

PA-113-589

14 9 87

TANZANIA TRANSPORT SECTOR STUDY  
FINAL REPORT

Submitted to:

United States Of America  
Agency for International Development  
Contract No. 621-0510-C00-7001

Prepared by:

Louis Berger International, Inc.  
100 Halsted Street  
East Orange N.J. 07019

March 1987

# TABLE OF CONTENTS

|   | <u>Page</u> |
|---|-------------|
| <b>INTRODUCTION</b>   |             |
| Introduction . . . . .  | 1           |
| Conclusions . . . . .   | 1           |
| Recommendations . . . . .   | 3           |
| <br>  |             |
| <b>CHAPTER ONE: BACKGROUND</b>  |             |
| Economic Background . . . . .   | 5           |
| Tanzania Transport System . . . . .   | 8           |
| <br>  |             |
| <b>CHAPTER TWO: CURRENT AND FORECAST FREIGHT DEMAND</b>                         |             |
| Railway Traffic . . . . .   | 16          |
| Road Traffic . . . . .  | 18          |
| Coastal Traffic . . . . .   | 18          |
| Port Traffic . . . . .  | 20          |
| Transit Traffic (Road and Rail) . . . . .                                       | 20          |
| Total Present Freight Transport Demand . . . . .                                | 22          |
| Forecasting Demand . . . . .  | 22          |
| <br>  |             |
| <b>CHAPTER THREE: TRANSPORT INFRASTRUCTURE AND SERVICE CAPACITY CONSTRAINTS</b> |             |
| Overall Capacity . . . . .  | 26          |
| Factors Affecting Present Capacity . . . . .                                    | 26          |
| Constraints . . . . .   | 29          |
| Presently Planned Donor Assistance to the Transport Sector . . . . .            | 33          |
| <br>  |             |
| <b>CHAPTER FOUR: USAID ASSISTANCE RECOMMENDATIONS</b>                           |             |
| 1. Railway Spare Parts Assistance . . . . .                                     | 38          |
| 2. Spare Parts Cash Cover for the Trucking Industry . . . . .                   | 40          |
| 3. Contract . . . . .   | 41          |
| 4. Maintenance . . . . .  | 41          |
| 5. Expanded Village Storage Study . . . . .                                     | 43          |
| <br>  |             |
| <b>CHAPTER FIVE: TRANSPORT TARIFF POLICY</b>                                    |             |
| Present Transport Tariffs . . . . .   | 43          |
| Cost Recovery Based Tariffs . . . . .   | 44          |
| Transit Tariffs . . . . .   | 44          |

TABLE OF CONTENTS (Continued)  
TABLE OF CONTENTS (Continued)

| CHAPTER SIX: | TANZANIA AND SADCC                   | <u>Page</u> |
|--------------|--------------------------------------|-------------|
| CHAPTER SIX: | TANZANIA AND SADCC                   |             |
|              | The Ever Present Danger . . . . .    | 46          |
|              | Predicting Demand . . . . .          | 47          |
|              | The Ever Present Danger . . . . .    | 47          |
|              | Are there Any Solutions? . . . . .   | 47          |
|              | Predicting Demand . . . . .          | 48          |
|              | USAID Assistance to TAZARA . . . . . | 48          |
|              | Are there Any Solutions? . . . . .   | 49          |
|              | The Crisis Management Unit . . . . . | 48          |
|              | USAID Assistance to TAZARA . . . . . | 49          |
|              | The Crisis Management Unit . . . . . | 49          |

ANNEX

|          |  |
|----------|--|
| ANNEX A: | Road System Traffic in Tanzania                            |
| ANNEX B: | Road System Traffic in Tanzania                            |
| ANNEX C: | Goods Movement On Selected Roads                           |
| ANNEX D: | Goods Movement On Selected Roads                           |
| ANNEX E: | Tanzania Railway Corporation                               |
| ANNEX F: | Summary of Tanzania Sixth Highway Project                  |
| ANNEX G: | Summary of Tanzania Sixth Highway Project (Dodoma Example) |
| ANNEX H: | Road Maintenance Organization (Dodoma Example)             |
| ANNEX I: | Road Maintenance Organization (Dodoma Example)             |
| ANNEX J: | Inputs for Improvement of Road Maintenance                 |
| ANNEX K: | Capability   |
| ANNEX L: | Inputs for Improvement of Road Maintenance                 |
| ANNEX M: | Capability   |
| ANNEX N: | Additional Discussion on Contract Maintenance              |
| ANNEX O: | Additional Discussion on Contract Maintenance              |
| ANNEX P: | Bibliography   |
| ANNEX Q: | Bibliography   |
| ANNEX R: | Interviews   |
| ANNEX S: | Interviews   |

LIST OF TABLES AND FIGURES

|            | LIST OF TABLES AND FIGURES                           |    |
|------------|--|----|
| MAP 1:     | Southern Africa . . . . .                            | 9  |
| MAP 2:     | Tanzania Transportation . . . . .                    | 9  |
| TABLE 2.1: | Tanzania Transportation                              |    |
| TABLE 2.1: | Combined TRC and TZR Traffic for the . . . . .       | 10 |
| TABLE 2.2: | Period 1981 to 1986                                  |    |
| TABLE 2.2: | Combined TRC and TZR Traffic for the . . . . .       | 17 |
| TABLE 2.3: | Period 1981 to 1986                                  |    |
| TABLE 2.3: | Computation of Total Freight Hauled by Road          | 17 |
| TABLE 2.4: | Computation of Total Freight Hauled by Road          | 19 |
| TABLE 2.4: | Major Ocean Port Traffic for the . . . . .           | 20 |
| TABLE 2.4: | Period 1981 to 1986                                  |    |
| TABLE 2.4: | Major Ocean Port Traffic for the . . . . .           | 20 |
| TABLE 2.4: | Period 1981 to 1986                                  |    |
| TABLE 2.4: | Total Dry Freight Transport Demand for the . . . . . | 20 |
| TABLE 2.4: | Period 1981 to 1986                                  |    |
| TABLE 2.4: | Total Dry Freight Transport Demand for the . . . . . | 22 |
| TABLE 2.4: | Period 1981 to 1986 . . . . .                        | 22 |

## INTRODUCTION AND SUMMARY

### INTRODUCTION

This is the final report on the Tanzania Transportation Sector Development Analysis prepared for USAID/Tanzania under Contract Number 621-051-C-00-7007. It draws upon the statistical information collected during Phase I (see chapter one), and the analytic work carried out in Phase II, as well as additions and modifications carried out in February 1987.

Chapter Two describes the current Tanzanian freight transportation situation and forecasts demand over the medium-term, to 1992. The current capacity of the transportation infrastructure is examined in Chapter Three with an eye to the constraints on more efficient operation as well as increased capacity. In Chapter Four suggestions are made on possible areas for USAID/Tanzania assistance.

In Chapter Five, the special issue of tariffs is presented. While domestic tariffs are discussed, the more serious concern is for transit traffic tariffs. This is an important source of foreign exchange earnings which is not being handled efficiently by the current policy and regulatory environment.

Finally, Chapter Six examines the implications for Tanzania of the crisis facing her neighbors to the west and south. These countries are all landlocked, and would turn to Tanzania immediately the border to South Africa closes. The sudden demand on her infrastructure would be enormous, could adversely impact domestic growth, and would strain her transport sector institutions far beyond their current capacity. It could also yield substantial foreign exchange and the possibility of new permanent customers, if Tanzania's already strained transport sector could provide and sustain an acceptable level of service.

An extraordinary effort was made by the staff of the USAID mission to Tanzania, without which the many documents assembled (Annex H), the many people interviewed (Annex I), and the field trips to Tanga, Mwanza, and Dodoma could not have been done. Appreciation is expressed to them all, as well as to AID's professional staff whose knowledge and support helped the Consultant get "up to speed" quickly.

### CONCLUSIONS

The Tanzanian transport sector has serious problems of capacity and condition resulting from a decade of bad policies and worse maintenance. Agricultural production is far from the coast where the ports, urban masses, and industrial centers are found. Average leads exceed 750 kilometers. Yet Tanzania has one of the lowest road densities in Africa, and has traditionally allocated

to transport only half the budget share that her neighbors spend. A feeder road network of over 30,000 km receives only 1% of the budget. Policy decisions have always favored public sector solutions, centralization, pan-territorial pricing and market controls over the private sector; yet 85 percent of road haulage is by private transporter, and railways, albeit important, only carry 25% of the traffic. Poor tariff policies have allowed transit traffic to pay in soft currency, often at rates below medium-term marginal cost. Zambia stopped paying dollars for transit in 1984. The decision in the late 1950's to centralize trunk road maintenance, saw the destruction of a working road camp maintenance system. In 1985 Tanzanian policy makers finally realized their error and returned to decentralized maintenance. Funding and equipment have yet to follow, and trunk road maintenance credits have been followed by rehabilitation credits for the same trunk roads. The railways have similarly suffered from lack of funding, poor staffing, and limited access to the foreign exchange they earn. The TRC has yet to regain 1981 freight levels, and only manages to stay within 80 percent of available traffic by removing locomotives from the passenger services in peak periods. TAZARA has yet to reach the freight volume she carried in 1977, a year after opening.

Tanzania will continue to experience capacity problems, reaching 500,000 to 1,000,000 tons by 1992. This will be primarily a surface haulage problem (road and rail) as the port improvements at Dar es Salaam are well underway. If policy and institutional changes, agreed to under the current IMF related accords, are to succeed, management related capacity improvement will begin to be realized by then.

The deteriorating situation in the Southern African region has brought new pressures on Tanzania. If the borders with RSA closed today, Tanzania would be expected to transport an additional 2-4 million tons per year. This is clearly unrealistic.

Options available to USAID/Tanzania include:

1. Support to the TRC for overcoming rolling stock constraints (particularly in locomotive re-powering and/or spare parts assistance).
2. Support to the trucking industry, particularly the financing of spare parts, tires and vehicle repairs for the private sector.
3. Support to the road maintenance organization in its effort to increase effectiveness with more decentralized operations (e.g. spare parts) or contract maintenance.
4. Support to self-help or food for work feeder road rehabilitation programs (supply of materials and tools), and storage facilities in the villages.

Options with Regional Transit Implications include:

5. Reinforcement of Tanga and Dar es Salaam ports lightering capacity (provision of steel sheets and bars for lighter repair in the near term, provision of lighters in Tanga and Dar es Salaam).
6. Improvement of rail link to Moshi, with Mombasa linkage potential (heavier rail and rolling stock).
7. Support to Tanga port rail connection and equipment for cargo handling for an increased level of traffic.
8. Rehabilitation of segments of the Tanzam Highway (as part of the Sixth Highway Project).
9. Support TAZARA railroad increase in capacity (e.g. through re-powering locomotives - Regional PP to be completed in April).

In addition, USAID could support policy changes to have Tanzania recover her costs for both transit traffic and for local trucking, and to promote greater use of private trucking.

The Consultant is aware of the recent legislation linking PL 480 Title I funds with the Private Enterprise Promotion objective. The proposed spare parts and the local construction industry programs are responsive to the new requirements on use of such locally generated funds.

Of course the USAID program needs to be coordinated with other donors, whose programs are listed in Table 3.2. In many cases USAID could use the structures set up and monitored by other donors to reduce USAID staffing requirements.

## RECOMMENDATIONS

1. USAID should contribute towards overcoming the medium terms transport capacity constraints by a program of (TP) assistance to the Tanzania Railways Corporation (repair/repowering of American-made engines, USD 4-5 million).
2. USAID should find a means to finance increased spare parts and tires for the trucking industry, possibly building on IBRD or other donor programs.
3. USAID could fund local currency assistance for the maintenance of feeder roads through encouragement of private Tanzanian contractors and village self help programs. The primary impact of these programs would be the increase in export crops and related foreign exchange earnings, two of the main objectives of the current Economic Recovery Program. In the medium term USAID should support the estab-

lishment of a reliable spare parts program for the trucking industry, and also the setting of tariffs to recover full economic costs.

While USAID should provide planned regional assistance to crucial links such as the TAZARA, donor support should not try to create a standby capacity for the crisis in the region. The cost to the donors would be excessive for Tanzania, it could topple the slowly emerging institutional structure. The creation of a crisis management team is recommended. They should analyze the demand, plan the response, and obtain donor commitments for standby teams and resources to manage the flood when the dam breaks. USAID should consider a central role in the crisis management process.

Finally, if USAID is to be involved in transport sector policy reform, the following areas would be the most critical for relief of transport constraints:

1. Transport Pricing Policy

- a) Deregulation of transport prices, particularly for agricultural export crops in peak season. Both public and private transport companies should be allowed to bid for transport contracts, up to their capacity.
- b) Transit pricing should reflect full long run marginal costs, a tariff policy study should be carried out immediately to determine these costs as well as a means of adjusting them in the future.

2. Vehicle, Spare Parts and Tire Supply Policy

- a) Spare parts should be made more available to the private sector, through reduction/removal of import restrictions. The best situation would allow those with foreign currency retention rights, to legally import spare parts for sale.
- b) The vehicle purchase program from "own funds" should be continued after the planned 1938 cutoff date.

3. Road Maintenance Policy

- a) Road maintenance and rehabilitation by contract to private contractors should be encouraged, especially in areas where there are problems now.
- b) Policies to allow private contractors to import equipment and spare parts, should be reviewed and revised, as necessary.

These policy changes will help to assure a viable transport industry in the future.

## CHAPTER ONE

### BACKGROUND

#### ECONOMIC BACKGROUND

Tanzania has a territory of 945,000 km<sup>2</sup> with a widely dispersed population of 19.8 million and a low density (20 persons per square kilometer). Population growth is estimated at 3.4% per annum with both fertility and mortality rates at relatively high levels. About 42% of the total land area is devoted to agriculture. More than 80% of the population lives in rural areas and is dependent directly or indirectly on agriculture. The agricultural sector accounts for over 45% of GNP, 90% of employment, and roughly 85% of total foreign exchange earnings. The industrial sector is small, contributing under 13% to GDP. The large government services sectors are responsible for about 30% of GDP. Export is dominated by the traditional primary products which include coffee, cotton, cashew nuts, sisal, tea and tobacco (8).

The economy has stagnated since 1979. The GDP in 1983 was virtually at the 1979 level. The main reasons have been an overall decline in agricultural and industrial production barely offset by increases in the services sector. At the same time inflation has continued at a fairly high level, fluctuating between 5 and 30 percent per year.

The economy, and with it the transport sector, have been adversely affected by external and internal forces. Externally, the increases in the worldwide price of oil in 1973 and 1979 had major adverse effects on Tanzania's terms of trade and thus availability of foreign exchange. The break up of the East African Community (EAC) and the Ugandan war imposed additional burdens on the economy. Internally, the build-up of parastatals beyond their managerial capability and attempts to direct economic activity through control of tariffs and ad hoc instruments for allocation of foreign exchange have exacerbated the situation. In the last two years, however, the Government has been moving away from rigid regulation of the economy. This has led to an increase in imports of a wide range of goods including motor vehicles and spare parts which has benefited the transport sector.

During the late 1970's and early 1980's serious internal and external problems retarded Tanzania's economic growth:

- o large fiscal deficits
- o rapid monetary expansion
- o high rates of inflation

- o balance of payments deficits
- o declining real per capita income
- o break up of the East African Community
- o 1978-79 war with Uganda
- o 1979 increase in petroleum prices
- o world wide recession
- o declining commodity export prices.

To address the country's structural problems and rehabilitate the economy, the Government adopted in 1982 a three-year comprehensive Structural Adjustment Program (SAP). The objectives on the SAP were:

- o to restructure future economic activity through better incentive systems and revised priorities in government spending in order to achieve a more sustainable external balance and renewed growth;
- o to rationalize production structures to achieve increased capacity utilization and improved manpower utilization, and to reduce unproductive activities;
- o to improve planning and control mechanisms through more effective budgeting, monitoring, evaluation and enforcement of agreed priorities.

The structural adjustment efforts were further complemented by the development of the Economic Recovery Program (ERP) which the GOT believed would enable the country to achieve sustained growth in real income and welfare improvements. The major objectives of the ERP were:

- o to increase the output of food and export crops through appropriate incentives for production, improving marketing structures, and increasing the resources available to agriculture;
- o to rehabilitate the physical infrastructure of the country in support of directly productive activities;
- o to increase capacity utilization in industry through the allocation of scarce foreign exchange to priority sectors and firms;
- o to restore internal and external balances by pursuing prudent fiscal, monetary and trade policies (6).

In striving to attain the objectives set forth in the ERP, the government is adopting a prudent approach towards the transportation sector by opting to increase the efficiency of existing transport resources through investments in rehabilitation rather than to create new capacity.

Within the road subsector, considerable resources will be allocated to rehabilitation of the existing road network. Large financial outlays and many years will be required to upgrade all levels of the road system to full efficiency. In the meantime rehabilitation priorities are to be strictly followed, with the most immediate attention given to remedial works on those segments of the network that are of greatest importance to the collection, processing and shipping of export crops (3).

The NTC has prepared a proposal for a National Road Transport Policy (N RTP) which is currently being reviewed by the Government. A comprehensive road transport policy based on the NTC proposal is expected to be ready by the end of 1986. Meanwhile, the Government has already decided to implement a number of key proposals in the N RTP.

The proposed Government action in the trucking industry will aim to correct the present imbalance in the allocation of new trucks and spares in favor of public versus private transporters. The Government plans are to adopt an allocation system that:

- o is impartial between private and public sectors
- o distributes vehicles and spare parts for which foreign exchange is allocated by the Government to the most efficient users within the industry on the basis of average annual mileage achieved per vehicle.

In the railway subsector, shortages of rolling stock and serviceable locomotives, and other operational constraints, are presently limiting TRC's ability to perform its primary role of moving bulk supplies to inland destinations and produce out of crop producing areas. As a result, an additional traffic burden has been placed on the road transport system which is already overloaded. The rehabilitation focus initially will be on two areas:

- o provision of foreign exchange for spares and maintenance machinery;
- o basic improvements to the operational efficiency of the system.

Once these initial improvements are in progress, a plan for the long-run rehabilitation of TRC will be prepared. This will include determining a phased program of track rehabilitation and renewal, and an assessment of the requirements for additional locomotive and rolling stock. It will also provide guidelines

for the allocation of foreign exchange for the railways, both to enable existing operations to be sustained and to ensure that TRC's earnings from international traffic, presently about 10% of total tonnage, are maximized.

The IBRD has taken an initiative to coordinate important transportation developmental activities under the Sixth Highway Project. This project, however, does not deal with the full array of Tanzania's transport problems. Other projects might therefore be considered by donors to complement this Bank initiative such that the broad range of deficiencies in Tanzania's transport sector are addressed.

Coordination both internationally and within MCW would be essential to avoid duplication of donor efforts and to ensure that scarce financial resources are not channeled towards marginal projects.

## **TANZANIA TRANSPORT SYSTEM**

The movement of goods and services over long distances are characteristic of Tanzania's transport infrastructure which is of vital importance to the economy, particularly agriculture, for internal marketing and distribution of food crops as well as for export of cash crops such as cotton, coffee, tea, sisal and sugar. Tanzania's transport infrastructure also provides important facilities for the external trade of neighboring land-locked Zambia, Malawi, Burundi, Rwanda and Eastern Zaire. (See Map 1)

Tanzania's transport system is comprised (a) a road network of 82,000 km, (b) two rail systems - the Tanzania Railway Corporation (TRC) operating about 2,640 km of track and the Tanzania/Zambia Railway Authority (TAZARA) jointly owned by Tanzania and Zambia with 970 km of track within Tanzanian territory, and (c) a port system operated by a parastatal, Tanzania Harbors Authority (THA), centered in Dar es Salaam with secondary ports at Tanga and Mtwara on the Indian Ocean; and a series of minor ports, and lake ports operated by TRC at Kigoma on Lake Tanganyika and Mwanza (plus other satellite ports) on Lake Victoria. (See Map 2) Additionally two international airports - Dar es Salaam and Kilimanjaro (serving Arusha/Moshi), all other paved airports and over 50 unpaved airfields provide air transport links. A pipeline carries crude oil and products from Dar es Salaam to Ndola in Zambia.

