PORT MODERNIZATION PROJECT IISummarized Income Statements: THA

| Year Ending 30/6: | A. Current Tsh Millions | | | | | |
|--|-------------------------|------|-------|-------|-------|-------|
| | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 |
| OPERATING REVENUES | 683 | 710 | 1,005 | 1,096 | 2,805 | 4,652 |
| OPERATING EXPENSES | 626 | 685 | 818 | 1,061 | 1,200 | 1,864 |
| OPERATING SURPLUS | 57 | 25 | 187 | 35 | 1,605 | 2,788 |
| NET NON-OPERATING INCOME | 1 | 36 | 51 | 51 | 158 | 486 |
| NET SURPLUS | 58 | 61 | 238 | 86 | 1,763 | 3,274 |
| | B. Current USD Millions | | | | | |
| Year Ending 30/6: | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 |
| OPERATING REVENUES | 71 | 57 | 58 | 63 | 54 | 56 |
| OPERATING EXPENSES | 65 | 55 | 45 | 61 | 23 | 22 |
| OPERATING SURPLUS | 6 | 2 | 10 | 2 | 31 | 33 |
| NET NON-OPERATING INCOME | 0 | 3 | 3 | 3 | 3 | 6 |
| NET SURPLUS | 6 | 5 | 13 | 5 | 34 | 39 |
| Ratios: | | | | | | |
| OPERATING MARGIN (Op. Surplus/Revenues) | 8% | 4% | 19% | 3% | 57% | 60% |
| NET MARGIN (Net Surplus/Revenues) | 8% | 9% | 24% | 8% | 63% | 70% |
| Memo Item: | | | | | | |
| Tsh/USD Period Average | 9.6 | 12.4 | 18.1 | 17.5 | 51.7 | 83.7 |

TANZANIA

PORT MODERNIZATION PROJECT II

Exchange Rates (Tanzanian Shillings per US Dollar)

1982-1989

| | <u>Period Average</u> | <u>End of Period</u> |
|------|-----------------------|----------------------|
| 1982 | 9.28 | 9.57 |
| 1983 | 11.14 | 12.43 |
| 1984 | 15.30 | 18.10 |
| 1985 | 17.50 | 17.50 |
| 1986 | 32.70 | 51.70 |
| 1987 | 64.30 | 83.70 |
| 1988 | 97.20 | 115.00 |
| 1989 | 145.00 | NA |

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PORT MODERNIZATION PROJECT II

Annex 5-3A

Cost Breakdown by Activity (USDollar)

1988

| <u>Service</u> | <u>Direct Costs</u> | <u>Direct General</u> | <u>Overhead Costs</u> | <u>Total Costs</u> | <u>Unit</u> |
|--------------------------|-------------------------|---------------------------|---------------------------|------------------------|-------------|
| Pilotage | 0.42 | 0.16 | 0.32 | 0.89 | 100 GRT |
| Tug Services | 101.73 | 22.25 | 77.36 | 201.34 | Hour |
| Navigational Aid | 0.50 | 0.14 | 0.38 | 1.02 | 100 GRT |
| Dockage | 0.03 | 0.01 | 0.02 | 0.06 | Metre/Hour |
| Mooring/Unmooring | 26.27 | 6.44 | 19.99 | 52.69 | Operation |
| Stevedoring Gen. Cargo | 0.34 | 0.07 | 0.26 | 1.47 | Tonne |
| Stevedoring Bulk | 0.09 | 2.46 | 0.75 | 4.25 | Tonne |
| Stevedoring Containers | 2.22 | 5.07 | 1.69 | 8.98 | TEU |
| Shorehandling Gen. Cargo | 0.08 | 0.19 | 0.06 | 0.33 | Tonne |
| Shorehandling Containers | 3.06 | 7.27 | 2.33 | 12.66 | TEU |
| Stripping Containers | 11.23 | 28.78 | 8.54 | 48.55 | TEU |
| Wharfage | 0.001 | 0.0002 | 0.008 | 0.0092 | Ad Valorem |