### **The Road Network**

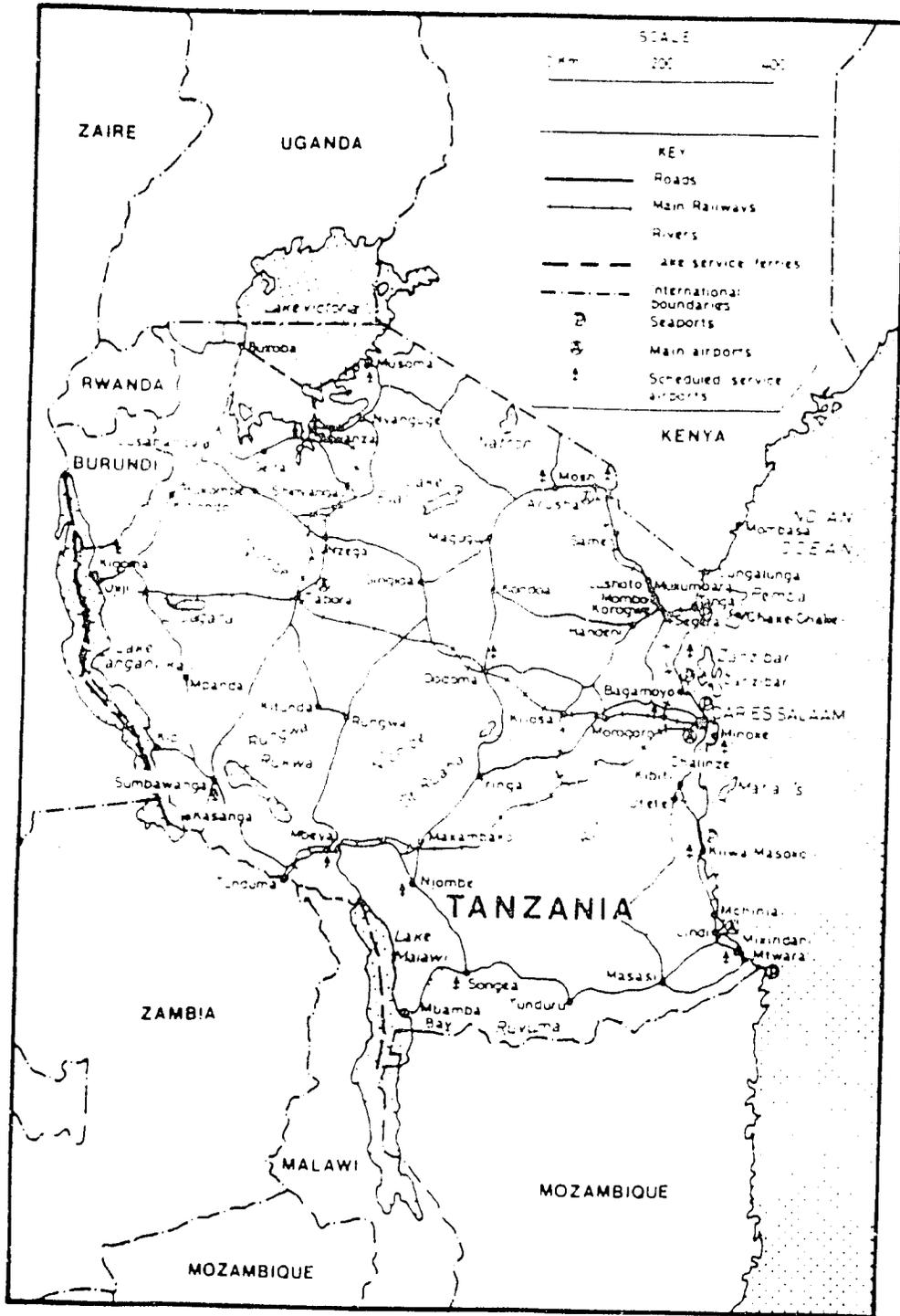
Tanzania is served by 82,000 km of road, 10,000 of which are designated as trunk roads functioning as the primary road system, 28,000 km are local main roads which serve as secondary roads, and the remaining approximately 42,000 km are designated as regional, district and agricultural feeder roads (most of the



MAP 1

# SOUTHERN AFRICA

TANZANIA TRANSPORTATION MAP



USAID Tanzania Transport Sector Study

district roads are in fact also agricultural feeder roads). The district roads are mainly earth tracks and only about 3,000 km of the whole road network are bituminous paved. The paved portion of the road from Dar es Salaam north to Arusha, the TANZAM highway from Dar es Salaam west to the Zambia border (via Morogoro, Iringa, Makambako, Mbeya, Tunduma) and the recently completed road from Morogoro to Dodoma. The TANZAM highway provides the main road outlet to the sea for Zambian traffic and also provides an alternate transit facility for Malawian traffic. The balance of the nation's road system is in the form of lower standard primary, secondary and feeder roads, many of which become impassable during the rainy season (10).

Overall average daily traffic on the roads is relatively light - under 200 vehicles per day on most roads. The most heavily trafficked roads are the TANZAM highway (over 800 vpd on some sections) and the Dar es Salaam-Arusha road (over 300 vpd). Average daily traffic on selected routes and commodity flows of 1,000 tons or more on selected roads are presented in Annexes A and B, at the end of this report.

The highway system serves primarily to provide transport links where other forms of transport such as rail and lake are not available, and secondarily, as a complement to the rail and lake systems.

Roads are the major links between main centers other than Dar es Salaam, and between the various centers on the TANZAM highway and Dar es Salaam. The TANZAM highway and TAZARA parallel each other but are in competition to only a minor degree due to:

- o the dedication of TAZARA to the transit of international traffic with local traffic of minor importance;
- o topographical conditions preventing ready communication between the highway located on high ground, and the railway located in low swampy terrain for most of its length.

The complementary function of roads to the rail network is most apparent in the north where the main roads generally terminate at lake ports or railheads. Thus, the degree of competition between road and other surface transport is limited.

Road maintenance has been inadequate which has led to a steady deterioration of trunk, secondary and rural roads. This, in turn, has adversely affected the quantity and quality of agricultural production and exports (11).

Enforcement of vehicle axle load regulations has not been effective. Extensive overloading of trucks, particularly those operating inter-regionally, has resulted in premature degradation of the paved roads and consequent higher vehicle operating costs. This is specially evident on the TANZAM Highway and the Chalinze-

Segera-Arusha and Segera-Tanga roads. Government has been reviewing current axle load legislation and enforcement measures with a view to raising the axle load limit from the present 8 mt. The University of Dar es Salaam as well as consultants financed by the Overseas Development Administration of the United Kingdom (ODA) have assisted the Government in this work. Their recommendations are presently under GOT review. The Government has agreed that, not later than 31 December 1986, it will:

- o introduce necessary regulations to reform existing axle load control (probably with a ten ton limit)
- o adopt a plan for the endorsement of the new regulations
- o initiate enforcement of the plan not later than three months thereafter (8).

### The Trucking Industry

The number of active vehicles in the Tanzanian trucking fleet is uncertain. Since 1981, the Central Transport Licensing Authority (CTLA) has ceased compiling new annual registrations.

The total number of trucks is estimated at over 11,000 with a total capacity of 81,000 tons. Of the vehicles, 78% are privately owned, with most of the remainder belonging to parastatals, including six Regional Transport Companies (RETCOs). The private sector accounts for 85% of total freight movements. In general, large inter-regional operators (including RETCOs) achieve the highest productivity with trucks achieving 40,000 km to 70,000 km per year, while crop authorities and small owners, both of whom use vehicles as ancillary to other activities, achieve as little as 10,000 km per truck annually. Vehicle age and availability of spare parts and tires are also significant determinants of truck performance (5,14).

The only public operators that keep comprehensive trucking records are RETCOs. Public trucking shows a mixed pattern of performance, with smaller trucks (7 tons), which operate almost exclusively intra-regionally, achieving an average of 35,000 km/year while larger trucks in the 10-15 ton group which operate inter-regionally, achieving 53,000 km/year on average.

The relative efficiency of public and private vehicle use can be seen from their load factors and availability for service. RETCO vehicles have a fairly low 66% availability and the RETCO load factor is about 60% overall, but closer to 40% on the 7-ton truck intra-regional movements (25:43). The balance of the public fleet is in the hands of parastatals and cooperative who have transport vehicles only to support their main activities. Consequently, their utilization is not maximized, they normally run empty one way (load factor lower than 50%), and appear to run

only 25% to 50% of the kilometers per year that are achieved by the RETCO's (10:9).

For years there has been a chronic shortage of replacement vehicles and a consequently aging fleet. Fleet replacement has averaged about 4% p.a., obviously inadequate compared to over 15% which is estimated as appropriate for poor African road conditions. Freight movement by road appears to have declined by 2% p.a. since the mid 1970's.

The main institutions involved in regulating the trucking sector are the following:

- o SMC under the Ministry of Trade and Industry - (MTI) responsible for determining the type and quantity of trucks to be imported, for recommending their regional distribution, and on the award of spares' import licenses to franchise and bazaar dealers
- o Prime Minister's Office - reviews and agrees to proposed allocation of vehicles
- o Regional Motor Vehicles Allocation Committee (RMVACs) - determine the allocation of vehicles between various regional end users
- o RTCCs which have responsibility for regional allocation of tires, and determination of intra-regional tariffs
- o Ministry of Trade and Industry - has direct responsibility for type allocation by region, and through SMC, for the Dar es Salaam Bus Company (major shareholder), the National Bus Company (100% shareholding) and the Coastal Shipping Company (100% shareholding)
- o Ministry of Communication and Works (MCW) - sets rates for petroleum transport by road on the basis of discussion with tanker truckers (5), but otherwise exercises little direct influence.

### The Rail Network

#### Tanzania Railways Corporation (TRC)

The TRC is a parastatal organization under the jurisdiction of MCW with a total length of 2,640 km and 900 km maximum haul. TRC links three important port areas, Dar es Salaam and Tanga on the Indian Ocean, the Lake Victoria ports (Mwanza and Musoma) and Kigoma on Lake Tanganyika.

The TRC network serves the regions which produce about two-thirds of all exported agricultural products, 80% of all marketed

cereal and food grains and which contain almost all of the milling and processing facilities for major exportable agricultural products.

The annual freight traffic has recently fluctuated between 1,028,000 tons (1981) and 791,000 tons (1983). The drop in 1983 coincided with a decision by TRC to increase passenger services, at the expense of freight services which declined by 6% from 1981 to 1983. This decline contributed to the 13% reduction in tonnage during that period but the concurrent contraction of the economy was probably the main cause. Similarly, economic recovery since then, although modest, has probably been the main reason for the rebound in freight traffic to 952,000 tons in 1985. However, freight train numbers have declined further, and tonnage per train has consequently increased sharply (7). There has been a major problem in the last few years with locomotive shortages and wagon repair; estimated 15% availability in 1987 with only one locomotive on the Northern Line from Amsha to Tanga (13:17; 22:T4).

The main commodities carried by TRC are petroleum, basic locally produced foodstuffs, cash crops for export, fertilizer, cement, and a range of miscellaneous products not separately identified in TRC statistics. Over the period 1981-85 there was no pronounced change in the composition of traffic except that transit traffic to Zaire, Burundi and Rwanda (ZBR) has become increasingly containerized. The average lead (distance hauled) is believed not to have changed significantly either, although estimates only are available since 1983. At nearly 700 km, the average lead confirms TRC's role as substantially a long-haul carrier (the only railway in the region with a longer lead is TAZARA, where long distance international traffic predominates) (7, 8). Commodity movements in excess of 1,000 tons for TRC routes are presented in Annex C. at the end of this report.

The TRC freight traffic distribution pattern is not precisely recorded at present, but enough is known about the main commodity flows to suggest that, apart from specialized one-way traffic movements of which petroleum is the obvious example, traffic is normally reasonably well-balanced. In particular for the period analyzed in Annex C:

- o transit traffic Dar es Salaam to Kigoma is substantially balanced at near 100,000 tons in each direction
- o cash crops generally move from the interior to Dar es Salaam and Tanga, while imports and fertilizer from the Tanga plant move in the opposite direction.

#### Tanzania-Zambia Railways Authority (TAZARA)

Impetus for construction of a direct rail link between Zambia and Dar es Salaam resulted from the export difficulties

Zambia experienced when Southern Rhodesia unilaterally declared independence in 1965. In September 1967, the Government of the People's Republic of China agreed to provide the Governments of Tanzania and Zambia with physical and financial assistance to construct a railway between Tanzania and Zambia. Construction began in October 1971 and TAZARA became fully operational in August 1976.

TAZARA has been unable to handle consistently the traffic on offer due to inadequate locomotive capacity. Locomotive availability has been low due mainly to poor maintenance and the inherent unsuitability of the existing locomotives for the mountainous central section of the TAZARA route. An aid agreement with the Federal Republic of Germany (FRG) provided for financing the re-engineering of 16 existing locomotives with compatible German engines and purchase of 14 more powerful German locomotives. Additionally, UNDP/UNCTAD have identified other possible investment requirements and a World Bank-financed study, completed in September 1984, analyzed operational and managerial weaknesses, which have also beset TAZARA, and proposed remedies. The Bank expects to assist in addressing these issues. Although the uncertain financial situation has been a problem, the recent meeting between Heads of States is believed to have placed a priority on finding a solution (2).

Wagon utilization is poor because of long wagon delays in the system. As a result, effective capacity has fallen short of demand and TAZARA has had to meet this shortfall by using Zambian railways wagons. While the introduction of additional locomotives is likely to reduce wagon turnaround time, TAZARA will experience operational problems so long as it is unable to overcome its shortage of trained and experienced staff. This has recently been recognized in an agreement with the Government of China whereby 50 experts have returned to assist in operations. There is moreover a need to convert at least a quarter of the TAZARA wagons to make them suitable for carrying containerized traffic. Containerization is already important on the TAZARA route and this is likely to increase over the next five years. Though none of the TAZARA wagons were built especially for containers, a sufficient number of these can be easily adapted

### Ports

The port of Dar es Salaam is Tanzania's largest sea port. It is served by two rail systems connecting with the Tanzanian hinterland and Zambia and a road network. The ports of Tanga, Mtwara and Kilwa are principally served by coastal vessels from Dar es Salaam, while Zanzibar port handles small coastal vessels and provides lighterage for larger ocean going vessels. The Dar es Salaam port facilities are located on the western side of a well sheltered natural harbor immediately adjacent to the city. The natural entrance channel to the harbor is narrow and has four bends, three of which are difficult for larger vessels to

navigate because of tidal currents and cross winds. Tugs accompany vessels during the passage at all times. This 3.5 km long channel was dredged in 1953 to provide no less than 7.6 meters of water depth at low water. There is no history of siltation occurring in the channel. Pilotage is compulsory (8).

The tidal variation is semi-diurnal with a spring range of about 4.2 meters. Most vessels wait for high water conditions to pass through the channel, with vessels entering against the ebb and leaving against the flood to ease the problems of navigating the bends. No night navigation takes place and thus there are many days when vessels can only arrive and leave the port during the one high water period that occurs in daylight, resulting in some ship waiting time. Navigation aids exist but are in need of replacement. The dredged depth of 7.6 m and the present bends in the channel limit the size and length of vessels using the port. Proposals for improving the channel have been prepared by the THA's consultants, but would be very expensive to execute. They might be considered for a future stage of port development.

There is an excellent outer anchorage available for a large number of vessels with a water depth of 14-16 meters. Adjacent to the anchorage area in Mjimwema Bay is a single buoy mooring used for the importation of crude oil for both Tanzania and Zambia. For many decades, up to 1956, Dar es Salaam operated as a lighterage port. The lighters were discharged on quays adjacent to the city. These quays have been preserved, partly rehabilitated and extended to serve continuing lighter traffic, coastal vessels and ferries.

The port of Dar es Salaam handles almost 90% of the country's cargo traffic and serves as an important regional port for neighboring land locked Burundi, Malawi, Rwanda, eastern Zaire and Zambia.

## CHAPTER TWO

### CURRENT AND FORECAST FREIGHT DEMAND

This chapter presents current traffic flows in Tanzania and uses economic growth factors prepared by others to forecast the freight flows on the Tanzanian system. The current transit traffic and planned increases from Malawi are included in this analysis. The forecast covers the medium term (to 1992) and does not include passenger traffic.

There are seven transport modes in Tanzania: road, rail, ocean port, coastal, inland marine, oil pipeline and air. Air's involvement in freight is minimal, and the TAZAMA pipeline from Dar es Salaam to Zambia is dedicated to spiked crude for the Ndoia refinery. Malawi will be using tank cars on the TAZARA for her shipments to Mbeya, and Tanzania doesn't use the TAZARA for domestic traffic. Lake transport is peripheral to the system and was not found to be a critical link in transport infrastructure (see Map 2). The present analysis will focus, therefore, on the four primary modes:

- railway
- road
- coastal shipping
- port

#### RAILWAY TRAFFIC

Tanzania has two railways, Tanzania Railways Corporation (TRC) and Tanzania Zambia Railway Authority (TZR). Both handle domestic and transit related traffic. Total freight traffic transported by rail is shown in Table 2.1.

TABLE 2.1

Combined TRC and TZR Traffic for the Period  
1981 to 1986 (000 mt)

|                            | <u>1981</u> | <u>1982</u> | <u>1983</u> | <u>1984</u> | <u>1985</u>  | <u>1986</u> |
|----------------------------|-------------|-------------|-------------|-------------|--------------|-------------|
| Tanzania Railways          | 1,028       | 926         | 791         | 916         | 952          | 989         |
| TZR (less local<br>Zambia) | <u>732</u>  | <u>754</u>  | <u>782</u>  | <u>913</u>  | <u>1,043</u> | <u>921</u>  |
| TOTAL                      | 1,760       | 1,680       | 1,573       | 1,829       | 1,995        | 1,910       |

Source: TRC-22:2 and 25:19; TZR-14:16 and 18:5

## ROAD TRAFFIC

Road Transport statistics are not so easily obtained. Detailed, reliable figures are only available for the RETCO (Regional Transport Corporation) activity. They have a comprehensive, objective management reporting system which began at inception (1981). Information is collected by vehicle at the local level and aggregated monthly for reporting by the NTC (National Transport Corporation), the holding company for the five RETCO's. Statistics are available monthly and for the financial year. Unfortunately, from a statistical point of view, these regional parastatals represent less than 4% of total truck traffic. As noted above, the World Bank estimates that the private trucking fleet hauls 85% of the total freight movements (5:14). The rest is hauled by parastatal-owned trucks.

Based on a review of the literature, interviews with various public and private sector representatives and several assumptions, a computation of total road trucking was made (see Table 2.2). This does not include the transit traffic which is hauled by non-Tanzanian trucks to/from Zambia or around the south shore of Lake Victoria.

In their 1985, "Study of Road Transport Policy and Practice and Role of the Public Sector" for the World Bank, Mason and Gilling estimated total haulage using a different approach. Using total diesel fuel consumed by trucks (total diesel less use by buses, rail, and the power authority) they came to a total ton-kilometers in 1984 of 1.63 billion. This is within 5% of the 1.57 billion calculated in Table 2.2. These figures are also broadly supported by other activity estimates (e.g. tire supply, average tire life and consumption data) (10:10).

## COASTAL TRAFFIC

The coastal shipping activity in Tanzania is handled nearly entirely by one public sector corporation, the Tanzania Coastal Shipping Lines (TACOSHILI) with some minor activity between the island and the larger ports by private dhows. TACOSHILI serves Tanga, Mtwara and Dar es Salaam, with calls to Bagamoyo, Kilwa, Lindi and Mafia. On occasion, cargo is carried to Mombasa (in conjunction with maintenance and repairs) and to Maputo, but this is rare.

The predominant freight traffic is with Tanga port (cement and fertilizer). The traffic to Mtwara is essentially passenger, as the area is isolated during the rainy season. Mtwara freight was estimated at a steady 8,000 tons the last few years (25:13). Total Tacoshili traffic in 1985-86 was 115,861 metric tons. The traffic for 1984-85 was not made available, and the traffic for 1981-1984 was not collected by the statistics department (there was a break in NORAD technical assistance).

TABLE 2.2

Computation of Total Freight Hauled by Road

|   | <u>FY 1981-82</u> | <u>FY 1982-83</u> | <u>FY 1983-84</u> | <u>FY 1984-</u> |
|---|-------------------|-------------------|-------------------|-----------------|
| <b>A. <u>RETCO Activity</u></b>               |                   |                   |                   |                 |
| Total Cargo Hauled (tons)                     | 100,043           | 176,228           | 216,057           | 221,6           |
| Ton-Kilometers (000)                          | 12,452,755        | 39,456,525        | 57,118,797        | 61,725,8        |
| <b>B. <u>Other Public Sector (Note 1)</u></b> |                   |                   |                   |                 |
| Total Cargo Hauled (tons)                     | 312,634           | 550,713           | 675,178           | 692,5           |
| Ton-Kilometers (000)                          | 38,914,859        | 123,301,641       | 178,496,241       | 192,893,2       |
| <b>C. <u>Private Sector (Note 2)</u></b>      |                   |                   |                   |                 |
| Total Cargo Hauled (tons)                     | 2,338,505         | 4,119,330         | 5,050,332         | 5,180,3         |
| Ton-Kilometers (000)                          | 291,083,148       | 922,296,272       | 1,335,151,880     | 1,442,841,7     |
| <b><u>TOTAL FREIGHT:</u></b>                  |                   |                   |                   |                 |
| Total Cargo Hauled (tons)                     | 2,751,183         | 4,846,270         | 5,941,568         | 6,094,5         |
| Ton-Kilometers (000)                          | 342,450,763       | 1,085,054,438     | 1,570,766,918     | 1,697,460,9     |

Note 1: The RETCO's have 4% of the fleet capacity, other public has 18%. Other public has a 50% average load factor; RETCO at 60%. Other public averages 50% of the annual kilometers achieved by the RETCO's. This equals .18/.04 .50/.60 .50/. times ton-km or tons.

Note 2: The private sector hauls 85% of the total freight movements equals .85/.15 times ton-km OR tons.

Source: A. RETCO Activity: NTC(7) Annexes I and XXIV.

## PORT TRAFFIC

There are three ports in Tanzania that are relevant to our analysis: Dar es Salaam, Tanga and Mtwara. These are all sea ports connected to import/export traffic for Tanzania. The many lake ports that are operated by TRC, serve primarily transit traffic, and some internal agriculture (Mwanza, for example, is a collector depot for the cotton produced around Lake Victoria). Their traffic is not shown here but is included as part of the TRC rail statistics.

Total dry cargo port traffic for the major ocean ports is shown in Table 2.3. Mtwara and the coastal component of Tanga are excluded to avoid double counting.

TABLE 2.3  
Major Ocean Port Traffic for the Period  
1981 to 1986 (000 mt)

|                   | <u>1981</u>  | <u>1982</u>  | <u>1983</u> | <u>1984</u> | <u>1985</u>  | <u>1986</u>  |
|-------------------|--------------|--------------|-------------|-------------|--------------|--------------|
| Dar es Salaam     | 3,515        | 3,579        | 3,155       | 3,447       | 3,149        | 3,376        |
| Less Petroleum    | (1,673)      | (1,405)      | (1,654)     | (1,607)     | (1,332)      | (1,852)      |
| Tanga             | 310          | 268          | 207         | 231         | 257          | 250          |
| Less coastal      | <u>(120)</u> | <u>(120)</u> | <u>(85)</u> | <u>(96)</u> | <u>(108)</u> | <u>(110)</u> |
| Net Dry Cargo (1) | 2,052        | 2,322        | 1,623       | 1,975       | 1,966        | 1,664        |

Note 1: Net of bulk liquids imports and exports and coastal shipping. The first six-month's figures were doubled for 1986.

Sources: (25), (26), (27), (28).

## TRANSIT TRAFFIC (ROAD AND RAIL)

The combination of road, rail and coastal shipping provides the composite network traffic demand, excluding the traffic hauled by road with non-Tanzanian trucks. This latter figure is most elusive.

The Ministry of Communication and Works does not collect the border tolls for the transit vehicles, and therefore has no vehicle count data. Neither do they have load data. The Treasury does not release toll receipts, as it is collected in foreign

exchange. (This is discussed from the tariff perspective in Chapter Five.)

The THA (Tanzania Harbor Authority) provides statistics for imports and exports by country, combining Zaire with Burundi and Rwanda (ZBR). The TAZARA breaks its traffic into four groups: Zambia local, import, and export and Tanzania local. Presumably the Zambia import and export numbers include the southern Zaire traffic too, as this is initially routed over the Zambia Railways. In 1981, Zambia exported 340,000 tons of copper via Dar es Salaam. In the same year, southern Zaire exported 619,000 tons of copper on Zambia Railways; 333,000 was transshipped to the TAZARA, and the balance went on the SATS (South African Transport System) (19:2). There are some indications that only 273,000 went on the TAZARA, the balance by road.

The 673,000 tons of copper, apparently shipped through Tanzania are difficult to track. In 1981, the TAZARA reports carrying 312,000 tons of "Zambia exports." The port of Dar es Salaam reports handling 492,000 tons of exports for Zambia, Zaire, Burundi and Rwanda. While the difference between the port and TAZARA can be explained by road haulage (we have already accounted for 68,000 tons); there is no explanation for the 181,000 tons which presumably entered Tanzania, but never left. At T.Shs. 500 per ton for copper at the time, the TAZARA could have earned another T.Shs. 90 million or about US\$11 million.

The data on transit traffic around Lake Victoria and by road from Mwanza is not available. Furthermore, the transit traffic that formerly went on the TRC is shifting to road because the TRC is short of capacity (25:40). This is a serious problem, as discussed later, because the overloaded Burundi trucks are reportedly causing unanticipated early deterioration of the trunk road system (25:45). They are also paying lower tolls which do not necessarily cover maintenance costs.

Malawi started exporting through Tanzania, according to the THA, in 1983 with 29,000 tons of cargo. This dropped to 18,000 in 1985, and 16,000 in 1986. All of this cargo was hauled to the port of Dar es Salaam by road. (More rail transit traffic is expected in the future as described in the following sections on Regional Demand.)

To be conservative, transit traffic by road is estimated to be equal to 20% of TRC freight plus one-third of TAZARA's Zambia import and export traffic plus Malawi. While this may under estimate the transit traffic, a 50% error would only represent a 2-3% change in total tons.

TABLE 2.4

**Total Dry Freight Transport Demand for the Period  
1981 to 1986 (000 mt)**

|                         | <u>1981</u> | <u>1982</u> | <u>1983</u> | <u>1984</u> | <u>1985</u> | <u>1986</u> |
|-------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Railway Traffic         | 1,760       | 1,680       | 1,573       | 1,829       | 1,995       | 1,910       |
| Road Traffic            | n/a         | 2,751       | 4,846       | 5,942       | 6,095       | n/a         |
| Transit Traffic (road)  | <u>384</u>  | <u>378</u>  | <u>398</u>  | <u>445</u>  | <u>466</u>  | <u>393</u>  |
| TOTAL TRAFFIC           | n/a         | 4,809       | 6,817       | 8,216       | 8,556       | n/a         |
| of which, Total Transit | 1,137       | 1,143       | 1,188       | 1,353       | 1,441       | 1,129       |

#### TOTAL PRESENT FREIGHT TRANSPORT DEMAND

The total traffic on the Tanzanian transport system is shown in Table 2.4. In addition, the table breaks out that share of the traffic that represents transit traffic without regard to mode. Bulk liquid flows are also excluded.

These estimates were cross checked against IBRD and USAID figures. The World Bank found that the Dar Es Salaam traffic of 2,174,000 in 1982 was 47% Tanzania's own, 45% Zambian, and 8% ZBR (28:19). This means a total transit tonnage of 1,152,000 which is very close to the figure calculated above.

USAID estimates that the Tanzania system carried 17% of total SADCC flows, or about 1.7 million tons in 1981 (19:2). Adding the 464,000 tons of Zambian spiked crude oil to the 1981 figure of 1,137,000 gives 1.6 million tons which is within the overall range of accuracy for these figures.

#### FORECASTING DEMAND

There are two aspects to the forecasting of demand: flows related to the Tanzanian economy and regional transit flows from other countries. Each is addressed in turn. The forecast horizon is medium-term, through 1992.

Projections of GDP were not available from any of the other concept paper support documents (1,2) and the World Bank chose not to forecast beyond 1991 (21:25). The World Bank forecast is excerpted in Table 2.5., and extrapolated to 1992.

Between 1966 and 1973 real GDP grew at 4.4% and the contribution of agriculture grew at only 2.3%. During the next five years, the real GDP accelerated to 5.5% due almost entirely to the rapid rise in the world prices of coffee and cotton, two of

Tanzania's main exports (2:2). This implies an increase in agriculture's contribution to the economy by about 3.5% per annum. Given this review of the historical performance of the economy, it is little wonder the World Bank qualifies its projections: "If sufficient resources are forthcoming and the recovery program is successfully implemented, GDP may be expected to grow by between 4% and 5% per annum, and possibly faster." The MRC used slightly lower estimates for agriculture, 4.3%; and for GDP, 4.0% (29:15).

In their 1985 SIP, Moris et al. pointed out a long list of factors that were certain design flaws in Tanzanian foreign assistance programs (4:146). This list included a long list of "don'ts" in the area of expectations for interministerial cooperation, coordination, and communication. This was written before the recent Tanzanian government decision that centralization was a mistake and Tanzania would return to the regional and district government system. While this is probably the right decision in the long run: it is the worst for communication and coordination in the short run.

For the above reasons, a more conservative growth rate is warranted. In so far as transport is a derived demand, its activity must reflect that of the productive sectors of the economy. Agriculture, especially export crop production, is meant to be the engine that drives the ERP recovery. Forecasts of export crop production indicate a sectoral growth closer than 2% (2). A rate of growth of transport demand of 4.5% per annum will be for domestic activity, up to 1992. A rate of growth of 6.9% will be used for export/import traffic, i.e. port dry cargo (2:13).

### Regional Demands

Traffic demand for Tanzania's neighbors has two aspects: economic growth in the states and planned route changes. The more serious issue of the threatened closure of the South African border is treated in Chapter Six.

Except for the transit traffic jump in 1984 and 1985, the trend (see Table 2.4) seems to be a stable 1.1 - 1.2 million tons per year. No change from this base transit level is expected in the medium-term pessimistic assumption.

Malawi has embarked on a route change, the Northern Corridor project. This project has multi-donor funding and is proceeding about on schedule. The plan calls for Malawi to ship 64% of exports and 39% of imports to/from countries outside the region via Dar es Salaam. While this is only a goal, there is a clear intention to reach 225,000 tons per annum by 1990 (primarily petroleum products) (19:14). From the starting level of 16,000 in 1986, and allowing for one year slippage, this represents an annual increase of 70% up to 1991. Malawi seems aware of the

institutional and infrastructure implications of this, and is planning to handle most transshipment problem areas with independent arrangements. (17)

The traffic forecasts for the period to 1992 are given in Tables 2.5 and 2.6 under pessimistic and optimistic assumptions. In 1992, the transport infrastructure must accommodate approximately one-third more than it now does, under this most pessimistic set of assumptions; the ports, 50% more dry cargo. Under the optimistic scenario a further 1.2 million tons of land transport and 300,000 tons of dry cargo is forecast.

**TABLE 2.5**  
**Forecasts of Traffic on the Tanzanian System**  
**for the Period 1986 to 1992 (000 mt)**  
Pessimistic Assumptions Set

|                             | <u>1986</u> | <u>1987</u> | <u>1988</u> | <u>1989</u> | <u>1990</u> | <u>1991</u> | <u>1992</u> |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Domestic Traffic            | 7,364       | 7,695       | 8,042       | 8,404       | 8,782       | 9,177       | 9,590       |
| Transit Traffic<br>(base)   | 1,129       | 1,150       | 1,150       | 1,150       | 1,150       | 1,150       | 1,150       |
| Transit Traffic<br>(Malawi) | <u>16</u>   | <u>27</u>   | <u>46</u>   | <u>78</u>   | <u>132</u>  | <u>225</u>  | <u>225</u>  |
| TOTAL DEMAND                | 8,509       | 8,872       | 9,238       | 9,632       | 10,064      | 10,552      | 10,965      |
| of which, Port<br>Dry Cargo | 1,664       | 1,772       | 1,887       | 2,010       | 2,141       | 2,280       | 2,428       |

Source: Tables 2.3, 2.4 and consultant's estimates.

TABLE 2.6

**Forecasts of Traffic on the Tanzanian System  
for the Period 1986 to 1992 (000 mt)**  
Optimistic Assumptions Set

|                             | <u>1986</u> | <u>1987</u> | <u>1988</u> | <u>1989</u> | <u>1990</u> | <u>1991</u> | <u>1992</u> |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Domestic Traffic            | 7,364       | 7,806       | 8,274       | 8,771       | 9,297       | 9,855       | 10,446      |
| Transit Traffic<br>(base)   | 1,129       | 1,190       | 1,232       | 1,275       | 1,320       | 1,366       | 1,414       |
| Transit Traffic<br>(Malawi) | <u>16</u>   | <u>31</u>   | <u>60</u>   | <u>116</u>  | <u>225</u>  | <u>281</u>  | <u>352</u>  |
| TOTAL DEMAND                | 8,509       | 9,027       | 9,566       | 10,162      | 10,842      | 11,502      | 12,211      |
| of which, Port<br>Dry Cargo | 1,664       | 1,805       | 1,959       | 2,125       | 2,306       | 2,502       | 2,715       |

Source: Tables 2.3, 2.4 and consultant's estimates.

## CHAPTER 3

### TRANSPORT INFRASTRUCTURE AND SERVICE CAPACITY CONSTRAINTS

This Chapter examines the infrastructure in the transport sector and its ability to serve the demand through 1992. Where capacity is constrained, quick response solutions will be identified. A rationale for USAID to assist with one or more of these solutions is developed in Chapter Four.

#### OVERALL CAPACITY

The current capacity of the various modes in the sector was detailed in the Phase I report, and is summarized in Table 3.1, after updating for recent information.

These estimates of capacity are based on the concept of "practical capacity" which takes into account the present operational characteristics of each transport service and the regulatory environment. The "physical capacity" of infrastructure is 2-3 times higher than practical capacity for rail and port infrastructure and an even larger multiple for roads, if the infrastructure is well maintained. When infrastructure is not maintained, physical capacity decreases, and when speeds are affected, the practical capacity of the system is lowered as well. There are also the effects of peak demand and scheduling which transform nominal capacity, based on annual throughput, into real shortages of capacity in a given peak period.

#### FACTORS AFFECTING PRESENT CAPACITY

The practical capacity of the Tanzania transport system has been in decline for lack of maintenance, parts, and necessary investment. Mtwara handled twice the indicated capacity in 1981, and Tanga was 40% higher in the same year (28:11). KAUDO reported (25:44) several, nearly new, trucks out of service for over ten months awaiting inexpensive but unavailable parts. Lighterage ports are unable to put their full complement of lighters into service for lack of steel plates and welding rods. They are operating at 20 to 30% of capacity and are working extra shifts or losing ships that will not wait for cargo not immediately available.

On an overall basis, the transport sector still suffers from the same flaws reported by earlier observers: diversion of resources from maintenance at all levels, lack of organization and management at the ministerial level which is translated down to the parastatals and regional staff as imprecise guidelines and objectives, over-regulation which is inefficient and ineffective, and misallocation of scarce resources to inefficient operators.

TABLE 3.1

**Current Capacity of the Transport Sector  
by Mode 1986-87 (000 mt)**

---

|                  |                   |           |           |
|------------------|-------------------|-----------|-----------|
| RAILWAY          |                   |           | 2,200,000 |
| of which:        | TRC               | 1,000,000 |           |
|                  | TAZARA            | 1,200,000 |           |
| ROAD TRANSPORT   |                   |           | 6,600,000 |
| of which:        | RETCO's           | 250,000   |           |
|                  | Other Public      | 750,000   |           |
|                  | Private           | 5,200,000 |           |
|                  | Non-Tanzanian     | 400,000   |           |
| COASTAL SHIPPING |                   |           | 150,000   |
| PORTS (ocean)    |                   |           | 2,320,000 |
| of which:        | Dar es Salaam (1) | 2,000,000 |           |
|                  | Tanga (2)         | 250,000   |           |
|                  | Mtwara (2)        | 70,000    |           |

Note 1: Excludes bulk liquid imports and exports (petroleum)  
 Note 2: Includes capacity dedicated to coastal traffic

Sources: Consultant's calculations.

In addition to these exogenous factors, each parastatal transport supplier has internal problems. Generally these are issues of staffing. Insufficiently trained, underpaid, and unmotivated are the reasons usually reported during interviews. Recent inflation has pushed costs so far ahead of wages that dual income families must now resort to farming.

Many parastatals run only in the presence of external advisors. In the case of the shipping company, TACOSHILI, it was found that advisors were not sufficient. After ten years of support, NORAD withdrew from TACOSHILI, confident that it would survive. Two years later it was so heavily in debt (T.Shs. 58 million in 1984) that NORAD returned. This time they are supplying managers not advisors. The idea is to run the company until it is up again. They are still faced, however, with the problem of financing coastal shipping forever, or finding a new way out. The solution they are attempting to sell government is privatization. It was well received at Finance but rejected at Works; the topic will be brought up again at their March coordination meeting.

NORAD only sees this as a way to get out. They realize that privatization will do little to increase capacity. A capacity

increase to 400,000 tones will require an infusion of some US \$11 million in new vessels and minor dock repair.

Similar stories are found at other parastatals. At TRC they could add capacity by 100,000 tons if someone would help them repair/repower 12 of the Series 73 1050 HP Indian locomotives (with American made ALCO engines) at a cost of \$4-5 million. They also have a long-term plan to get to 1.8 million tons capacity, which they consider their theoretical maximum before major track and signalization investments. Policy issues concerning tariffs and capitalization are yet to be resolved, and TRC is not presently on a sound financial footing, compounded by its inability to haul transit traffic.

In the road mode the issues of policy and regulation also arise. There is little official recognition of efficiency when allocating trucks, tires, and spare parts. In 1984 and 1985 two-thirds of all new vehicles imported through the SMC (State Motor Corporation) went to the public sector, who hold only 22% of the fleet (10:38). There is ample evidence that this public fleet is much less efficient than the private operators.

The private sector has no incentive to keep records, and with many of the private sector transporters being owner-operators (10:31; 25:43) no data is available. Nevertheless, based on selected interviews (10:10) a pattern emerged. The private sector vehicles achieve essentially the same kilometerage per year as RETCO vehicles, but an average load of 70% to 80% due to their ability to set lower return prices and attract backhaul freight.

The private truckers appear to have much easier access to spare parts than the RETCO's through the bazaars and own-funds import schemes; in fact they seem to have no problem acquiring new trucks on the own-funds scheme. Second, there is reportedly an unofficial trade in agricultural and imported commodities across the borders. Thirdly, private haulage is so lucrative that the Asian truckers, again reportedly, earn enough the first two years to pay for their vehicles and buy new ones. The used vehicles are normally sold to less sophisticated truckers who run them at least another five or six years.