TANZANIAPORT MODERNIZATION PROJECT IITariff Structure

| <u>Service</u> | <u>Tariff Unit</u> | <u>Tariff</u> | <u>Last Update</u> | <u>Paymaster</u> |
|------------------------------|--------------------|---------------|--------------------|-------------------|
| Shipping | | | | |
| Pilotage | 100 GRT | USD 4.1 | September 84 | Carrier/Shipowner |
| Port dues | 100 GRT | USD 4.9 | September 84 | Carrier/Shipowner |
| Light dues | 100 GRT | USD 4.2 | September 84 | Carrier/Shipowner |
| Mooring/Unmooring | Operation | USD 91.8 | September 87 | Carrier/Shipowner |
| Tug service < 10,000 GRT | Hour | USD 388.4 | May 89 | Carrier/Shipowner |
| Tug service < 20,000 GRT | Hour | USD 450.0 | May 89 | Carrier/Shipowner |
| Tug service > 20,000 GRT | Hour | USD 600.0 | May 89 | Carrier/Shipowner |
| Dockage | Metre/hour | USD 0.2 | September 84 | Carrier/Shipowner |
| Wharfage | | | | |
| Transit Imports | Ad Valorem | USD 1.25% | September 85 | Shipper/Consignee |
| Transit Exports | Ad Valorem | USD 1.0% | September 85 | Shipper/Consignee |
| Transit Export Metals | Ad Valorem | USD 0.125% | September 85 | Shipper/Consignee |
| Export Containers | TEU | USD 120 * | May 89 | Shipper/Consignee |
| Domestic Imports | Ad Valorem | TSH 1.5% | December 87 | Shipper/Consignee |
| Domestic Exports | Ad Valorem | TSH 1.0% | December 87 | Shipper/Consignee |
| Domestic Trans-shipment | Ad Valorem | TSH 0.8% | December 87 | Shipper/Consignee |
| Cargo Operations | | | | |
| Stevedoring General | Harbr Tonne | USD 6.9 | September 84 | Carrier/Shipowner |
| Stevedoring Bulk | Harbr Tonne | USD 4.4 | September 84 | Carrier/Shipowner |
| Shorehandling Imports | Harbr Tonne | TSH 120 | July 89 | Shipper/Consignee |
| Shorehandling Exports | Harbr Tonne | TSH 100 | July 89 | Shipper/Consignee |
| Transit Exports | Harbr Tonne | USD 2.1 | September 85 | Shipper/Consignee |
| Transit Imports | Harbr Tonne | USD 3.0 | September 85 | Shipper/Consignee |
| Transit Storage | Tonne/Day | USD 1.4 | September 85 | Shipper/Consignee |
| Container Handling ** | | | | |
| Stevedoring FCL | TEU | USD 80 | May 89 | Carrier/Shipowner |
| Stevedoring LCL | TEU | USD 130 | May 89 | Carrier/Shipowner |
| Stevedoring Empty | TEU | USD 40 | May 89 | Carrier/Shipowner |
| Shorehnding FCL Local | TEU | TSH 4,000 | May 89 | |
| Shorehnding FCL Transit | TEU | USD 30 | May 89 | Shipper/Consignee |
| Stripping/Stuff. Local | TEU | TSH 5,000 | May 89 | Shipper/Consignee |
| Stripping/Stuff. Transit | TEU | USD 40 | May 89 | Shipper/Consignee |
| Customs Examin. Local | TEU | TSH 12,000 | May 89 | Shipper/Consignee |
| Customs Examin. Transit | TEU | USD 90 | May 89 | Shipper/Consignee |
| Storage FCL | TEU/Day | TSH 2,000 | July 89 | Shipper/Consignee |

* Export containers with wheat, maize, sugar, fertilizer, rice, cement: USD 50 per TEU.

** Rates for handling containers at Berth: 1-8 are 10-25% higher.

PORT MODERNIZATION PROJECT II

Summarized Balance Sheets: THA

| At 30/6: | A. Current Tsh Millions | | | | | |
|-----------------------------------|-------------------------|--------------|--------------|--------------|--------------|---------------|
| | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 |
| Current Assets | 747 | 912 | 962 | 944 | 2,297 | 4,120 |
| Gross Fixed Assets | 1,704 | 1,758 | 1,829 | 1,901 | 1,979 | 2,570 |
| Accumulated Depreciation | 879 | 840 | 885 | 981 | 1,012 | 1,123 |
| Net Fixed Assets | 825 | 918 | 944 | 920 | 967 | 1,447 |
| Work in Process | 117 | 276 | 306 | 583 | 2,229 | 4,853 |
| Other Investments | 34 | 104 | 120 | 150 | 250 | 350 |
| Total Assets | 1,723 | 2,210 | 2,332 | 2,597 | 5,743 | 10,770 |
| Current Liabilities | 68 | 214 | 158 | 258 | 1,162 | 2,989 |
| Long-term Debt | 388 | 738 | 530 | 1,258 | 2,996 | 5,701 |
| Equity/Accumulated Surplus | 1,272 | 1,263 | 1,644 | 1,083 | 1,585 | 2,080 |
| Total Liabilities + Equity | 1,723 | 2,210 | 2,332 | 2,597 | 5,743 | 10,770 |

| At 30/6: | B. Current USD Millions | | | | | |
|-----------------------------------|-------------------------|------------|------------|-----------|-----------|------------|
| | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 |
| Current Assets | 67 | 60 | 55 | 29 | 36 | 42 |
| Gross Fixed Assets | 153 | 115 | 105 | 58 | 31 | 26 |
| Accumulated Depreciation | 79 | 55 | 51 | 30 | 18 | 12 |
| Net Fixed Assets | 74 | 60 | 54 | 28 | 15 | 15 |
| Work in Process | 11 | 18 | 17 | 18 | 35 | 50 |
| Other Investments | 3 | 7 | 7 | 5 | 4 | 4 |
| Total Assets | 155 | 144 | 133 | 79 | 89 | 111 |
| Current Liabilities | 6 | 14 | 9 | 8 | 18 | 31 |
| Long-term Debt | 34 | 48 | 30 | 38 | 47 | 59 |
| Equity/Accumulated Surplus | 114 | 83 | 94 | 33 | 25 | 21 |
| Total Liabilities + Equity | 155 | 144 | 133 | 79 | 89 | 111 |

Ratios:

| | | | | | | |
|------------------------------|------|-----|-----|-----|------|------|
| Current Ratio | 11.0 | 4.3 | 6.1 | 3.7 | 2.0 | 1.4 |
| Debt/(Debt + Equity) | 23% | 37% | 24% | 54% | 65% | 73% |
| Return on Net Fixed Assets * | 7% | 3% | 20% | 4% | 170% | 231% |

Memo Items:

| | | | | | | |
|---------------------------|------|------|------|------|-------|-------|
| Tsh/USD at Period End | 11.1 | 15.3 | 17.5 | 32.7 | 64.3 | 97.2 |
| Operating Surplus (Tsh m) | 57 | 26 | 187 | 85 | 1,605 | 2,788 |

* Equals Operating Surplus/Average of Net Fixed Assets at Beginning and End of Year.

TANZANIA

PORT MODERNIZATION PROJECT II

Status of THA's Loans

June 30, 1989

| | Principal * | Original Amount | Rate | | Date | | |
|------------------|---------------------|-----------------|-------|---------------|------------|----------|---------|
| | Outstanding (US\$M) | (US\$M) | (%) | Currency | Contracted | Maturity | Channel |
| IBRD 428 * | 0.74 | 1.8 | 5.50 | USD | 1965 | 1995 | DIRECT |
| IBRD 638 * | 4.11 | 11.0 | 6.00 | USD | 1969 | 1994 | DIRECT |
| IBRD 865 * | 4.99 | 8.4 | 7.25 | USD | 1972 | 1997 | DIRECT |
| IDA 024 | 0.18 | 2.5 | 7.95 | USD | 1980 | 1989 | ON-LENT |
| IDA 1536 | 28.55 | 32.5 | 11.00 | SDR | 1985 | 2009 | ON-LENT |
| DAMEN SHIPYARD | 0.18 | 1.7 | 12.38 | DG | 1985 | 1991 | DIRECT |
| KUWAIT | 0.56 | 1.6 | 2.50 | KUWAITI DINAR | 1982 | 2009 | DIRECT |
| EAD BANK #1 | 0.10 | 6.5 | 14.00 | SEK | 1985 | 1989 | DIRECT |
| EAD BANK #2 | 0.08 | 0.6 | 14.00 | SDR | 1985 | 1989 | DIRECT |
| TREASURY LOAN #1 | 0.04 | 2.0 | 6.00 | TSH | 1982 | 1991 | DIRECT |
| ZAMBIA #1 | 0.05 | 0.2 | 6.00 | ZKW | 1967 | 1990 | DIRECT |
| ZAMBIA #2 | 0.15 | 0.1 | 6.00 | ZKW | 1967 | 1990 | DIRECT |

* Lent jointly to Kenya, Tanzania and Uganda as East African Community.

"Original Amount" represents Tanzania's share only (32%).

Note: Does not include grants under the ongoing project.

TANZANIA

PORT MODERNIZATION PROJECT II

THA's Corporate Financial Policy

Introduction

1. Based on discussions with the World Bank and a detailed evaluation of THA's financial position, the following set of recommendations has been made by THA's Finance Department:

- (a) Repayment to the Government of: the fixed asset component of past and existing donor grants; all World Bank funds on-lent to THA; and all future donor grants. All future grants will have a twenty year term with five year grace, at 11% interest.
- (b) Debt-to-equity ratio to be kept below 60:40.
- (c) Adoption of a dividend policy.
- (d) Institution of a well-funded but rigorously administered productivity incentive scheme.
- (e) Investment of short-term funds in higher yielding assets.
- (f) Tariff structure to be used as a means of altering the behaviour of port users, as well as as a cost recovery mechanism.

2. Taken together, these proposals will allow THA to make a consistent and significant contribution to the country's finances without jeopardising its own ability to fund vital capital investment. These proposals are discussed in turn, then an analysis is presented showing the effects this financial policy will have on THA's forecast cash flow, including an estimate of the revenue THA will be providing to the Treasury. From 1990/91 onwards, this is estimated to be in excess of US\$25 million per annum.