The situation has improved for private truckers through the own-funds import scheme. This should improve even more if the IBRD's Sixth Highway Program succeeds in establishing a spare parts purchase system within NTC that earmarks a significant portion of the spare parts for the private sector. On the other hand, the government still avoids using unregulated market allocation; and insists that schemes like own funds importation will not be needed once the exchange rate imbalance is corrected, scheduled for mid-1988.

The road transport situation is compounded by a significant lack of routine and periodic maintenance of all levels of roads

resulting in surface deterioration. The trunk road system, some 10,000 km of which 3,000 have been paved, is the subject of the IBRD's Fifth Highway Program. Recent inspection by the Consultant shows that little maintenance has been provided to the system. This is confirmed in the background writeup for the proposed Sixth Highway Project which plans reconstruction of 278 km of the TANZAM Highway, assistance to the local contracting industry (to take all but routine maintenance away from government), and rehabilitation of equipment that was supplied under the previous project. (6) (See Annex E Road Maintenance.)

The effect of this poor road condition and the lack of maintenance directly impacts the road haulage capacity. Travel speeds are reduced, so total ton-kilometers that can be hauled in a vehicle over the year is also reduced. Vehicle repair and maintenance time increases, thus reducing vehicle availability; and vehicle life in years is also reduced. Private operators avoid bad roads and remote locations, even if there is no regulation of the tariffs they can charge. Even the RETCO's allocate their fleets in such a way as to minimize the number of trucks that are assigned to the worst areas; the very areas that served as their *raison d'etre*.

The ability of the RETCO's to replace their fleet in the future is also in question, if they cannot recover full costs in their tariff structure. A review of the detailed data kept by KAUDO, the Dodoma RETCO, in June 1986, produced an average cost per ton-kilometer of T.Shs. 8.16 for their 7-ton trucks. For the same period and fleet, the average tariff per ton-kilometer was T.Shs. 6.90 indicating a loss of T.Shs. 1.26 per ton-kilometer, or T.Shs. 173,143 for the class for the month. Under these circumstances they will never earn enough to replace their vehicles. In a future with foreign exchange shortage, this means a continued decline in capacity.

## CONSTRAINTS

The overall capacity picture of 1987, revealed in the comparison of Tables 2.6, 2.7 and 3.1 shows that land transport will be inadequate, while the ports will retain a 20% margin over the optimistic demand. By 1992, there will be substantial capacity problems in all areas unless the programs are implemented to increase capacity (even without a major routing change - discussed in Chapter Six).

In the short-term, this capacity problem is related to the lack of foreign exchange, spare parts, materials or timely investment in new equipment, and payment of local funds; all of which flow from the policy and institutional issues.

In the medium-term, the issues of encouragement of the more efficient transporters (e.g. private sector) and full cost pricing in the public sector need to be resolved, as well as

financing for improved vehicles and rolling stock. Road and railroad maintenance must also be improved to meet future medium-term demand. Specific transport constraints on agricultural exports are outlined below.

### Specific Constraints on Agricultural Exports

The attached map (Map 3), shows the specific production areas for each type of crop, and the location of the processing facilities that produce the export products associated with these crops. These all represent steps in the chain of transport from growing area to ship, as described below:

Coffee: Coffee transportation can be divided into north and south production areas. The north flows are typically from Kagera region to Moshi for processing, then from Moshi to Tanga Port for export. The first bottleneck occurs in the production areas at harvest time. The berries are collected, but trucks are not always available for transport to coffee buying centers. This leads to spoilage and smuggling across the border in some cases. Trucks are frequently not available due to lack of spare parts, tires and fuel (fuel is somewhat better now).

The second step is a ferry trip across the lake to the railhead at Mwanza. (This does not seem to have any problems at present.)

The third step is a train connection to Moshi via Chalinze (see Map 3) which is the long way around, but there are no direct routes through the Serengetti Reserve. (This problem may be solved with the planned processing plants in Kagera and Mbeya.) This has been hampered by lack of rolling stock (especially locomotives).

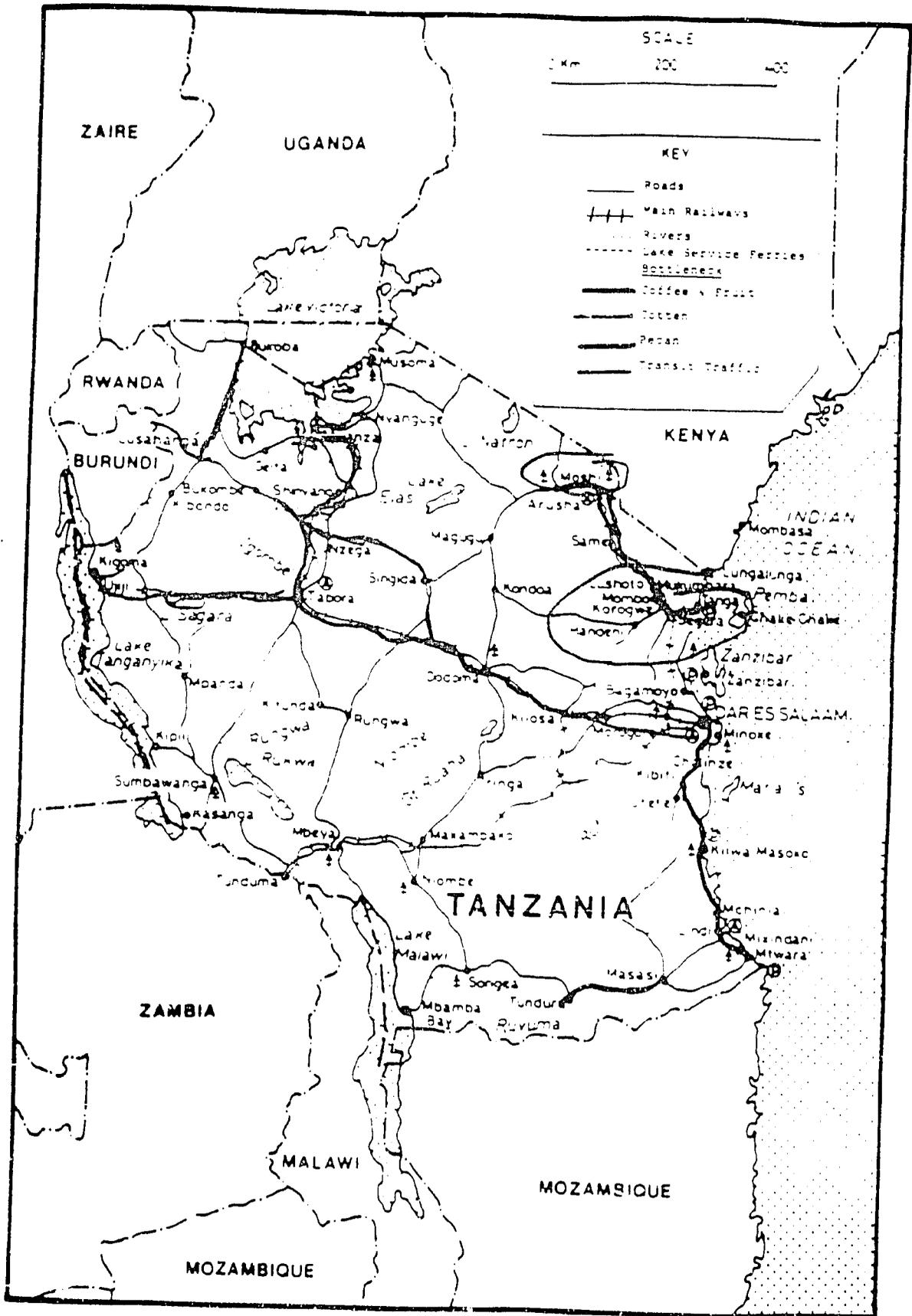
The final step is from Moshi to Tanga for export. This is by train and in recent years there has been a shortage of rolling stock, causing coffee to pile up in Moshi and in some cases a ship cannot wait for the rest of its cargo (causing marketing deadlines to be missed and higher shipping costs per ton). Tanga port loading does not seem to be a bottleneck at present traffic levels.

For the southern coffee production area, the normal route is by road to Mikumi, then by rail to Moshi and Tanga, once processed. This route has the same problems as the northern route.

Cotton. Most cotton is produced in the Mwanza-Shinyanga regions. This product is collected from farmers at village buying posts and taken to the ginneries, scattered throughout the production areas. From the ginneries it is transported to railheads by road and then to Dar es Salaam for export.

MAP 3

AGRICULTURAL EXPORT BOTTLENECKS



USAID Tanzania Transport Sector Study

Due to the shortness of the cotton season there is a high demand for trucks and the cotton cooperatives advertise for more vehicles. All available truckers are asked to work, but many resist receiving the low transport rates set by the cooperatives, which assume all spares, tires, etc., are purchased at official exchange rates. The private truckers, who buy at higher prices cannot afford to transport at these rates, particularly over bad roads.

The cotton transport by rail was a serious problem this last year (September 1986 to January 1987) because it was necessary to divert locomotives from passenger service to freight haulage (thereby cutting passenger service from four times to once a week). This is a serious dislocation.

Tobacco: This crop is in a better transport situation because much of the production area is situated along the rail, or near the Port of Mtwara. All processed tobacco is sent to Morogoro, and from there it is exported in containers.

The main problems are - not enough rail wagons in Morogoro, in the peak season (which overlaps with cotton and maize) - and few container trucks available for a road alternative. Tobacco is a valuable enough crop that the transport rates are set at adequate levels, and the transport distances are not as long as for other crops.

Cashew Nuts: This crop has dropped to a seventh of its past volume, and is centered in the Mtwara region. Its transport from trees to buying post is still hindered by poor roads in that region, but trucking is available through the local RETCO. Transport to processing plants will be a problem, when and if production picks up again, and production along the Mtwara-Aares Salaam road is severely constrained by poor road condition.

Sisal: This is another low value to volume crop that has problems similar to cotton. Transport on the sisal estates is the first step, as leaves go to the factor. Then the fiber is transported from factory to harbor (Tanga or Dar es Salaam).

The present problems are related to the dismantling in most public owned estates of the internal railroads to carry leaves to the factories. This left that transport to road vehicles. This worked as long as the road maintenance capacity of the estates was adequate, and vehicle spare parts were readily available. However, in public estates both the vehicles and the maintenance capacity have deteriorated. This contrasts with the private estate run by the Amboni Group which both maintains the internal railroad, and operates a central workshop to repair both rolling stock and trucks and is relatively efficient in keeping communication

open to its subsidiary farms to avoid equipment down time (according to Ministry of Agriculture marketing officials).

The movement to the port has some problems at present, due to the lack of enthusiasm of truckers to haul sisal at the low set rates. In February 1987, there were 3,000 tons waiting to be shipped from an estate near Morogoro, which is not on the rail line.

Tea: This is produced in very localized hilly areas, and has a transport step to the factory, then from factory to export. The IBRD is helping out on the internal transport problems to the tea estates. The longer hauls to the ports from the tea factories are only constrained by the general road system. Since tea is a relatively high value commodity, the transport rates are set high enough to attract the necessary truckers. Tea transport from factories was still a major constraint in 1986-87 in the Tanga region as godowns were full. This resulted in the absence of buyers for some growers.

Finally it should be recognized that the agricultural transport requirements must compete with demand for transport. For example the peak season for cotton and tobacco is also the peak maize harvest and transport season.

Agricultural inputs are also important for transport, especially fertilizer. This has been a problem for the fertilizer plant at Tanga and late shipment of fertilizer has had a significant effect on production in recent years. In addition, the phosphate shipments in 1986 from Arusha to Tanga (10,000 tons) were one-third of the required level, resulting in a direct loss of foreign exchange for imported phosphate.

#### **PRESENTLY PLANNED DONOR ASSISTANCE TO THE TRANSPORT SECTOR**

There is a substantial amount of donor activity already addressing some of these capacity problems. The international donor community has always been generous to Tanzania. In many cases a donor has "adopted" a particular region (NORAD, TACOSHILI; CIDA, TRC; China, TAZARA; USAID, TANSEED) hoping to see it through to independent financial and institutional stability. The extent of donor involvement in the past as well in support of the ERP has been ably documented elsewhere (e.g. 2, 3, 6, 12, 24, 27) and does not need to be repeated here. Table 3.2, however, summarizes those aspects of the current donor activity which address the issue of near- and medium-term resource assistance to the transport sector. Only assistance that will stabilize or increase capacity before 1991 is included.

While the assistance programs listed in Table 3.2 are impressive, the question becomes, "How will they affect the capacity for each mode?"

TABLE 3.2

**Medium-Term Donor Resource Assistance  
to the Tanzanian Transport Sector**  
(equivalent US\$ million)

|   |   |          |
|---|---|----------|
| <b><u>GENERAL SECTOR ASSISTANCE</u></b> |   |          |
| NORAD                                   | Import Support  | 10.0 est |
| SDC                                     |   | 5.0 est  |
| ODA                                     |   | 5.0 est  |
| <b><u>RAILWAYS</u></b>                  |   |          |
| <b>TANZANIA RAILWAY CORPORATION</b>     |   |          |
| CID                                     | General support to TRC  | 7.5 est  |
| ODA                                     | Spares for 20 locomotives   | 3.8      |
| DANIDA                                  | Marine Service on Lake Victoria - experts and ship rehab. & shore installations | 15.0 est |
| <b>TANZANIA ZAMBIA RAILROAD</b>         |   |          |
| SIDA                                    |   | 22.0     |
| FRG                                     | Locomotives   | N/A      |
| <b><u>ROAD TRANSPORT</u></b>            |   |          |
| SIDA                                    | Scania Trucks and Spares  | 20.0     |
| IBRD/IDA                                | Reconstruction of TANZAM, truck spares,   | 50.0     |
| FRG                                     | Trunk Road Rehab (Moshi), truck spares,   | 17.5     |
| DANIDA                                  | Trunk Road Rehab (Moshi), Feeder Road Study, TA to MCW planning unit            | N/A      |
| NORAD                                   | General tire import support, HWY 6,   | 10.0     |
| ODA                                     | Makubako Songea Road, trucks, Bailey Bridges                                    | 15.2 est |
| EEC                                     | Feeder roads, vehicle spares  | 35.0     |
| UNDP/ILO                                | Feeder roads  | N/A      |
| <b><u>PORTS</u></b>                     |   |          |
| <b>DAR ES SALAAM</b>                    |   |          |
| SIDA                                    | General cargo berths, Cooper Handling Equipment                                 |          |
|   | Kurasini oil terminal, rehab of quays 1 to 8                                    | 18.0     |
| IBRD/IDA                                | Container Terminal, Ubungo depot, Kurasini terminal equipment, lighter quay     | 20.0     |
| NETHERLANDS                             | Grains silos and handling facilities  | 10.3     |
| DANIDA                                  | Cranes  | 13.0     |
| NORAD                                   | Coastal Terminal, Kurasini oil terminal, rehab of quays 1 to 8                  | 10.4     |
| FINNIDA                                 | Equipment   | 6.8      |
| ODA                                     |   | 0.3      |
| ITALY                                   | Equipment   | 3.8      |
| <b><u>COASTAL SHIPPING</u></b>          |   |          |
| NORAD                                   | TACOSHILI - Management assistance, equipment                                    | N/A      |
| <b><u>STORAGE</u></b>                   |   |          |
| EEC                                     | Storage for Cooperatives  | N/A      |

Sources: 2, 3, 5, 12, 24, 25, 27, 28.

A study of the TAZARA was conducted in 1984 which examined the operational and staffing changes required to achieve a capacity of 1.5 million tons per year. The program of presently planned assistance is insufficient in three areas: the repowering of more DFH2 engines, the conversion of more wagons, and the improvement of the mechanical workshops. In addition, staff training and safety (derailments and other accidents) need attention. By inference, and unless additional assistance is identified, the 1992 capacity will be set at 1.3 million tons.

There is a project with CIDA funds to provide equipment, training and technical assistance to the TRC. This continues the ongoing "adoption of TRC by CIDA which began in the 1970's. In addition, the World Bank is prepared to bring the available funds up to US \$12 million over two years.

The World Bank project is funding a short-term recovery program for the TRC which started in June 1986. The program has two components. The short-term holding operation, to be included in the Multi-Sector Rehabilitation Credit, was to be followed by a comprehensive recovery program extending three or more years from 1989-90. The goal of the short-term holding action was to achieve, in conjunction with other ongoing and imminent multi-lateral and bilateral assistance, an increase in freight traffic of 20% over the 1984 levels (22:ii). While the increase to 1.1 million tons is an improvement, it is not likely to satisfy the demand in the most fertile export crop production area of Tanzania; neither will it satisfy much of the transit traffic demand from ZBR. Although it will increase revenues, the program will not by itself put TRC on a sound financial footing.

Evaluation of the impacts of assistance to the road transport and roads sub-sectors is much harder to evaluate, as the locations of constraints are not as neatly defined as are ports and railways. The 1.1 million ton increase in capacity seen between 1984 and 1985 is not likely to occur again. It reflected the attainment of a reasonable fleet size and skill level by the RETCO's, coupled with the loosening up of the own-funds import scheme for private operators. In fact, there is some indication that the RETCO capacity is dropping. KAUDO, which appears to be a trend setter in the group, had its worst year since opening. Total ton-kilometers for 1985-86 dropped 53% below the level achieved in 1984-85, which was itself 16% below the 1983-84 figure. While it may be pessimistic to project no growth in the road haulage capacity through 1992, to expect an increase of one million tons is defensible and 2.2 million optimistic. The latter figure would be dependent on GOT success in providing reliable, consistent trunk road maintenance.

The impact of the work at the Port of Dar es Salaam is expected to improve dry cargo handling rates by 5% to 25% for break bulk and 200% for bulk grain. Container handling is expected to go from 85 TEU/ship/day to 300 TEU/ship/day, an increase of 250%. This latter improvement is important because transit traffic is especially prone to rapid containerization,

more so perhaps than the domestic traffic. From a level of 10% or 100,000 tons in 1982, it is estimated to reach 1,100,000 by 1992 (40%). The latest IBRD supervision mission (August 1986) reports that all intended work will be completed, and all equipment delivered by the end of 1989. Considering that the appraisal report forecast a dry cargo load on Dar es Salaam of 2,778,000 in 1992, it appears the ports will not be a system constraint. In fact, they will have 400,000 to 700,000 tons of spare capacity, albeit not necessarily in the most convenient places.

Table 3.3 summarizes the current and forecast capacity by mode, the pessimistic and optimistic demands, and the implied shortfalls in capacity, assuming no major transit traffic rerouting through Tanzania.

**TABLE 3.3**  
**Freight Capacity, Demand and Shortfalls**  
**in 1992 by Mode (000 mt)**

| <u>Mode</u>    | <u>Capacity</u><br><u>1986</u> | <u>Estimates</u><br><u>1992</u> | <u>1992</u>                    |                                   | <u>1992</u>                               |     |
|----------------|--------------------------------|---------------------------------|--------------------------------|-----------------------------------|---|-----|
|                |                                |                                 | <u>Demand</u><br><u>Pesim.</u> | <u>Estimates</u><br><u>Optim.</u> | <u>Shortfalls</u><br><u>Pesim. Optim.</u> |     |
| Railway        | 2,200                          | 2,400                           |                                |                                   |   |     |
| Road Transport | 6,600                          | 7,600/<br>9,100                 | 10,965                         | 12,211                            | 965                                       | 711 |
| Ports          | 2,230                          | 3,100                           | 2,428                          | 2,715                             | no shortage                               |     |

**Sources:** Tables 2.6, 2.7, 3.1 and Consultant's estimates.

The transport system is likely to experience serious capacity problems in surface haulage under all assumptions. Capacity will need to come from either road transport or railways. This analysis supports the conclusion that there will be a transport constraint on Tanzanian import distribution and export collection, even with the planned assistance of other donors shown in Table 3.2.