Status of Grants Relating to the Ongoing Port Project

3. The ongoing Port Rehabilitation Project was partly funded by an IDA Credit (Credit No.1536) of 26.2 million SDRs. This Credit is the subject of a subsidiary loan agreement under which THA has contracted to repay to the Tanzanian Government the full amount of the loan plus interest at 11% per annum. The principal amount will be repaid in forty equal semi-annual installments, starting on 15/8/1990 and finishing on 15/2/2010.

4. Donor grants for the project totalled US\$141.3 million, of which US\$107.3 million represented investment in fixed assets. The fixed asset element of the grants will be repaid to the Government semi-annually over twenty years (starting on 30/9/90), at an interest rate of 11% p.a. Effectively, therefore, as with the IDA Credit, THA will be given a five

year grace period, followed by twenty years of principal repayments plus interest. Unlike the IDA Credit, the principal repayments will be on a steadily rising scale so that the total payments of interest plus principal are equated across the twenty years (i.e. at the Tanzanian shilling equivalent of US\$13.5 million each year). The remaining grants of US\$34.0 million will be classified as equity.

IDA Credit and Grants Relating to the Port Modernization Project II

5. The proposed Port Modernization Project II is forecast to include an IDA Credit of US\$37 million equivalent (of which US\$35 million relates directly to THA) and donor grants totalling the equivalent of about US\$44 million. The full amount of each will be on-lent to THA on the following terms: five year grace period, followed by a fifteen year period in which principal is repaid semi-annually and interest charged at 11% per annum. Again, principal repayments would gradually rise so that the total payments each year are equal (i.e. about US\$11 million equivalent for the IDA Credit and grants combined). The first repayment date would be 30/9/1995 and the last would be 31/3/2010.

Financial Structure

6. In order to operate on a sound commercial footing and service its debts consistently, THA will not allow its debt-to-equity ratio to rise above 60:40. In other words, long-term debt will not represent more than 60% of total long-term liabilities plus equity. The draft balance sheet for 30/6/88 indicates a debt-to-equity ratio of 73:27. However, assuming that the revaluation of THA's fixed asset base leads to an increase of US\$112 million in its book value (as forecast), that all grants under the ongoing project are classified as either debt (US\$107.3m) or as equity (US\$34.0m), that the proposed project goes ahead and that the policy proposals described herein are implemented, then the debt-to-equity ratio will fall to 57:43, just within the acceptable range. THA's future capital investment programme and dividend policy will be designed in such a way that its balance sheet does not become over-levered again. Maintenance of the 60:40 debt-to-equity ratio will be a project covenant.

Dividend Policy

7. Any dividends which THA pays to the Treasury will be decided according to established principles, i.e. on each separate occasion they will be voted upon and passed by THA's Board of Directors. However, this does not prevent THA from having an indicative dividend policy which establishes guidelines for each year's dividend decision.

8. These guidelines will be as follows. Each year's dividend will be equal to 50% of its profit after taxes and extraordinary items as long as the following two conditions are met: first, that this would not increase THA's debt-to-equity ratio above 60:40; and second, that the dividend paid is no more than half the cash available for investments minus the capital investments made in that year. The first condition will safeguard THA's financial structure and the second will ensure that funds

are available for future years' investments in the port's physical asset base.

Productivity Incentive Scheme

9. In order to handle the rapidly increasing traffic over the next few years, THA has to make more efficient use of its existing assets. It is vital, therefore, that productivity is improved throughout the organization.

10. To this end, a well-funded but rigorously administered productivity incentive scheme will be set up. The incentives will be cash bonuses. The total amount awarded each year will be decided by a committee comprising members of THA's Board and senior management. Once this amount is set, the General Manager will decide how much each department receives based on their overall performance during the year. In turn, each Director will decide how best to distribute the bonuses within his department. For some staff there will be readily quantifiable performance targets, for others a more judgmental approach will be adopted. Stevedores, for instance, will be paid on a frequent basis depending on their work-rate; administrative and headquarters staff will be paid once a year. Skills allowances may or may not be included, depending on each Director's wishes. The total amount of bonuses will vary from year to year according to THA's operating results, and each year some departments will receive considerably more than others depending on performance. It is also important that people within the same department are given significantly different awards according to their individual productivity levels.

11. In a successful year, total bonuses are envisaged to be as high as THA's current expenditure on salaries, casual labour, third shift, overtime and meal allowances combined. Based on the budget for the 1989/90 fiscal year, this would be roughly equivalent to US\$9.2 million. THA has the financial capacity to institute this scheme, as well as the administrative base. The yearly evaluation process, conducted at budget time, has the form if not the substance (i.e. real incentives) to act as a genuine motivating device.

12. Before the incentive scheme becomes operational, an accurate census of THA's current workforce must be conducted and the committee which will decide the total amount to be awarded each year must be constituted.

Investment in Higher Yielding Assets

13. In real terms THA is losing about US\$5-6 million per annum on its short-term cash holdings in Tanzanian shillings. Instead of receiving a negative real interest rate by investing in short-term bank deposits, THA should invest in an asset with a positive real return. THA have considered a number of alternative investment vehicles, including a new hotel, a dockyard and warehouses. However, the most sensible investment appears to be a new headquarters office building, since the commercial risk appears to be small and the returns potentially high.

14. Based on a report prepared by a property consultant, the investment has the following attractions. First, there is a shortage of office space in Dar es Salaam. Second, non-Tanzanian organizations are obliged to pay rent in convertible currency, so this would be a good source of foreign exchange. Third, the two floors that THA would occupy would allow some people in the port to move into the current office building, thus relieving the severe shortage of office space in the port. Fourth, the foreign exchange component of the investment can, it seems, be financed externally, secured on the expected rental income in the first few years. This means that THA would be receiving foreign exchange returns from the fifth year onward (second year after completion) without making any foreign exchange investment. Finally, the expected return, as prepared by the consultant, looks very attractive. However, before going ahead with this proposal, THA must make an independent assessment of the consultant's analysis, with particular emphasis on the market risk and the availability of external financing for the foreign exchange portion.

Tariff Changes

15. The tariff changes which became effective in May and July 1989 should together bring about a 8% increase in THA's revenue. However, the tariff structure can and should be used more aggressively to achieve the following two purposes. First, the revenue derived from each port activity should at least cover the fully-loaded cost of providing that service. Fully-loaded costs include allocated overhead and interest payments (which will be considerably higher under the proposed financial strategy).

16. Second, the tariff structure should be used as a means to alter the behaviour of port users. If the dwell time of import containers, for instance, could be reduced by stringent storage penalties for long-staying containers, then the terminal's effective capacity would rise and in the medium term so would THA's revenues. The decision to charge wharfage on export containers on a "per box" basis rather than an "ad valorem" basis will help to reduce the average dwell time of export containers. This "per box" basis should also be used for wharfage on import containers (both transit and local). Furthermore, the charge for storing loaded as well as empty containers should rise the longer the container stays in the port; and the absolute level of storage charges for stripped cargo at Ubungu ICD should be increased from 24 shillings per ton per day to something like 100 shillings per ton per day to discourage unnecessary change of container status from House-to-House to Port-to-Port.

Effect of These Proposals on THA's Cash Flow

17. The attached table A shows the effect of some of these proposals on THA's cash flow. The "base case" assumes a one-off increase in revenues of 8% due to the 1989 tariff changes and a further 5% increase in 1992 due to a second tariff adjustment (other tariff changes are assumed to have a neutral short-term effect on total revenue). There will also be a steady increase in revenues commensurate with traffic growth. Until 1993-94, operating costs are assumed to rise by the amount needed to maintain and operate the new equipment and infrastructure included in the proposed project, and from 1994-95 they are assumed to grow at 3% per annum.

Depreciation expense is assumed to increase due to the asset revaluation process and the new investments under the project. However, in this scenario, it is assumed that no interest payments or principal repayments are made on existing grants, future grants or the proposed IDA Credit. In this case, the cash available for investments steadily rises from about US\$15 million in 1989-90 to about US\$40 million by 1996-97.

18. The second scenario assumes that THA adopts the repayment proposals outlined above. As a result, the cash available for investment dips substantially in fiscal years 1990/91 and 1995/96, corresponding to the years in which the two grace periods end.

19. The third scenario includes the incentive scheme as well. It assumes that the full US\$9.2 million is utilized each year from 1989/90 onwards, although the tax effect halves the effective cost of the scheme for THA. In this scenario, cash flow is fairly tight in fiscal year 1990/91 and a conservative dividend at the end of 1989/90 would be advisable. However, by 1992/93, THA's cash flow will have risen above US\$15 million again.

20. Investment in a new building has not been included in this analysis due to the uncertainties involved. However, the cash requirements (assuming the foreign exchange component is externally financed) would be about US\$2 million p.a. for four to five years, followed by net inflows once rental payments come on stream. This would leave THA just US\$6-7 million for capital investments in 1990-91, which should be sufficient given the capital investments envisaged under the proposed project.

21. In conclusion, THA has the financial capacity to adopt these proposals, though not without care. The development study will be indicating a need for substantial capital investment from 1993 onwards. By this stage, THA's forecast net cash flow will be back above US\$15 million p.a., high enough to fund a large capital investment programme, but low enough to ensure financial discipline.

Benefits to the Treasury

22. As the final section of the table depicts, THA will be contributing a substantial amount of the Treasury's receipts by the mid-1990's. The figures shown here refer to the tax payments THA will make (assuming a 50% rate), as well as the interest payments and principal repayments on credits and grants on-lent to THA. Dividend payments are not included, although they are likely to make an important contribution to the total. In addition to the high absolute amounts, the Treasury has the benefit of having a predictable and reliable source of income.