Future planned port capacity appears to be adequate if there is no major rerouting of transit traffic through Dar es Salaam. Tanga is likely to be either under-utilized as lower costs per ton at Dar es Salaam attract traffic away; or be kept at capacity by regulation, in order to leave more spare capacity at Dar es Salaam for transit traffic. The problem of allocation of traffic by port should be studied closely by the transport planning unit and THA, and their conclusions implemented by tariff policy rather than by parastatal controls.

## CHAPTER FOUR

### USAID ASSISTANCE RECOMMENDATIONS

A wide range of assistance opportunities is always available in the transport sector. Identification of an appropriate subset for evaluation is always the first hurdle. This paper has the benefit of being prepared in support of, and concurrently with a concept paper (30) which addresses the larger objective of defining whether and how USAID should resume assistance to Tanzania. In general, that concept paper recommends strong support for the Tanzanian economic recovery program by relieving economic bottlenecks. That paper proposes a program with an emphasis on resolving transport problems in the near-term and medium-term (i.e. up to 1992) particularly where these affect agricultural exports. In addition, the program should be oriented toward commodity imports and sector level disbursement with relatively low USAID staffing level.

The funds available to support USAID transport sector assistance to Tanzania are likely to be the following range:

- FY87 T.Shs. 450 million from PL 480, available immediately and to be disbursed rapidly; likely to be repeated in FY88 and 89
- FY88 US\$ 4-7 million for bilateral assistance
- FY87 US\$ 9 million for the regional program (SARP)
- FY88 a possible regional supplemental allocation.

The options available to USAID/Tanzania include:

1. Support to the TRC for overcoming rolling stock constraints (particularly in locomotive re-powering and/or spare parts assistance).
2. Support to the trucking industry, particularly the financing of spare parts, tires and vehicles repairs for the private sector.
3. Support to the road maintenance organization in its effort to increase effectiveness with more decentralized operations (e.g. spare parts) or contract maintenance.
4. Support to self-help or food for work feed road rehabilitation programs (supply of materials and tools), and storage facilities in the villages.

Options with Regional Transit Implications include:

5. Reinforcement of Tanga and Dar es Salaam ports lightening capacity (provision of steel sheets and bars for lighter repair in the near-term, provision of lighters in Tanga and Dar es Salaam).
6. Improvement of the rail link to Moshi, with Mombasa linkage potential (heavier rail and rolling stock).
7. Support to Tanga port rail connection and equipment for cargo handling for an increased level of traffic.
8. Rehabilitation of segments of the Tanzam Highway (as part of the Sixth Highway Project).
9. Support TAZARA railroad increase in capacity (e.g. through re-powering locomotives - Regional Project Paper to be completed in April).

In addition, USAID could support policy changes to have Tanzania recover her costs for both transit traffic and for local trucking, and to promote greater use of private trucking.

The Consultant is aware of the recent legislation linking PL480 Title I funds with Private Enterprise Promotion objective. The proposed spare parts and the local construction industry programs are responsive to the new requirements on use of such locally generated funds.

Of course, the USAID program needs to be coordinated with other donors, whose programs are listed in Table 3.2. In many cases USAID could use the structures set up and monitored by other donors to reduce USAID staffing requirements. More details on some of these options are given below.

#### 1. RAILWAY SPARE PARTS ASSISTANCE

The Tanzania Railways Corporation (TRC) is within easy near-term reach of an additional 100-200,000 tons of capacity. TRC owns 15 Series 73 locomotives (1050 HP) that are less than ten years old. While relatively new, only three are in service. These Class 73 Indian supplied mainline locomotives are equipped with American made ALCO engines (Alco Power, Inc. Auburn NY 13021 USA). It is estimated that the provision of spares and work involved, additional spares based on repair history, and provision of workshop tools and some minimal technical support (4-6 months) would cost on the order of US\$ 4-5 million (in 1986 prices) (25:20). This assistance would bring TRC availability up to normal levels, and coupled with anticipated other assistance, achieve a capacity increase of 15% to 20% (22:27). For the purpose of the following analysis, an assumed increase of only 100,000 MT (10%) will be used.

The benefits of this assistance are: railway capacity increase, improved export crop movement, lower cost of transport freed up road capacity, reduction of road deterioration, increased foreign exchange revenue to both the TRC and to Tanzania, and purchase of American goods. In addition there will be a major medium-term impact on the regional transit traffic capacity, to be discussed further in Chapter Six.

Coffee, tea and cotton are three of Tanzania's major export crops. Traditionally, the TRC has evacuated them to the ports of Tanga and Dar es Salaam. During the Consultant's field trips to Tanga and Mwanza, it was observed that TRC was the crucial bottleneck; in particular locomotive capacity. At Mwanza the Port Officer observed that he was unable to load the 2,600 bales of cotton from his sheds, because he had no shunting locomotive (he shared one with the station in town) with which to reposition the six empty wagons he had in his yard; he needed 20 more double wagons and did not know when they might arrive. He had over 11,200 bales waiting to come to his sheds if he could empty the sheds and get the additional 112 double wagons then required. He had over 40 loaded wagons awaiting a shunting locomotive to move them to marshaling yard; and locomotive power to move them to the ports. The addition of 12 working locomotives would greatly ease this problem; and in so doing, reduce the deteriorating wagon turn-around times and increase wagon availability.

Naturally, some commodities are perishable and their timely delivery is important. In other cases, the shipper is interested in a dependable level of service. Shippers in these situations are switching to road transport. While the financial cost by road is at least four times higher than rail (13:6; 25:20; 6:aIV), the perceived total cost to the shipper of a more reliable service is obviously lower. More dependable and predictable scheduled rail service would allow shippers to return to this normally lower cost mode. This would not only save shippers money; but could increase the producer price of commodities, depending upon the degree of regulation remaining in the subsector.

A second benefit of this shift to rail would be the freeing up of more truck capacity which, because of its route flexibility, is able to service areas where the railway is not a competitor. It could even promote a more logical coordinated feeder, rather than parallel, system.

TRC also hauls transit traffic from Burundi, among others, through the Mwanza port on Lake Victoria. Of late, this traffic has been going by road, in non-Tanzanian vehicles (25:40). This poses several problems for Tanzania as well as TRC. There is less regulation of the transit vehicles, and they are more liable to be overloaded. While there is no evidence to support the contention, the Regional Engineer (Dodoma) attributes much of the recent breakup of the trunk roads in his region to the "heavy Burundi trucks." As they do not save money by road transport,

the shippers would readily shift to rail once the level of service is equivalent in generalized price terms. This shift would slow the deterioration of the trunk road network, a real savings to the economy; and improve the riding quality of the roads, an objective of the ERP.

More importantly, this mode shift would earn foreign exchange with no added incremental cost. The tariff for road transport by non-Tanzanian trucks is payable in US dollars at the rate of \$6 per truck. There are not more than ten toll stations in all of Tanzania. No matter how the truck goes, his 10 to 20 tons of goods cannot attract more than \$60 in tolls (empty back-haul assumed). The tariff on the TRC is currently \$40 per ton for the Mwanza to port route, payable in hard currency (albeit only since mid-1985). If one assumes the 100,000 ton increment would support 60% more transit traffic, the TRC stands to earn \$2,400,000 the first year; Tanzania would gain about \$2.2 million, excluding the savings in road maintenance. Even if the rail tariff has TRC operating at breakeven, the operating cost of the railway is only about 60% foreign exchange. The first year benefits to the assistance, using any reasonable shadow price for foreign exchange and a fair tariff, should be at least 30%. A net gain in foreign exchange would result, another objective of the ERP. The tariff issue is addressed again in Chapter Five.

## 2. SPARE PARTS CASH COVER FOR THE TRUCKING INDUSTRY

Local currency assistance to the trucking industry is not easily planned. However, one option is the provision of local currency to finance the purchase of spare parts. Table 3.2 identifies at least US \$50 million in spare parts and commodity import assistance for spares, in the near-term. The IMF/IBRD conditions will place several constraints on the sale and allocation of these spares. Firstly, everyone must be treated equally in the process of allocating, which is to be done on the basis of efficiency. There will soon be a study under the NTC to define this mechanism. Secondly, at least 50% of the spares they control must be awarded to private sector truckers. Thirdly, everyone receiving spares, private and public alike, must put up a Tanzanian shilling 'cash cover' equal to the official price of the spares plus duties and taxes. The aforementioned credit squeeze is expected to put pressure on the private sector.

USAID could provide funds to a financial intermediary, such as CRDB or NBC who would perform the lending to designated 'qualified' recipients or suppliers of vehicles. This form of assistance is suitable outside the transport sector as well. The questions of choice of financial intermediary, and how to structure the loans so that they do not run afoul of the IMF accords are beyond the scope of this paper. (This could be handled administratively as an add-on to the IBRD spare parts program.)

### 3. CONTRACT ROAD MAINTENANCE

A new initiative proposed in the Sixth Highways Project and discussions with various private sector contractors, gave birth to this assistance idea. The World Bank is funding the National Construction Council to begin training private contractors to undertake construction of various elements of the gravel roads program as well as maintenance components of the Sixth Highways Project (6:8). However, there are other ways to provide training and verify capacity to do the work. Furthermore, private sector contractors are willing to work for Tanzanian shillings. If the budget for a district road maintenance program is T.Shs. 4-6,000 per kilometer (25:47), then adequate maintenance by the private sector should be available for the same order of magnitude.

It is proposed that USAID undertake the financing of road maintenance, particularly feeder road maintenance in the areas where road conditions are poor, agricultural export crops are in large surplus, and there is an active private sector road haulage capacity. The program could also be undertaken on regional or trunk roads, but in this case the benefit is less directly in aid of export crop production. The reduction in the cost of transport would translate, though competitive, into lower transport prices. If the policy objectives for agriculture, now being pursued, are successful, this would then be translated into higher producer prices and higher production. This is in line with the ERP objectives. Trucking capacity would increase as average speed increases and lower maintenance times lead to higher annual kilometerage. Savings in foreign exchange would also occur from lower vehicle operating costs per ton-kilometer. (See Annex G.)

A possible enhancement to this program would involve assistance in the replacement of equipment used in the road maintenance work. Through some system of points for quantities of work performed, contractors could earn credits towards the allocation of new equipment. The shillings thus paid could be added back to the road maintenance fund.

### 4. MAINTENANCE BUDGET SUPPORT

The private sector maintenance contracting program may be unsuitable for the near-term assistance design. A corollary to this would be direct budget support to the District Maintenance budget within the Ministry of Local Government and Cooperatives, through the Prime Minister's office via the Regional Engineer, or through the Ministry of Communications and Works. The actual routing is less important than the idea. To the extent that feeder road maintenance does not happen because of lack of funds, then budget support could achieve many, though not all, of the benefits of the private sector program.

The questions of general versus directed budget support and the mechanisms for it are beyond the scope of this sector study, and are addressed in the Concept Paper.

## 5. EXPANDED VILLAGE STORAGE STUDY

Road rehabilitation or construction are not the only solution to transport capacity bottlenecks. Trucking capacity is also short because of low average load factors and peak period demand that exceeds actual capacity by double. The presence of simple storage, with proper vermin and insect control, is an often overlooked solution to this problem. While it is certainly a solution in some Tanzanian contexts, its analysis will not be undertaken here. Firstly, an Agricultural Feeder Roads Study is currently underway (DANIDA) and should be completed this year. It will address this issue in detail. Secondly, village storage is a project that would not be easily implemented in the near-term. It would require proper planning, implementing, and supervision. There is no existing, other donor financed storage program at the village level that could be bought into. The FAO storage program is regionally oriented.

A proper project study and design for a local storage project is recommended for FY88 financing, pending review of the results of the Agricultural Feeder Roads Study on this subject.

USAID/Tanzania will need to prepare further, more detailed analyses of these potential projects at the PID stage. This will require more background work in the field, which can be started as soon as there are indications of approval in principle of the idea of a transport sector program. (The regional program is already moving on a Project Paper for TAZARA support.)

## CHAPTER FIVE

### TRANSPORT TARIFF POLICY

There is currently no national transportation tariff policy. Neither is there evidence of the awareness of the merits of having one. This chapter examines what is now done in the name of transportation tariff setting, why it is flawed, how it should be done, and ends by addressing the special subject of the transit traffic tariff.

#### PRESENT TRANSPORT TARIFFS

Tariffs are not presently set with regard to cost recovery, rather they are a political expedient for the purpose of subsidy by tariff to productive sectors of the Tanzanian and neighboring economies. Haul distances are long, yet pan-territorial tariffs are the norm. The overall costs for shipping copper on the TAZARA are lower than on any other route, and higher on fertilizer (11:16). The per annum growth of revenue yield on the TRC in December 1984 was 9%, compared to an average inflation rate of 11% (22:26). RETCO tariffs are set by a regional transport coordinating council (RTCC) in conjunction with the Ministry of Trade. The input from the RETCO management information reporting system is ignored. The last rate was set in October 1986 at 4.75 per ton-km for KAUDO. Despite recent inflation and the major devaluation, a new rate is not expected before July 1987. Current costs for intra-regional haulage, the *raison d'etre* for the RETCO, is over 8 shillings (25:42).

The road tolls are 50 and 100 shillings for light vehicles and trucks respectively and USD 3 and 6 for non-Tanzanian registry or international registry vehicles in the same classes. There is no indication of a load related fee. The tolls are collected by the Ministry of Finance at toll stations along main roads. The MOF presently provides no reports to the Road Maintenance division of the MCW (Ministry of Communications and Works). Neither do they use the weighbridge data of the MCW to develop tariffs based on road surface wear and tear costs (or road maintenance costs) caused by these vehicles (25:33).

The TZR charges were, until recently, stated in TShillings and Kwacha at a fixed exchange rate. When devaluation started in Zambia, the railway posted losses with every Kwacha payment as it was translated for entry into TShilling based accounts. Now the transit rates are stated in US dollars and are payable in US dollars, except for Zambia who switched to payment in Kwacha in 1983-84.

Currently, the TRC tariff is about 1/- per ton-kilometer on average. This translates into a tariff of about T.Shs. 1,250 for the Mwanza to Dar es Salaam route. Transit traffic, until July

1985, paid the same rate and in TShillings. In July 1985 the tariff for transit traffic was changed to hard currency, and for the same trip the tariff is USD 40 per ton, payable to an account in Belgium. In April 1987 the tariff will be revised to about T.Shs. 1,500-1,600 per ton for this trip; the transit rate will remain USD 40. The rationale for not changing the latter was that the exchange rate is currently 52 T.Shs. to the US dollar, and so they are being overcharged now (25:20).

### COST RECOVERY BASED TARIFFS

While it seems evident that there is no appreciation for cost-based tariffs among those setting tariffs, it is not fair to say that there is no pressure to correct the situation. One of the obligations under the MRC (Multisector Rehabilitation Credit) is the preparation of a review of the current and proposed future tariff structure to be accomplished by February 1987; and another is implementation of a revised, acceptable system for intra-regional trucking before the second MRC tranche is released, by the fiscal year 1987/88 which begins in July 1987 (29:6,35). This would indicate movement in the right direction, but certain signs of slippage are showing already. In June 1986 the World Bank determined that TRC needed a 40% rate increase and more internal control on their own response to inflation (22:26). The MRC requires a satisfactory increase to be effected before the 2nd tranche (29:35); yet the increase is not coming until April, and will be nil for transit traffic and only about 25% for domestic traffic, i.e. less than inflation.

The results of the tariff study, due in February, will be important. A shift by Tanzania to a cost-based recovery policy for tariffs will remove the main transport cross-subsidy distortions between modes and force better resource utilization. This may also drive up the cost of many goods, though some food crops should not be seriously affected, as they are now being transported by private sector truckers at unregulated prices. The new tariff structure should permit the parastatal transport companies to make a reasonable return on their equity and generate sufficient funds for stable financial growth. If they cannot compete on this basis, they should be dissolved or sold off to private investors who can profit from a monopoly situation. But most importantly a new cost based structure, properly compared with other nations' route tariffs, will lead to better commercial decision making by Tanzania on their transit tariffs.

### TRANSIT TARIFFS

Tanzania spends her scarce foreign exchange building a transportation infrastructure that benefits her neighbors perhaps more than it does Tanzania herself. Yet these neighbors pay very little for their usage, and until recently paid in soft currency. If Tanzania is to continue her 'corridor to the sea' role, and

she seems intent on so doing; a transit tariff structure must be set that serves two functions. Firstly, quite obviously, it must recover the cost of the services consumed, defined in long-term total cost, not short term marginal cost, terms. Secondly, and perhaps more importantly, it must cover risk. Tanzania is expected to make a major commitment to build a standby transit traffic capacity that can respond to the expected regional crisis, see Chapter Six. Not only has she no guarantee that this crisis will occur, but transport investments are lumpy and usually depreciated over 20 to 40 year horizons. To some extent, the transit tariff must reflect that fact that the standby capacity, if used, is unlikely to be needed for more than five years. Once the crisis ends, Tanzania will have to compete for regional traffic on normal commercial terms. An accelerated depreciation formula now, would permit more competitive tariffs when the monopoly ends.

Finally, the issue of hard currency payment of transit tariffs should be laid to rest. On average, the foreign exchange component of transport is over 75%. There is no reason why Tanzania should subsidize her neighbors, especially for foreign currency costs.

USAID could play a major role in stimulating a regional plan for tariffs, as part of a simplified regional transport documentation system. This problem is not presently being addressed by other donors or the SADCC countries and will present major future problems, especially under crisis conditions, as described in the following chapter.

## CHAPTER SIX

### TANZANIA AND SADCC

#### THE EVER PRESENT DANGER

The forecast of transport demand in Chapter Two is based on a political status quo in the region. Tanzania will fill an important role in the movement of goods for the front line states (FLS) and landlocked states; but there does not seem to be any unmanageable crisis in capacity in the medium term that current programs are not addressing. While a capacity squeeze of half a million tons by 1992 is forecast, the policy and institutional reforms now underway are expected to resolve this by the mid-1990's. The least expensive mechanism for increasing capacity--revision of work methods and increased productivity of assets--will begin to be translated into reality. But there is another reality that looms over the horizon.

The rapidly deteriorating relationship between the FLS and the RSA (Republic of South Africa) threatens to close the borders of RSA to FLS traffic in response to sanctions, threatened and imposed. The diminishing hope for any near term reliable access to Mozambique's ports has caused individual SADCC states, SATCC as a body, and the donor community to see Tanzania as the panacea. This places Tanzania in a very delicate spot, with necessarily mixed feeling to resolve. Her transport infrastructure is stretched to capacity and will remain so into the 1990's. Her institutional house is in transition away from the type of centralized control needed to address an international transit traffic crisis, and towards a decentralized structure that must stabilize before the communication linkages can be created to deal with such issues. Her staff is not fully trained and inexperienced, stretched to the limits of their spans of control and too few in number. And worst of all, the diversion of transport resources to transit traffic would retard the recovery and growth of Tanzania's own economy.

On the other hand, Tanzania is second to none in her commitment to fight apartheid. The transit traffic would yield enormous amounts of foreign exchange at monopoly tariffs. Some new customers might be gained after the situation is normalized ... provided she can deliver an acceptable level of service during the crisis.

The official pronouncement on Tanzania's response to the potential crisis is that Tanzania will turn over the entire capacity of the port of Dar es Salaam to the transit traffic; shipping all her own cargo through the ports of Tanga and Mtwara. This position is enlightening for two reasons. First, we see that Tanzania has every intention of acting the role of panacea. Secondly, we see that government has an inflated idea of the capacity of its infrastructure, which is not shared by the

planning staff in the MCW (Ministry of Communications and Works), which controls all modes of transport. (They were horrified at the pronouncement which came as a complete surprise to them.)

## PREDICTING DEMAND

In 1985, SATCC estimated that 5.4 million tons of freight to and from the SADCC countries and Zaire, transited the Republic of South Africa. Zimbabwe, with the largest share, has over 2 million tons of overseas import/export traffic, only 800,000 MT of which is handled on the Beira line (16:2). Minerals, including copper, are the largest flows and Zambia and Zaire sent nearly 500,000 tons/year of copper alone through the RSA ports in the 1980's with another 600-700,000 tons/year going through Tanzania.

Of the 5.4 million, the 500,000 tons from Zaire could be shipped north out of Matadi in an emergency. There would also be some substitution and reduction of imports (say 20%). The rest would have to be split between Mozambique, Angola and Tanzanian ports. If Angola railway stays out of commission, this leaves about 4 million tons of added freight to be divided between Mozambique and Tanzanian ports. Clearly Tanzania cannot handle all this additional freight, but the SADCC states may request her to exceed practical port and rail capacity by a large amount.

## ARE THERE ANY SOLUTIONS?

If work began today on rehabilitating the port of Mtwara back to its former level of 500,000 MT's, and constructing the new 7-berth deep water port at Mwambane Bay (8 km south of Tanga), she could not implement this solution before the mid to late 1990's. This presumes that the donor community speculates, and funds the projects as well as access routes to the ports. Mwambane Bay's projected cost in 1977 was USD 250 million. Access costs to Mtwara could easily be twice this amount (although road improvements to a good gravel standard might be a good stopgap measure). If all Dar's capacity were then devoted to transit, she could handle up to 2.8 million tons. Additional capacity could be provided on a crisis basis by adding a major lightering operation with separate freight handling equipment. (This could be used for double sided loading as well as to increase port productivity.)

The port of Tanga lightering operation could also be expanded on a crisis basis with more lighters and efficient cargo handling equipment. This is a major undertaking, and would have to involve TRC improvements as well.

In theory, the port of Mombasa could provide relief. Her physical capacity is presently 20.0 million tons, of which 2 million can be containerized. In 1985 Mombasa handled 6.3 million tons of which 1 million was containerized. She is only using 30%

of total capacity, and 50% of container capacity. Unfortunately, there is no practical way for the traffic to get to Mombasa. The roads are already in bad condition, and would not last long under the crisis movements. The route requires major rehabilitation (75 km from Tanga to Segera) and a new road from Tanga to the Kenya border (65 km). The road on the Kenyan side is presently paved to Mombasa, but not designed to carry the emergency traffic. A major road construction project to deal with these improvements would cost in the range of USD 100 million and take 2-3 years to carry out.

The only other link to Mombasa would be over the TAZARA to the old Kidatu station on the TRC, built by the Chinese when they used the TRC to ferry supplies from Mombasa to the TAZARA project. At Kidatu, a transfer station would have to be built as the rail gauges go from 1067 on the TAZARA to meter gauge on the TRC; not a major problem for containers, more difficult for general cargo. The next problem is the light rails, 50 lb and 55 lb, used on the Kidatu extension. The best, in fact probably only, locomotives that TRC has that would be suitable for the work on this line are the 73 Class 1,050 HP Indian locomotives that need to be repaired. Shifting them here would give 100,000 tons capacity for the transfers, 200,000 with a bit of signal improvement. To reach even 300,000 tons would require geometry changes and new rail and ballast. Even if these improvements were made, and more container wagons were provided to the TRC, the link to the Mombasa line on the Kenya side is reported in need of rehabilitation. This appears to be a major obstacle for using the rail link to Mombasa as a practical emergency route.

#### USAID ASSISTANCE TO TAZARA

All these solutions would involve the TAZARA. Originally designed for a capacity of 5 million tons, i.e., 2.5 million each way, it was equipped and dimensioned for 2 million tons when it opened in 1976. It has never carried more than 1.2 million (1978) and its average since then has been below one million tons per annum (14:13,16). A recent study financed by CIDA (11) sees it as a comfortable 1.5 million ton railway into the 1990's, until reorganization and operational changes begin to yield some capacity related benefits.

USAID has already expressed interest in supporting the repowering program for some of the Chinese locomotives, replacing the engines with American made General Electric engines. This is compatible with the current repowering program, but will do nothing to raise capacity above the 1.5 million mark. This regional assistance will be crucial to TAZARA meeting her obligations under normal traffic forecasts. This will only partly provide the stand-by crisis capacity needed to deliver the crisis traffic to the ports of Dar es Salaam, Tanga, Mtwara, or Mombasa.

## THE CRISIS MANAGEMENT UNIT

In truth, Tanzania has neither the resources or the institutional capacity to satisfy the crisis transit traffic. Furthermore, it seems unlikely that any donor group would finance the speculative cost of even 3.5 million additional tons of railway and port capacity. The most reasonable strategy will be to build up the capacity of the system gradually and try to achieve the institutional structure necessary to run efficiently at the 2 million ton level. If the crisis comes a strong crisis management team would have to take over the day to day running of the railway; and donors will have to send the rolling stock and signaling equipment on an emergency basis. The same strategy will be needed for the TRC in the hopes that it can ferry cargo to both Tanga and Mombasa.

The same strategy will not work for the port of Dar es Salaam. The Dar port cannot move to a three shift system with a major gain in capacity. This is because of the problems with the channel. So long as snips need wait for the day time high tide in order to travel in or out, sometimes only one per day, there will be a physical constraint on throughput that efficiency will not overcome. More serious thought to the dredging proposal is promised by the IBRD, later this decade. However, increased lightering capacity may be the answer to a short term crisis situation.

One of the most constructive steps that could be taken now, would be the establishment of a crisis management team in the planning unit of the MCW in charge of building a game plan for quick response to the crisis. As the plan crystallizes, the various donors should choose the modes they can competently staff and quickly mobilize support teams. Team members should know each other and have recent familiarity with the organization they will control. The staffing of the crisis management team might be an interesting and appropriate role for USAID's regional program to fund on an ongoing basis. Its corollary benefits could be the improved linkage of the regional transport systems, and simplification of border customs transfer formalities. An important step towards improved inter-regional trade.

ANNEX A  
TANZANIA ROAD SYSTEM VEHICLE TRAFFIC  
AVERAGE ANNUAL DAILY TRAFFIC (AADT)  
1985

| <u>ROAD</u>              | <u>PASSENGER VEHICLE</u> |                    |                     |                      |                                     | <u>INTER REGIONAL</u>      |                         | <u>INTRA REGIONAL</u>      |                        | <u>TOTAL</u> |
|--------------------------|--------------------------|--------------------|---------------------|----------------------|-------------------------------------|----------------------------|-------------------------|----------------------------|------------------------|--------------|
|                          | <u>PASS.<br/>CAR</u>     | <u>PICK<br/>UP</u> | <u>MINI<br/>BUS</u> | <u>LARGE<br/>BUS</u> | <u>TRUCK<br/>LESS<br/>THAN 5 T.</u> | <u>TRUCK<br/>OVER 5 T.</u> | <u>FULL-<br/>TRAIL.</u> | <u>TRUCK<br/>OVER 5 T.</u> | <u>FULL-<br/>TRAIL</u> |              |
| <u>HOROBORO-TANGA</u>    | <u>35</u>                | <u>42</u>          | <u>22</u>           | <u>43</u>            | <u>25</u>                           |                            |                         | <u>34</u>                  | <u>53</u>              | <u>254</u>   |
| <u>DAR ES SALAAM-</u>    |                          |                    |                     |                      |                                     |                            |                         |                            |                        |              |
| <u>KIBITI</u>            | <u>13</u>                | <u>58</u>          |                     | <u>9</u>             | <u>9</u>                            | <u>58</u>                  | <u>1</u>                | <u>38</u>                  |                        | <u>186</u>   |
| <u>MAKUYUNI-BABATI</u>   | <u>12</u>                | <u>103</u>         |                     | <u>17</u>            | <u>14</u>                           | <u>32</u>                  | <u>10</u>               | <u>26</u>                  |                        | <u>214</u>   |
| <u>BABATI-ARUSHA</u>     |                          |                    |                     |                      |                                     |                            |                         |                            |                        |              |
| <u>(DODOMA BRD)</u>      | <u>12</u>                | <u>103</u>         |                     | <u>17</u>            | <u>14</u>                           | <u>32</u>                  | <u>10</u>               | <u>26</u>                  |                        | <u>214</u>   |
| <u>DODOMA-IRINGA BDR</u> | <u>5</u>                 | <u>60</u>          | <u>3</u>            | <u>15</u>            | <u>7</u>                            |                            | <u>6</u>                | <u>50</u>                  |                        | <u>146</u>   |
| <u>DODOMA BRD-IRINGA</u> | <u>5</u>                 | <u>60</u>          | <u>3</u>            | <u>15</u>            | <u>7</u>                            |                            | <u>6</u>                | <u>50</u>                  |                        | <u>146</u>   |
| <u>BUKOBA-KYAKA</u>      | <u>3</u>                 | <u>23</u>          | <u>1</u>            | <u>9</u>             | <u>1</u>                            |                            |                         | <u>26</u>                  | <u>2</u>               | <u>65</u>    |
| <u>BUKOBA-BIHARAMULO</u> | <u>1</u>                 | <u>12</u>          |                     | <u>2</u>             | <u>1</u>                            |                            |                         | <u>14</u>                  | <u>2</u>               | <u>32</u>    |
| <u>MPANDA-LUICHE</u>     | <u>2</u>                 | <u>29</u>          | <u>1</u>            | <u>2</u>             |                                     | <u>19</u>                  | <u>3</u>                | <u>12</u>                  |                        | <u>68</u>    |
| <u>LUICHE-KASESLA</u>    |                          | <u>7</u>           |                     | <u>1</u>             |                                     |                            |                         | <u>8</u>                   |                        | <u>16</u>    |
| <u>DODOMA-SINGIDA</u>    |                          |                    |                     |                      |                                     |                            |                         |                            |                        |              |
| <u>(DODOMA BDR)</u>      | <u>13</u>                | <u>26</u>          | <u>2</u>            | <u>4</u>             | <u>1</u>                            | <u>39</u>                  | <u>20</u>               |                            |                        | <u>105</u>   |
| <u>ISSUWA-MANYONI</u>    | <u>1</u>                 | <u>30</u>          |                     | <u>6</u>             | <u>1</u>                            | <u>30</u>                  | <u>8</u>                |                            |                        | <u>76</u>    |
| <u>MANYONI-DODOMA</u>    |                          |                    |                     |                      |                                     |                            |                         |                            |                        |              |
| <u>BRD.</u>              | <u>1</u>                 | <u>30</u>          |                     | <u>6</u>             | <u>1</u>                            | <u>30</u>                  | <u>8</u>                |                            |                        | <u>76</u>    |
| <u>SINGIDA-TABORA</u>    |                          |                    |                     |                      |                                     |                            |                         |                            |                        |              |
| <u>BRD.</u>              | <u>4</u>                 | <u>32</u>          | <u>1</u>            | <u>4</u>             | <u>3</u>                            | <u>89</u>                  | <u>22</u>               |                            |                        | <u>155</u>   |
| <u>NZEKA-TABORA</u>      |                          |                    |                     |                      |                                     |                            |                         |                            |                        |              |
| <u>(SINGIDA BRD.)</u>    | <u>4</u>                 | <u>32</u>          | <u>1</u>            | <u>4</u>             | <u>3</u>                            | <u>89</u>                  | <u>22</u>               |                            |                        | <u>155</u>   |

ANNEX A (Cont'd)

| <u>ROAD</u>              | <u>PASSENGER VEHICLE</u> |                |                 |                  |                             | <u>INTER REGIONAL</u>  |                   | <u>INTRA REGIONAL</u>  |                   | <u>TOTAL</u> |
|--------------------------|--------------------------|----------------|-----------------|------------------|-----------------------------|------------------------|-------------------|------------------------|-------------------|--------------|
|                          | <u>PASS. CAR</u>         | <u>PICK UP</u> | <u>MINI BUS</u> | <u>LARGE BUS</u> | <u>TRUCK LESS THAN 5 T.</u> | <u>TRUCK OVER 5 T.</u> | <u>FULL-TRAIL</u> | <u>TRUCK OVER 5 T.</u> | <u>FULL-TRAIL</u> |              |
| <u>MACASI-MTWARA</u>     |                          |                |                 |                  |                             |                        |                   |                        |                   |              |
| <u>(RUVUMA BRD.)</u>     | <u>1</u>                 | <u>4</u>       |                 | <u>2</u>         | <u>1</u>                    |                        |                   | <u>10</u>              |                   | <u>18</u>    |
| <u>SONGEA-TUNDURU</u>    | <u>5</u>                 | <u>50</u>      | <u>1</u>        | <u>8</u>         | <u>1</u>                    |                        |                   | <u>52</u>              |                   | <u>117</u>   |
| <u>TABORA-NZECA</u>      | <u>1</u>                 | <u>50</u>      |                 | <u>9</u>         | <u>6</u>                    | <u>33</u>              | <u>8</u>          | <u>12</u>              |                   | <u>119</u>   |
| <u>SINGIDA-SINGIDA</u>   |                          |                |                 |                  |                             |                        |                   |                        |                   |              |
| <u>ARUSHA BRD</u>        | <u>1</u>                 | <u>10</u>      |                 | <u>6</u>         |                             | <u>42</u>              | <u>6</u>          | <u>34</u>              |                   | <u>107</u>   |
| <u>BABATI-SINGIDA</u>    |                          |                |                 |                  |                             |                        |                   |                        |                   |              |
| <u>ARUSHA BRD.</u>       | <u>1</u>                 | <u>18</u>      |                 | <u>6</u>         |                             | <u>42</u>              | <u>6</u>          | <u>34</u>              |                   | <u>107</u>   |
| <u>MAKUTINI-NGORON-</u>  |                          |                |                 |                  |                             |                        |                   |                        |                   |              |
| <u>GORO</u>              | <u>5</u>                 | <u>60</u>      | <u>1</u>        | <u>2</u>         | <u>4</u>                    |                        |                   | <u>26</u>              |                   | <u>99</u>    |
| <u>LITONI-MANDA</u>      | <u>1</u>                 | <u>13</u>      |                 | <u>1</u>         |                             |                        |                   | <u>11</u>              |                   | <u>26</u>    |
| <u>HIMO-TARAKEA</u>      | <u>29</u>                | <u>96</u>      | <u>2</u>        | <u>17</u>        | <u>12</u>                   |                        |                   | <u>58</u>              |                   | <u>202</u>   |
| <u>NZECA-TABORA</u>      |                          |                |                 |                  |                             |                        |                   |                        |                   |              |
| <u>SHYNIANGA BRD</u>     | <u>5</u>                 | <u>11</u>      | <u>2</u>        | <u>5</u>         | <u>2</u>                    | <u>35</u>              |                   |                        |                   | <u>60</u>    |
| <u>MBEYA-RUNGWA</u>      | <u>1</u>                 | <u>38</u>      |                 | <u>1</u>         |                             | <u>12</u>              |                   | <u>39</u>              |                   | <u>91</u>    |
| <u>SHYNIANGA-TABORA</u>  |                          |                |                 |                  |                             |                        |                   |                        |                   |              |
| <u>(SHYNIAN BRD)</u>     | <u>2</u>                 | <u>5</u>       | <u>1</u>        | <u>4</u>         |                             | <u>28</u>              |                   |                        |                   | <u>40</u>    |
| <u>TUNDUMA-RUKWA/BRD</u> | <u>7</u>                 | <u>23</u>      | <u>1</u>        | <u>4</u>         | <u>4</u>                    | <u>28</u>              | <u>5</u>          |                        |                   | <u>72</u>    |
| <u>LUICHE-MBEYA</u>      |                          |                |                 |                  |                             |                        |                   |                        |                   |              |
| <u>RUKWA BRD</u>         | <u>7</u>                 | <u>23</u>      | <u>1</u>        | <u>4</u>         | <u>4</u>                    | <u>28</u>              | <u>5</u>          |                        |                   | <u>72</u>    |
| <u>MIKUMI-MAHEGE</u>     | <u>1</u>                 | <u>33</u>      |                 | <u>4</u>         |                             |                        | <u>21</u>         | <u>1</u>               |                   | <u>60</u>    |
| <u>SONGEA-MBINGA</u>     | <u>2</u>                 | <u>38</u>      | <u>4</u>        | <u>3</u>         | <u>2</u>                    |                        | <u>32</u>         |                        |                   | <u>81</u>    |

## ANNEX A (Cont'd)

| ROAD                      | PASSENGER VEHICLE |            |             |              |                         | INTER REGIONAL     |                | INTRA REGIONAL     |                | TOTAL      |
|---------------------------|-------------------|------------|-------------|--------------|-------------------------|--------------------|----------------|--------------------|----------------|------------|
|                           | PASS.<br>CAR      | PICK<br>UP | MINI<br>BUS | LARGE<br>BUS | TRUCK LESS<br>THAN 5 T. | TRUCK<br>OVER 5 T. | FULL-<br>TRAIL | TRUCK<br>OVER 5 T. | FULL-<br>TRAIL |            |
| <u>MBITNGA-MBAMBA BAY</u> |                   | <u>18</u>  |             | <u>1</u>     | <u>2</u>                |                    |                | <u>7</u>           |                | <u>28</u>  |
| <u>ITIGI-MANYONI</u>      | <u>4</u>          | <u>4</u>   |             | <u>2</u>     | <u>1</u>                |                    |                | <u>15</u>          |                | <u>26</u>  |
| <u>DODOMA-ARUSHA BRD</u>  | <u>3</u>          | <u>10</u>  |             | <u>7</u>     |                         | <u>13</u>          | <u>1</u>       |                    |                | <u>34</u>  |
| <u>BIHARAMULO-LUSA-</u>   |                   |            |             |              |                         |                    |                |                    |                |            |
| <u>HUNGA</u>              | <u>4</u>          | <u>16</u>  |             | <u>2</u>     |                         | <u>46</u>          | <u>2</u>       |                    |                | <u>70</u>  |
| <u>KIGOMA-KIGOMA</u>      |                   |            |             |              |                         |                    |                |                    |                | <u>70</u>  |
| <u>JUNCTION</u>           | <u>1</u>          | <u>4</u>   | <u>2</u>    | <u>5</u>     |                         | <u>34</u>          |                |                    |                | <u>46</u>  |
| <u>BIHARAMULO-</u>        |                   |            |             |              |                         |                    |                |                    |                |            |
| <u>KAGERA MWANZA BRD</u>  | <u>2</u>          | <u>45</u>  |             | <u>12</u>    | <u>3</u>                |                    | <u>19</u>      | <u>91</u>          |                | <u>172</u> |
| <u>GEITA-MWANZA</u>       |                   |            |             |              |                         |                    |                |                    |                |            |
| <u>(KAGERA BRD)</u>       | <u>2</u>          | <u>45</u>  |             | <u>12</u>    | <u>3</u>                |                    | <u>19</u>      | <u>91</u>          |                | <u>172</u> |
| <u>GEITA-USAGARA</u>      | <u>2</u>          | <u>45</u>  |             | <u>12</u>    | <u>3</u>                |                    | <u>19</u>      | <u>91</u>          |                | <u>172</u> |
| <u>MAKUTANO-</u>          |                   |            |             |              |                         |                    |                |                    |                |            |
| <u>SIRARI (KENYA BRD)</u> | <u>9</u>          | <u>77</u>  |             | <u>12</u>    | <u>2</u>                |                    |                | <u>32</u>          |                | <u>132</u> |
| <u>USAGARA-SHINYANGA</u>  |                   |            |             |              |                         |                    |                |                    |                |            |
| <u>(MWANZA BRD)</u>       | <u>2</u>          | <u>56</u>  |             | <u>15</u>    | <u>1</u>                | <u>47</u>          | <u>3</u>       |                    |                | <u>124</u> |
| <u>IPOLE-RUNGWA</u>       | <u>1</u>          | <u>11</u>  |             | <u>2</u>     |                         | <u>7</u>           |                | <u>8</u>           |                | <u>29</u>  |
| <u>TABORA-IPOLE</u>       | <u>1</u>          | <u>13</u>  | <u>2</u>    | <u>2</u>     |                         | <u>13</u>          |                | <u>10</u>          |                | <u>41</u>  |
| <u>SAME-KISIWANI</u>      |                   |            |             |              |                         |                    |                |                    |                |            |
| <u>MKOMAZI</u>            | <u>3</u>          | <u>8</u>   |             | <u>4</u>     |                         |                    |                | <u>19</u>          |                | <u>34</u>  |
| <u>SHINYANGA-MWANZA</u>   |                   |            |             |              |                         |                    |                |                    |                |            |
| <u>BRD</u>                | <u>2</u>          | <u>45</u>  |             | <u>12</u>    | <u>3</u>                |                    | <u>19</u>      | <u>91</u>          |                | <u>172</u> |