CASH FLOW EFFECTS OF NEW FINANCIAL POLICY

(Constant 1989 US\$ Million)

| Year Ending 30/6: | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|--|------|-------|-------|-------|-------|-------|-------|-------|-------|
| OPERATING REVENUES | 57.0 | 65.2 | 69.3 | 77.6 | 82.9 | 88.1 | 94.0 | 100.3 | 107.0 |
| OPERATING COSTS | 22.0 | 22.0 | 22.7 | 23.7 | 24.6 | 24.6 | 25.3 | 26.1 | 26.9 |
| INTEREST CHARGES | 1.0 | 0.8 | 4.5 | 4.1 | 3.8 | 3.5 | 3.2 | 3.0 | 2.8 |
| DEPRECIATION | 0.9 | 4.7 | 7.0 | 8.5 | 8.9 | 9.0 | 9.0 | 9.0 | 9.0 |
| OPERATING SURPLUS BEFORE TAXES | 33.1 | 37.7 | 35.1 | 41.3 | 45.6 | 51.0 | 56.5 | 62.2 | 68.3 |
| TAXES | 16.5 | 18.9 | 17.6 | 20.7 | 22.8 | 25.5 | 28.3 | 31.1 | 34.2 |
| OPERATING SURPLUS | | | | | | | | | |
| AFTER TAXES CASH FLOW FROM OPERATIONS | 16.5 | 18.9 | 17.6 | 20.7 | 22.8 | 25.5 | 28.3 | 31.1 | 34.2 |
| PRINCIPAL REPAYED | 2.4 | 2.3 | 3.9 | 3.1 | 3.2 | 3.3 | 2.4 | 2.4 | 2.4 |
| CASH AVAILABLE FOR INVESTMENTS | 15.1 | 21.3 | 20.7 | 26.1 | 28.5 | 31.2 | 34.9 | 37.7 | 40.8 |
| PLUS CHARGES ON GRANTS + IDA: | | | | | | | | | |
| INTEREST CHARGES | 0.0 | 0.0 | 11.8 | 11.6 | 11.4 | 11.2 | 10.9 | 19.4 | 18.0 |
| LESS TAX EFFECT | 0.0 | 0.0 | (5.9) | (5.8) | (5.7) | (5.6) | (5.5) | (9.7) | (9.4) |
| PRINCIPAL REPAYED | 0.0 | 0.0 | 1.7 | 1.9 | 2.1 | 2.3 | 2.5 | 5.1 | 5.6 |
| NET CASH COST | 0.0 | 0.0 | 7.6 | 7.7 | 7.8 | 7.9 | 8.0 | 14.8 | 15.0 |
| CASH AVAILABLE FOR INVESTMENTS | 15.1 | 21.3 | 13.1 | 18.4 | 20.7 | 23.3 | 26.9 | 22.9 | 25.8 |
| PLUS INCENTIVE SCHEME: | | | | | | | | | |
| ADD. LABOUR COST | 0.0 | 9.2 | 9.2 | 9.2 | 9.2 | 9.2 | 9.2 | 9.2 | 9.2 |
| LESS TAX EFFECT | 0.0 | (4.6) | (4.6) | (4.6) | (4.6) | (4.6) | (4.6) | (4.6) | (4.6) |
| NET CASH COST | 0.0 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 |
| CASH AVAILABLE FOR INVESTMENTS | 15.1 | 16.6 | 8.4 | 13.8 | 16.1 | 18.7 | 22.2 | 18.3 | 21.1 |
| PAYMENTS TO TREASURY: | | | | | | | | | |
| INCOME TAXES | 16.5 | 14.3 | 7.1 | 10.3 | 12.5 | 15.3 | 18.2 | 16.0 | 20.2 |
| INTEREST PAYMENTS | 0.2 | 0.1 | 15.7 | 15.2 | 14.8 | 14.4 | 14.0 | 22.2 | 21.5 |
| PRINCIPAL REPAY. | 0.8 | 0.8 | 4.1 | 3.5 | 3.7 | 3.9 | 4.2 | 6.7 | 7.2 |
| TOTAL | 17.6 | 15.1 | 26.8 | 29.0 | 31.0 | 33.6 | 36.4 | 45.7 | 48.9 |

Note: Does not include investment in new office building.

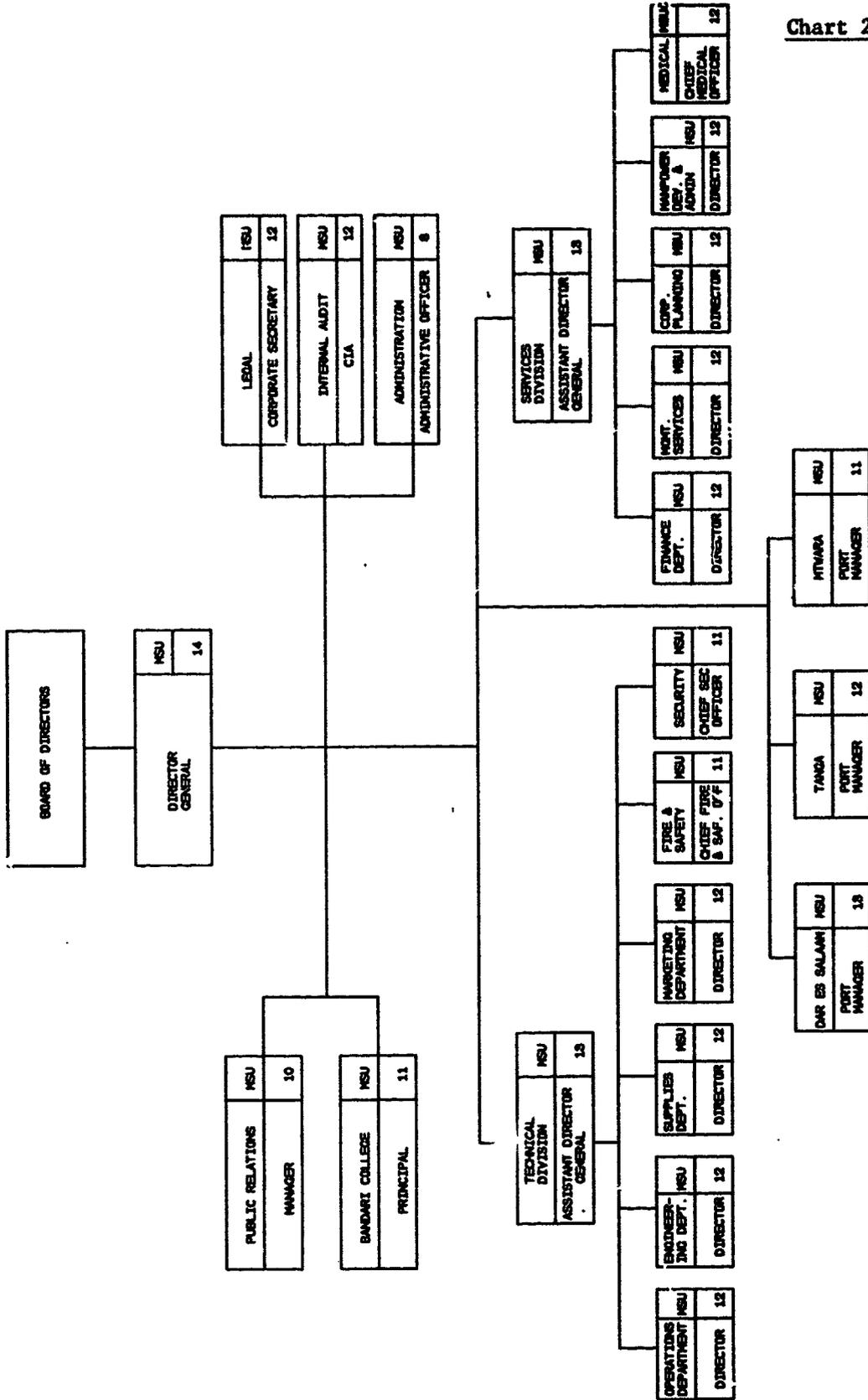
TANZANIA
PORT MODERNIZATION PROJECT II
Implementation Schedule

| | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | |
|-------|----------------------|----------------------|----------------------|----------------------|------|------|----------------|
| A.1 | Port Container Term | | ████████████████████ | | | | IDA |
| | Kurasini Depot | | ██████████████ | | | | IDA |
| | Ubungo Depot Paving | | ██████████ | | | | IDA |
| A.2 | Copper Road | | ██████████ | | | | IDA/THA |
| A.3 | Berth 9,10, 11 Imprv | | ████████████████████ | | | | DANNIDA |
| A.4 | Lightrge Wharf Pving | | ██████████ | | | | DUTCH |
| A.5 | Belgian Wharf Rehab | | ██████████ | | | | NORAD |
| A.6 | Port Central Wkshop | | ██████ | | | | SIDA |
| A.7 | Kurasini Oil Jetty | | ████████████████████ | | | | NORAD |
| B.1 | Cargo Hndlg Equipmnt | | | ████████████████████ | | | IDA |
| B.2-3 | Equip for Cntr Term | | | ████████████████████ | | | FINNIDA/DANIDA |
| B.4 | Office Equipment | | ██████████ | | | | IDA |
| B.5 | Ctrl Workshop Equip | | ██████████ | | | | IDA |
| C.1-7 | Design & Supervision | ████████████████████ | | | | | IDA/DONORS |
| C.8 | Port Devlpmnt Study | | ██████████████ | | | | IDA |
| C.9 | Workshop Study | ██████████ | | | | | FINNIDA |
| D.1-3 | Technical Assistance | | ████████████████████ | | | | IDA/DONORS |