## ANNEX A (Cont.'d)

| <u>ROAD</u>             | <u>PASSENGER VEHICLE</u> |                    |                     |                      |                                 | <u>INTER REGIONAL</u>      |                        | <u>INTRA REGIONAL</u>      |                        | <u>TOTAL</u> |
|-------------------------|--------------------------|--------------------|---------------------|----------------------|---------------------------------|----------------------------|------------------------|----------------------------|------------------------|--------------|
|                         | <u>PASS<br/>CAR</u>      | <u>PICK<br/>UP</u> | <u>MINI<br/>BUS</u> | <u>LARGE<br/>BUS</u> | <u>TRUCK LESS<br/>THAN 5 T.</u> | <u>TRUCK<br/>OVER 5 T.</u> | <u>FULL-<br/>TRAIL</u> | <u>TRUCK<br/>OVER 5 T.</u> | <u>FULL-<br/>TRAIL</u> |              |
| <u>USAGARA-MWANZA</u>   | <u>2</u>                 | <u>45</u>          |                     | <u>12</u>            | <u>3</u>                        |                            | <u>19</u>              | <u>91</u>                  |                        | <u>172</u>   |
| <u>SINGIDA-ISSUNA</u>   | <u>1</u>                 | <u>30</u>          |                     | <u>6</u>             | <u>1</u>                        | <u>30</u>                  | <u>8</u>               |                            |                        | <u>76</u>    |
| <u>KOROGWE-MKOMAZI</u>  | <u>13</u>                | <u>42</u>          | <u>1</u>            | <u>25</u>            | <u>2</u>                        | <u>67</u>                  | <u>26</u>              |                            |                        | <u>174</u>   |
| <u>SEGERA-KOROGWE</u>   | <u>13</u>                | <u>42</u>          | <u>1</u>            | <u>23</u>            | <u>2</u>                        | <u>67</u>                  | <u>26</u>              |                            |                        | <u>174</u>   |
| <u>LUSAHUNGA-NIARA</u>  |                          |                    |                     |                      |                                 |                            |                        |                            |                        |              |
| <u>MAZI-KIGOMA BRD</u>  | <u>1</u>                 | <u>9</u>           |                     | <u>1</u>             | <u>1</u>                        | <u>43</u>                  |                        |                            |                        | <u>54</u>    |
| <u>KAGERA-KIGOMA</u>    | <u>1</u>                 | <u>28</u>          |                     |                      |                                 | <u>32</u>                  |                        |                            |                        | <u>61</u>    |
| <u>KIGOMA-UVINZA</u>    | <u>1</u>                 | <u>13</u>          |                     | <u>1</u>             |                                 |                            | <u>1</u>               | <u>14</u>                  |                        | <u>30</u>    |
| <u>NYAKAHURA-NZAZA</u>  | <u>7</u>                 | <u>18</u>          |                     | <u>1</u>             |                                 |                            |                        | <u>31</u>                  |                        | <u>65</u>    |
| <u>MIKUMI-MOROGORO</u>  |                          |                    |                     |                      |                                 |                            |                        |                            |                        |              |
| <u>(IRINGA BRD)</u>     | <u>17</u>                | <u>61</u>          | <u>2</u>            | <u>16</u>            | <u>3</u>                        | <u>91</u>                  | <u>6</u>               |                            |                        | <u>180</u>   |
| <u>MOROGORO-(IRINGA</u> |                          |                    |                     |                      |                                 |                            |                        |                            |                        |              |
| <u>BRD )-IRINGA</u>     | <u>17</u>                | <u>61</u>          | <u>2</u>            | <u>16</u>            | <u>3</u>                        | <u>91</u>                  | <u>6</u>               |                            |                        | <u>180</u>   |
| <u>IRINGA-MAKAMBAKO</u> | <u>28</u>                | <u>81</u>          | <u>4</u>            | <u>32</u>            | <u>2</u>                        | <u>100</u>                 | <u>18</u>              |                            |                        | <u>265</u>   |
| <u>MKOMAZI-TAVETA</u>   |                          |                    |                     |                      |                                 |                            |                        |                            |                        |              |
| <u>JUNCTION</u>         | <u>74</u>                | <u>74</u>          | <u>6</u>            | <u>58</u>            | <u>2</u>                        |                            | <u>78</u>              |                            |                        | <u>370</u>   |

Source:

## ANNEX B

TANZANIA GOODS MOVEMENT ON SELECTED ROADS  
(500 TONS OR MORE)

| O-D<br>NO. | ORIGIN<br>NAME | DESTINATION<br>NAME | GOODS ('000 tons) |        |
|------------|----------------|---------------------|-------------------|--------|
|            |                |                     | 1984              | 1985   |
| 1-17       | Mkuranga       | DarEsSalaam         | 1579.4            | 3039.9 |
| 1-21       | Mkuranga       | Kisiji              | 1325.9            | 1791.6 |
| 4-34       | Shinyanga      | Nzega               | 390.5             | 804.8  |
| 4-38       | Shinyanga      | Usagara             | 243.4             | 519.8  |
| 8-43       | Moshi          | Himo                | 450.5             | 536.0  |
| 11-26      | Mbeya          | Makambako           | 226.2             | 525.9  |
| 12-26      | Iringa         | Makambako           | 298.3             | 749.5  |
| 12-28      | Iringa         | Mikumi              | 383.2             | 968.2  |
| 15-32      | Singida        | Issuma              | 475.6             | 1215.0 |
| 15-34      | Singida        | Nzega               | 498.7             | 1225.1 |
| 16-18      | Dodoma         | Morogoro            | 512.9             | 1291.8 |
| 16-55      | Dodoma         | Manyoni             | 465.5             | 1193.7 |
| 17-47      | DarEsSalaam    | Chalinzi            | 1442.6            | 2993.7 |
| 18-28      | Morogoro       | Mikumi              | 413.2             | 968.6  |
| 18-47      | Morogoro       | Chalinzi            | 968.3             | 2505.7 |
| 32-55      | Issuma         | Manyoni             | 465.5             | 1193.7 |
| 43-45      | Himo           | Segeera             | 350.5             | 536.0  |
| 45-47      | Segeera        | Chalinzi            | 563.7             | 791.8  |

Source: Government of Tanzania, Ministry of Communication and Works.

## ANNEX C

TANZANIA RAILWAYS CORPORATION (TRC) COMMODITY FLOWS  
 (1000 TONS OR MORE)  
 FIRST THREE QUARTERS 1985

| ORIGIN | DEST. | TON-KM      | TONNAGE  | DIST-KM |
|--------|-------|-------------|----------|---------|
| 088    | 700   |             | 26245.00 | 0.00    |
| 204    | 700   | 3375700.00  | 6275.00  | 537.96  |
| 204    | 701   | 2382420.00  | 4428.00  | 538.04  |
| 204    | 788   | 2392873.00  | 1486.00  | 1610.28 |
| 204    | 801   | 478257.00   | 1445.00  | 330.97  |
| 407    | 788   |             | 8885.00  | 0.00    |
| 426    | 801   | 3420583.00  | 2155.00  | 1587.32 |
| 427    | 700   | 2156930.00  | 1512.00  | 1426.54 |
| 429    | 701   |             | 1467.00  | 0.00    |
| 429    | 788   |             | 2384.00  | 0.00    |
| 429    | 801   |             | 5157.00  | 0.00    |
| 467    | 700   |             | 1399.00  | 0.00    |
| 496    | 700   |             | 2002.00  | 0.00    |
| 700    | 088   |             | 2052.00  | 0.00    |
| 700    | 204   | 1310490.00  | 2436.00  | 537.97  |
| 700    | 407   |             | 7129.00  | 0.00    |
| 700    | 427   | 3244337.00  | 2274.00  | 1426.71 |
| 700    | 429   |             | 1651.00  | 0.00    |
| 700    | 723   | 490692.00   | 2441.00  | 201.02  |
| 700    | 736   | 1567736.00  | 3371.00  | 465.07  |
| 700    | 743   | 686687.00   | 1154.00  | 595.05  |
| 700    | 756   | 6812746.00  | 8015.00  | 850.00  |
| 700    | 767   | 1533507.00  | 1346.00  | 1139.31 |
| 700    | 776   | 1345213.00  | 1430.00  | 940.71  |
| 700    | 708   | 14654301.00 | 13983.00 | 1048.01 |
| 700    | 788   | 60755189.00 | 49637.00 | 1223.99 |
| 700    | 790   | 9720931.00  | 9093.00  | 1069.06 |
| 700    | 832   | 3154587.00  | 5653.00  | 558.04  |
| 700    | 837   | 4366828.00  | 6781.00  | 643.98  |
| 700    | 853   | 1727819.00  | 1461.00  | 1182.63 |
| 700    | 900   | 72191572.00 | 57615.00 | 1253.00 |
| 701    | 407   |             | 1605.00  | 0.00    |
| 701    | 426   | 3789126.00  | 2689.00  | 1409.12 |
| 701    | 427   | 6040521.00  | 4233.00  | 1427.01 |
| 701    | 429   |             | 3297.00  | 0.00    |
| 701    | 736   | 778868.00   | 1675.00  | 465.00  |
| 701    | 756   | 6560558.00  | 7718.00  | 850.03  |
| 701    | 767   | 1299071.00  | 1139.00  | 1140.54 |
| 701    | 773   | 8187267.00  | 6534.00  | 1253.03 |
| 701    | 780   | 7521445.00  | 7177.00  | 1047.99 |
| 701    | 788   | 28027252.00 | 22898.00 | 1224.00 |
| 701    | 790   | 1195685.00  | 1119.00  | 1068.53 |
| 701    | 801   | 711827.00   | 2112.00  | 337.04  |
| 701    | 832   | 3398137.00  | 6090.00  | 557.99  |
| 701    | 837   | 3326516.00  | 5165.00  | 644.05  |
| 701    | 853   | 1181947.00  | 999.00   | 1183.13 |
| 723    | 700   | 617028.00   | 3070.00  | 200.99  |
| 723    | 701   | 638523.00   | 3177.00  | 200.98  |
| 723    | 756   | 2184289.00  | 3371.00  | 647.96  |
| 723    | 767   | 1140048.00  | 1218.00  | 936.00  |
| 723    | 788   | 1888241.00  | 1837.00  | 1027.89 |

67

## ANNEX C (con't)

| ORIGIN | DEST. | TON-KM      | TONNAGE  | DIST-K  |
|--------|-------|-------------|----------|---------|
| 736    | 701   | 632055.00   | 1359.00  | 465.09  |
| 743    | 701   | 565146.00   | 950.00   | 594.89  |
| 745    | 723   | 1041600.00  | 2400.00  | 434.00  |
| 756    | 791   | 1073894.00  | 1263.00  | 850.27  |
| 756    | 723   | 3313891.00  | 5114.00  | 648.00  |
| 756    | 760   | 109519.00   | 1204.00  | 90.96   |
| 756    | 773   | 413311.00   | 1026.00  | 402.84  |
| 756    | 788   | 1322763.00  | 3490.00  | 379.02  |
| 758    | 723   | 10173339.00 | 1481.00  | 6869.24 |
| 760    | 723   | 2972319.00  | 4022.00  | 739.02  |
| 767    | 900   | 361318.00   | 3198.00  | 112.98  |
| 777    | 700   | 1289996.00  | 1314.00  | 981.73  |
| 780    | 700   | 8371800.00  | 7988.00  | 1048.05 |
| 782    | 700   | 9627605.00  | 8664.00  | 1111.22 |
| 782    | 788   | 305155.00   | 2586.00  | 118.00  |
| 783    | 700   | 5941742.00  | 5153.00  | 1153.06 |
| 783    | 701   | 1194349.00  | 1036.00  | 1152.85 |
| 788    | 407   |             | 1744.00  | 0.00    |
| 788    | 426   | 248676.00   | 1382.00  | 179.94  |
| 788    | 427   | 591916.00   | 2989.00  | 198.03  |
| 788    | 429   |             | 2575.00  | 0.00    |
| 788    | 700   | 5226479.00  | 4270.00  | 1224.00 |
| 788    | 701   | 10307839.00 | 8421.00  | 1224.06 |
| 788    | 780   | 546872.00   | 3021.00  | 181.02  |
| 800    | 788   |             | 1445.00  | 0.00    |
| 800    | 832   |             | 3002.00  | 0.00    |
| 800    | 837   |             | 3190.00  | 0.00    |
| 801    | 736   | 913939.00   | 1419.00  | 644.07  |
| 801    | 756   | 1049096.00  | 1019.00  | 1029.53 |
| 801    | 788   | 2808553.00  | 1996.00  | 1407.09 |
| 801    | 832   | 2154511.00  | 6138.00  | 351.01  |
| 801    | 837   | 1853004.00  | 4240.00  | 437.03  |
| 804    | 427   | 1856697.00  | 1167.00  | 1591.00 |
| 804    | 429   |             | 1125.00  | 0.00    |
| 804    | 736   | 1011780.00  | 1606.00  | 630.00  |
| 804    | 744   | 1672505.00  | 1201.00  | 1392.59 |
| 804    | 832   | 2078686.00  | 6168.00  | 337.01  |
| 804    | 837   | 2317219.00  | 5478.00  | 423.00  |
| 819    | 701   | 766475.00   | 2288.00  | 335.00  |
| 825    | 884   | 643048.00   | 1148.00  | 560.15  |
| 832    | 700   | 1047509.00  | 1877.00  | 558.08  |
| 832    | 701   | 1808658.00  | 3241.00  | 558.06  |
| 832    | 788   | 1863460.00  | 1143.00  | 1630.32 |
| 832    | 800   | 4406373.00  | 12554.00 | 350.99  |
| 837    | 788   | 1959622.00  | 1143.00  | 1714.45 |
| 837    | 800   | 826354.00   | 1891.00  | 436.99  |
| 837    | 801   | 8159916.00  | 18673.00 | 436.99  |
| 837    | 832   | 154648.00   | 1798.00  | 86.01   |
| 853    | 701   | 3142767.00  | 2657.00  | 1182.83 |
| 853    | 723   | 1064986.00  | 1089.00  | 977.95  |
| 853    | 756   | 442479.00   | 1329.00  | 332.94  |
| 882    | 832   | 5814528.00  | 7561.00  | 769.02  |
| 900    | 700   | 80910593.00 | 64573.00 | 1253.01 |
| 913    | 816   | 3419641.00  | 4523.00  | 756.06  |



## ANNEX C (Cont'd)

KEY TO ORIGIN DESTINATION CODES  
(continued)

| O-D<br>NUMBER | ORIGIN<br>NAME    | DESTINATION<br>NAME |
|---------------|-------------------|---------------------|
| 701 837       | Ilala             | Arusha              |
| 701 853       | Ilala             | Mpanda              |
| 723 700       | Morogoro          | DarEsSalaam         |
| 723 701       | Morogoro          | Ilala               |
| 723 756       | Morogoro          | Tabora              |
| 723 767       | Morogoro          | Uvinza              |
| 723 788       | Morogoro          | Mwanza South Port   |
| 736 701       | Dodoma            | Ilala               |
| 743 701       | Manyoni           | Ilala               |
| 745 723       | Itigi             | Morogoro            |
| 756 701       | Tabora            | Ilala               |
| 756 723       | Tabora            | Morogoro            |
| 756 760       | Tabora            | N.A.                |
| 756 773       | Tabora            | Kigoma              |
| 756 788       | Tabora            | Mwanza South Port   |
| 758 723       | N.A.              | Morogoro            |
| 760 723       | N.A.              | Morogoro            |
| 767 900       | Uvinza            | Kigoma              |
| 777 700       | Isaka             | DarEsSalaam         |
| 780 700       | Tanga             | DarEsSalaam         |
| 782 700       | Tanga             | DarEsSalaam         |
| 782 788       | Tanga             | Mwanza South Port   |
| 783 700       | Bukwimba          | DarEsSalaam         |
| 783 701       | Fela              | Ilala               |
| 788 407       | Mwanza South Port | N.A.                |
| 788 427       | Mwanza South Port | Musoma              |
| 788 429       | Mwanza South Port | Bukoba              |
| 788 700       | Mwanza South Port | DarEsSalaam         |
| 788 701       | Mwanza South Port | Ilala               |
| 788 780       | Mwanza South Port | Tanga               |
| 800 788       | Tanga Wharf       | Mwanza South Port   |
| 800 832       | Tanga Wharf       | Moshi               |
| 800 837       | Tanga Wharf       | Arusha              |
| 801 736       | Tanga             | Dodoma              |
| 801 756       | Tanga             | Tabora              |

## ANNEX D

TANZANIA  
SIXTH HIGHWAY (REHABILITATION) PROJECT  
STAFF APPRAISAL REPORT  
Transport Sector Investment Program (FY1986-88)

|   | <u>TShs. (Million)</u> |                |              | <u>Financing<br/>(Foreign)</u> |
|---|------------------------|----------------|--------------|--------------------------------|
|   | <u>Local</u>           | <u>Foreign</u> | <u>Total</u> |                                |
| <u>Roads</u>                                  |                        |                |              |                                |
| TANZAM Highway                                | 245                    | 510            | 755          | ] IDA/Various                  |
| Gravel Roads                                  | 82                     | 122            | 204          |                                |
| Nyanguge-Musoma                               | 44                     | 93             | 137          | EEC                            |
| Songea-Makambako                              | 81                     | 246            | 327          | ODA                            |
| Chalinze-Mukumbara                            | 160                    | 340            | 500          | FRG                            |
| Ribiti-Lindi                                  | 150                    | 50             | 200          | -                              |
| Trunk Road Maintenance                        | 16                     | 150            | 166          | IDA                            |
| Mufundi Sugar Mill Access Road                | 105                    | 62             | 167          | EEC                            |
| Arusha-Magugu                                 | 130                    | 530            | 660          | Italy                          |
| Hombo-Lushoto                                 | 0                      | 26             | 26           | FRG                            |
| Lusahunga-Bukombe                             | 100                    | 256            | 356          | EEC                            |
| TANZAM Highway (Morogoro)                     | 0                      | 80             | 80           | Japan                          |
| Kilombero Ferry                               | -                      | 66             | 66           | Switzerland                    |
| Others (Studies, etc.)                        | 50                     | 106            | 156          | IDA/Various                    |
| Subtotal                                      | <u>1163</u>            | <u>2637</u>    | <u>3800</u>  |                                |
| <u>Road Transport (Trucking)</u>              | 60                     | 330            | 390          |                                |
| <u>Tanzania Railways Corporation</u>          |                        |                |              |                                |
| Quarry Equipment                              | 0                      | 100            | 100          | Canada                         |
| Telecommunications                            | 0                      | 130            | 130          | FRG/Canada                     |
| Machinery/Equipment                           | 0                      | 48             | 48           |                                |
| Morogoro Railway Workshop                     | 0                      | 49             | 49           | Canada                         |
| Technical Assistance (Marine)                 | 0                      | 20             | 20           | Denmark                        |
| Wagons  | 0                      | 84             | 84           | Various                        |
| Kigoma Port                                   | 0                      | 73             | 73           | EEC                            |
| Track (Bridge Overhaul)                       | 0                      | 66             | 66           | Canada                         |
| Locomotive Spares                             | 0                      | 122            | 122          | Canada                         |
| Rolling Stock Spares                          | 47                     | 0              | 47           | -                              |
| New Locomotives<br>(12 Mainline, 24 Shunting) | 0                      | 560            | 560          | -                              |
| Others  | 0                      | 49             | 49           | -                              |
| Subtotal                                      | <u>47</u>              | <u>1300</u>    | <u>1347</u>  |                                |

Tanzania/Zambia Railway Authority

|  |     |     |     |         |
|--|-----|-----|-----|---------|
| Wagons, Track Maintenance Equipment,<br>and Workshop Equipment | 100 | 235 | 335 | Various |
|--|-----|-----|-----|---------|

Tanzania Harbors Authority

|  |     |     |      |  |
|--|-----|-----|------|--|
| Ship Repair Facilities                 | 10  | 35  | 45   | Norway   |
| Dar. Port Rehabilitation <sup>2/</sup> | 360 | 647 | 1007 | IDA/Norway/<br>Netherlands/<br>Finland/Denmark |

|           |            |            |             |  |
|-----------|------------|------------|-------------|--|
| Tacoshili | 0          | 1          | 1           |  |
| Subtotal  | <u>370</u> | <u>683</u> | <u>1053</u> |  |

Aviation

|          |            |            |            |  |
|----------|------------|------------|------------|--|
| Airports | <u>144</u> | <u>170</u> | <u>264</u> |  |
|----------|------------|------------|------------|--|

|                 |      |      |      |  |
|-----------------|------|------|------|--|
| Total Transport | 1884 | 5302 | 7186 |  |
|-----------------|------|------|------|--|

Source: Ministry of Communications and Works.