TANZANIA

PORT MODERNIZATION PROJECT II

Proposed Organization Structure - THA Headquarters



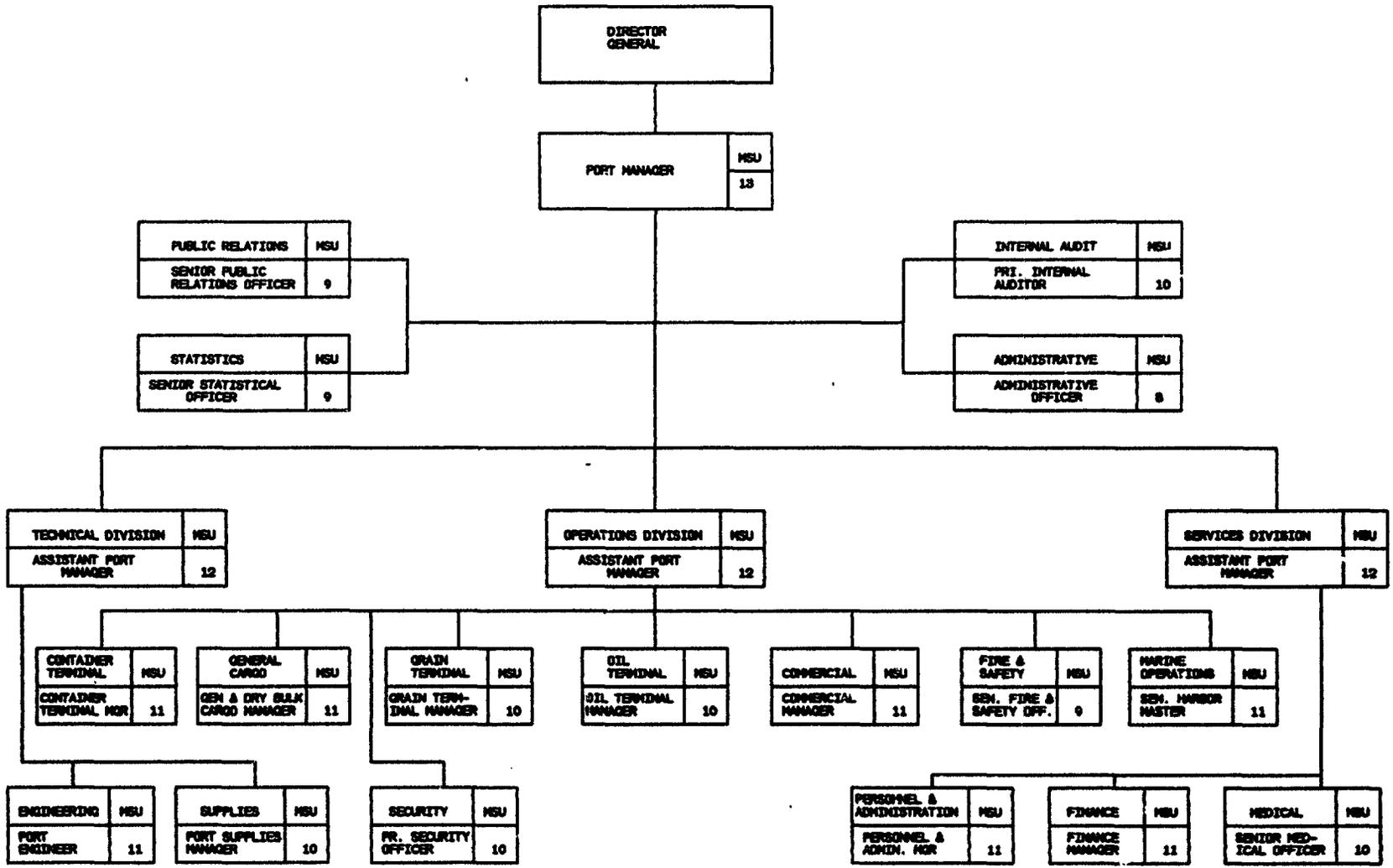
NSU = Grade Level

Chart 2

TANZANIA

PORT MODERNIZATION PROJECT II

Organization Structure - Dar es Salaam Port



MSU = Grade level

MAP SECTION



**TANZANIA
PORT MODERNIZATION
PROJECT II
PROJECT LOCATION**

- ⚓ PROJECT PORT
- BITUMEN TRUNK ROADS
- GRAVEL/EARTH ROADS
- RAILROADS
- ✈ PORTS
- ✈ AIRPORTS
- LAKE SERVICES (FERRIES)
- SELECTED TOWNS
- ⊙ REGION HEADQUARTERS
- ⊙ NATIONAL CAPITALS
- REGION BOUNDARIES
- - - INTERNATIONAL BOUNDARIES

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