1/ Feasibility Study Underway.

2/ Credit No. 1536-TA, 1984.

## ANNEX E

### ROAD MAINTENANCE ORGANIZATION (DODOMA EXAMPLE)

Road maintenance, after independence, was performed by road crews located in road camps and supervised at the local and the regional levels. The World Bank projects begun in 1964 helped develop and train these maintenance units. In the late 1970's government moved towards centralization; and these maintenance camps were disbanded and discontinued. As a result, all institutional development and staff training were lost. In fact, when a Bank Audit Report was subsequently prepared on these projects, they considered the institutional development and staff training aspects of these projects to have been unsuccessful (28:8).

Government has decided that centralization has not worked and is now decentralizing. Maintenance of regional roads has been returned to the Regional Engineer, who reports to the Regional Government under the Prime Minister's Office in Dodoma. For technical support he still looks to the Ministry of Works in Dar es Salaam. The Regional Engineer is meant to supervise 4 - 5 District Engineers, responsible for the district and feeder roads. However District Engineers report to the district development councils (DDC) from whom they get their budget. The DDC is under the Ministry of Local Government. Figure 1 attempts to present these institutional relationships graphically.

To get a clearer picture of the process the Consultant met with the Regional Engineer (RE) for Dodoma, and the Dodoma(V) District Road Inspector. There are 1416 km in the Dodoma region: 560, trunk; 303, regional; 1047, district; and 2506, feeder. The Ministry of Works regional office (COMWORKS) has a Trunk Road Maintenance unit which is supposed to maintain the 560 km of trunk roads. They are supervised by the Regional Engineer. The TRM has 4 graders and assorted equipment, only half of which is operational.

The RE has a trainee engineer under him to help run the maintenance of the 303 km of gravel roads for which the RE's office is directly responsible. For this work he has 2 graders, which he shares with the districts in the dry season (districts appear to have no equipment), and adds to the TRM force in the rainy season to help keep the trunk roads passable. While he reports no problem in receiving his full budget allocation, his program is based on only 10 to 15 km of regravelling per year. He has no traffic data to see if regravelling every 20 years is adequate, but knows that it isn't. His budget was formerly increased 5-10% per year; however, the extraordinary shift in the exchange rate has increased his 1985/86 budget of TShs 7 Million to TShs 21 million for 1986/87. One assumes that the negotiations surrounding the 6th Highway project also influenced the allocation.

At the district, the District Road Inspector discussed his 1506 km sphere of responsibility. He has 15 permanent staff situated at 15 locations; each man responsible for 20 km per year of earth roads. Underemployed farmers are hired as casual laborers to assist each site camp, with the expected seasonal shortages. No help is received from the village self-help programs. Only hand tools are utilized. The district has no equipment at all. The grader from regional was provided once during the last three years for a few weeks. Also he felt a tipper would be useful, as the 1506 km are meant to include 312 km of gravel roads. There is no pick-up or other vehicle for him to supervise his subordinates.

His budget bears no relationship to his funding. In 1985/86 the budget for maintenance and equipment was TShs 6 million, or 4000 per kilometer. In fact the unit received no equipment and only TShs 900,000. In 1986/87 the budget was increased to TShs 8,710,000 for equipment and maintenance. For the first six months of the fiscal year no equipment had been received, and the funds at his disposal were only TShs 250,000. It appears the funds reach the DDC, but the financial controller is often directed to reallocate the funds.

Clearly, the financial and institutional situation makes the process of maintenance nearly impossible. It is not surprising that some trunk roads have become impassable. In the rainy season and no better than poor earth roads in the dry season.



MINISTRY OF COMMUNICATIONS & WORKSROAD MAINTENANCE SECTIONINPUTS REQUIRED FOR IMPROVEMENT OF ROAD MAINTENANCECAPABILITY

The country's total trunk network of about 10,000 km. is poorly maintained because of lack of sufficient resources mainly plants, equipment and materials. Although the country, through World Bank assistance, imported several items of plants, vehicles and equipments in the 4th and 5th Highway Projects, most of these are now unserviceable due to lack of the necessary spares and inputs like tyres, tubes, batteries, cutting edges, etc.

About 60% of the available plants, vehicles and equipments can be repaired if the necessary spare parts and inputs are made available. There is also the need for additional plants, vehicles and equipments to have appreciable impact on the Ministry's road maintenance capability. These shall have to be provided together with the necessary spare parts and accessories. The lack of important materials for road maintenance is also a serious problem affecting maintenance of roads. For the past three years the country has not been able to import bitumen because of lack of foreign exchange. The condition of the bitumen roads (about 30% of the trunk road network) has deteriorated extensively. Other materials such as explosives, road paints, corrugated metal, culvert are also required.

A list of the plants, vehicles, equipments and materials required for improvement maintenance capability is summarised in the table below:

ANNEX F (CONT'D)  
LIST OF PLANTS, EQUIPMENT AND MATERIALS  
REQUIRED FOR IMPROVED ROAD MAINTENANCE  
1986 - 89 REQUIREMENTS

| ITEM DESCRIPTION                          | UNIT | Q U A N T I T Y   |                |                        | APPROX.<br>UNIT PRICE<br>(US\$) | R E M A R K S  |
|---|------|-------------------|----------------|------------------------|---------------------------------|--|
|   |      | Total<br>Required | Avail-<br>able | Additional<br>Required |                                 |  |
| Motorcycle 125CC                          | Ea.  | 125               | -              | 125                    | 2,000                           | For use by foremen for effective supervision of road maintenance works - 80+ |
| Bicycle                                   | Ea.  | 700               | -              | 700                    | 200                             | For use by headmen for supervision of road maintenance works - 20kms         |
| Pick Up 4WD, 1 ton                        | Ea.  | 96                | 60             | 36                     | 8,000                           | For use by engineers and technicians for supervision of road maintenance     |
| Tipper trucks, 7 ton                      | Ea.  | 325               | 229            | 96                     | 32,000                          | For regravelling, rehabilitation and resealing works                         |
| LWB trucks 10 ton                         | Ea.  | 20                | 8              | 12                     | 40,000                          | For transport  |
| Motorgraders                              | Ea.  | 52                | 40             | 12                     | 120,000                         | For routine & periodic maintenance   |
| Bulldozer D6                              | Ea.  | 19                | 15             | 4                      | 150,000                         | For periodic maintenance   |
| Wheel loaders                             | Ea.  | 24                | 15             | 9                      | 60,000                          | For periodic maintenance   |
| Mobile Crusher Plants                     | Ea.  | 3                 | 1              | 2                      | 500,000                         | For production of aggregates for resealing works                             |
| Bitumen Heater/Sprayer<br>500 - 1000 Ltr. | Ea.  | 28                | 16             | 12                     | 20,000                          | For resealing  |
| Spot-mixer                                | Ea.  | 18                | 6              | 12                     | 10,000                          | For patchworks   |
| Chipping spreader                         | Ea.  | 10                | 6              | 4                      | 20,000                          | For resealing  |
| Vibro-Rollers 3/4 Ton                     | Ea.  | 20                | 7              | 12                     | 6,000                           | For patchwork  |
| Compactors 5 ton                          | Ea.  | 40                | 18             | 22                     | 150,000                         | For periodic maintenance   |
| Low loader 35 ton                         | Ea.  | 7                 | 4              | 3                      | 100,000                         |  |

## ANNEX F (CONT'D)

- 2 -

SPARE PARTS & ACCESSORIES

|  |   |  |  |  |  |   |
|--|---|--|--|--|--|---|
| Spare parts for various items<br>of plant and equipments | - |  |  |  |  | Quantity and specifications to be<br>determined |
| Tyres, tubes, batteries,<br>cutting edges, etc.          |   |  |  |  |  | "   |

MATERIALS

|                         |       |        |   |        |       |   |
|-------------------------|-------|--------|---|--------|-------|---|
| Bitumen 80/100 pen.     | tonne | 10,000 | - | 10,000 | 280   | For resealing and patchwork                     |
| Bitumen MC.1            | tonne | 3,000  | - | 3,000  | 390   | " " " "   |
| Explosives              | tonne | 15     | - | 15     | 6,000 | For quarry works                                |
| Paints, road signs etc. | -     | -      | - | -      | -     | Quantity and specifications to be<br>determined |

66

## MINISTRY OF COMWORKS

ECONOMIC RECOVERY PROGRAM REQUIREMENTS FOR TRUNK  
ROAD MAINTENANCE 1987/88 (PRIORITY LIST)

1. Spare parts for Plant, Equipment and Vehicles
2. Cutting edges for graders and bulldozers (caterpillar)
3. Tyres, tubes, filters, batteries fast moving mechanical repair components, jack hammers and cutting bits.
4. Drainage pipes
  - (a) 100m pipe Arches 2m x 1.5m
  - (b) 4,000m of 0.9m  $\emptyset$  pipes
  - (c) 4,000m of 1.2m  $\emptyset$  pipes
  - (d) 1,000m of 1.8m  $\emptyset$  pipes
5. Bitumen - pen grader 80/100 - 4,000 MT.  
pen grader MC.1 - 1,000 MT.
6. Explosives - 10 MT.
7. Concrete Vibrator - 20 NO.
8. Concrete Mixers (10/7) - 20 NO.
9. Mini-Dumpers - 20 NO.
10. Drawing Office Equipment, e.g., printing papers, tracing papers, drawing boards, design manuals, drawing pens.
11. Training of Senior Engineers (short courses, seminars).
12. Central Material Lab. (Chemical reagents and testing equipment spares).

## ANNEX G

### Additional Discussion on Contract Maintenance

#### Program Benefits

The benefits of this type of program can be estimated through the vehicle operating costs of the seven-ton trucks used for intra-regional trips which have been calculated at between 5.4 and 8.2 T.Shs. per ton-kilometer, or about 15.2 to 22.8 per kilometer (assuming a 40% average load factor). At unofficial (parallel market) prices, the cost per kilometer goes up by about 63%, 24.7 to 37.2 T.Shs. per kilometer (6:aIV, 23:MIR6.1). Improvement of the road surface could halve the cost of vehicle maintenance and repair, reduction in repair and maintenance time would translate into higher availability and higher annual mileage. These two simple savings translate into a reduction of the costs from 24.7 - 37.2, to a range of 20.4 - 30.7. This 17% reduction would not only allow cheaper transport prices, but could also stimulate higher production. This starts the free market cycle where more traffic leads to higher load factors, which leads to lower per ton kilometer charges, which leads to higher production.

It should be pointed out that this 17% reduction is based on calculations for small independent operators. As the fleet size of an operator grows, his fixed operating costs increase as a percentage of operating costs, and the savings could then be even higher, and the competition more vigorous.

Foreign exchange is normally about 65-70% of the cost of trucking. The major items are vehicle depreciation, spares, POI and tires. Foreign exchange will be conserved if vehicle life is extended and spare parts consumption decline. This too is a benefit supporting the ERP.

#### Program Structure

The contract maintenance system described below could be implemented for one year as a pilot program in bottleneck areas. If successful, and USAID wished to continue support, it could be extended one year at a time. The finite duration is possible because no contracts would exceed in length what could be accomplished in a few months.

The mechanism for private contractor provision of maintenance is not complex, and there is some indication that a similar system was in use in the late 1960's and early 1970's. It hinges on three points: prior agreement of rates and work to be done, competent supervision, and prompt payment for work performed. Rate setting can be done one of two ways. First, the client

establishes a model bill of quantities and standard specifications for the work to be performed. This would include things like patching per square meter, regravelling per kilometer, drainage rehabilitation per square or cubic meter, etc. Then the client issues a set of prices for a fixed period, say six months or a year, and assigns work to prequalified contractors who agree to work at those rates. The alternate way would be to allow prequalified contractors to tender annually for the model bill of quantities (probably with a guaranteed minimum volume of work, or volume discount). Those whose prices were acceptable would be awarded work. In either case, the average prices for the work should be published regularly through the National Construction Council (NCC) so that competition is stimulated. This system would fit in well with the NCC program under the Sixth Highways Project, where they will be prequalifying contractors and training them in methods of work that would relate to the specifications in use.

The next step is professional, impartial supervision. An engineer must inspect the work site jointly with the contractor just prior to start of work to agree on what is to be done. Regular site inspection thereafter will insure compliance with specifications. Monthly inspection will verify partial payment

ANNEX H  
BIBLIOGRAPHY

- 1 Rempel, Henry (for COTI) The Agriculture Sector in Tanzania: An Overview  
Jan 1987
- 2 Shakotko, Robert and S. Wellisz, The Tanzanian Economy: Prospects and  
Problems, Second Draft Jan 1987 and supplemental telex
- 3 Dijkerman, Dirk W., Agricultural Development in East Africa: an Assessment  
of A.I.D. Assistance to Tanzania, a MADIA resource paper, Dec 1986
- 4 Morris, Jon et al, Tanzania's Productivity Crisis: A Social and  
Institutional Profile, USAID/Tanzania 1985
- 5 World Bank Group, Report and Recommendations of the President of the  
International Development Association to the Executive Directors on a  
Proposed Credit of SDR 43.5 million to the United Republic of Tanzania  
for a Sixth Highway (Rehabilitation) Project, Washington April 10, 1986
- 6 World Bank Group, Staff Appraisal Report Tanzania Sixth Highway  
(Rehabilitation) Project, 1985
- 7 National Transport Corporation, Project Completion Report on the Tanzania  
Trucking Industry Rehabilitation and Improvement Project, Dar es  
Salaam June 1986
- 8 National Construction Council, Sixth Highway (Rehabilitation) Project:  
Assistance to Local Contracting Industry RFP and TOR, December 1986
- 9 Wells, E J, Expansion of Public Sector Construction in Tanzania, National  
Construction Council Technical Report, Dar es Salaam 1984
- 10 World Bank Group, Tanzania: Efficiency of the Trucking Industry May 1986
- 11 Canadian Pacific Consulting Services Ltd, Final Report of the  
Operational and Staffing Study for Tanzania - Zambia Railway Authority  
Sep 1984
- 12 World Bank Group, Tanzania: Port Rehabilitation Project, Credit 1536-TA  
Supervision Report August 1986
- 13 Tanzania Railways Corporation, Donor Conference Background Information  
Dar es Salaam 1983
- 14 Tanzania-Zambia Railway Authority, Ten Years of Tazara Operations: Review  
and Perspective, Dar es Salaam August 1986

10

ANNEX H (CONT'D)

- 15 National Transportation Council, Pre-feasibility Report on the Establishment of a Freight Transportation Company to Haul International Cargo Between Mtwara Port and Makambako Railhead Dec 1986, DRAFT only
- 16 Cook P., Minutes of briefing by the Operations Chief of Zambia Railways to IBRD on programs and traffic forecasts, Washington DC December 1986
- 17 Ministry of Transport and Communications (Malawi), Operational Study of the Northern Corridor Transport System, Lililongwe July 1986
- 18 Tanzania Zambia Railway Authority, Quarterly Performance for the 4th Quarter 1985/86 Dar es Salaam June 1986
- 19 USAID/SARP, Regional Transport Development program, excerpts from draft PID April 1986
- 20 United Republic of Tanzania, Program for Economic Recovery, 1986
- 21 World Bank Group, Report to the Consultative Group for Tanzania on the Government's Economic Recovery Program, 1986
- 22 World Bank Group, Status report on the TANZANIA RAILWAY CORPORATION, 1985
- 23 KAUDO (the Dodoma Regional Trucking Corporation), Management Information Report for the month of June 1986 and the year to date, Dodoma 1986
- 24 Dijkerman, D., Donor Assistance to Tanzania: Past Trends and Recent Developments, for USAID/Tanzania Working Draft January 1987
- 25 Berger, F., Consultant's interview notes, 16 to 30 January 1987
- 26 Tanzania Harbours Authority, Ships and Cargo Traffic-Tanga Port 1979 - 1985, Office of the Port Manager, Tanga 1986
- 27 Louis Berger International Inc, Phase I Report of the Transport Sector Study for USAID/Tanzania, Dar es Salaam 1986
- 28 World Bank Group, Staff Appraisal Report: Tanzania Port Rehabilitation Project, November 1984
- 29 World Bank Group, Report and Recommendation of the President to the Executive Directors for a Proposed Multisector Rehabilitation Credit to the United Republic of Tanzania, Washington September 1986
- 30 USAID/Tanzania, A Conceptual Framework for Resumption of AID assistance to Tanzania, Dar es Salaam (Draft) January 1987
- 31 Ministry of Communications and Works, Draft Proposed National Transport Policy, Dar es Salaam January 1987
- 32 World Bank Group, Tanzania Agricultural Sector Mission-Technical Paper No. 2: Agricultural Inputs Supply, Technical Paper No. 3: Marketing and Pricing Policy, and Technical Paper No. 4: Agro-Processing Industries Washington DC 1986

## ANNEX I

### Interviews

This is a list of people interviewed during January and February 1987 while researching this paper. This list does not include the USAID/Tanzania, REDSO (Nairobi), and SARP staff involved with the concept paper or the regional program, who also provided useful information.

#### **A. Ministry of Communications and Works**

1. Mr. Mkanga, Deputy Principal Secretary
2. Mr. Temba, Director of Planning
3. Mr. Kaombwe, Sr. Transport Planner, Planning Unit (16, 24)
4. Mr. Bendix, Team Leader of Transport and Communications Planning Project (advisory group to MCW Planning Unit (Danida)) (16, 24)
5. Mr. Gamba, Chief Engineer, Contract Construction Cost Control Unit (16)
6. Mr. Mtema, Chief Engineer Road Maintenance (23)
7. Mr. Moore, Director Electrical and Mechanical Department (24)
8. Mr. Kimambo, Commissioner of Construction and Maintenance (3 Feb.)
9. Mr. Liamba, Transport Manning Unit, (Financing)
10. Mr. Sekwao, Chief Design Engineer
11. Mr. Mgumbulu, Assistant Design Engineer

#### **B. National Transport Corporation**

1. Mr. Shekalaghe, Director of Planning and Finance (16, 21)
2. Mr. Reddy, Financial Advisor on Trucking Project (16)

#### **C. KJ Motors LTD**

Mr. Sing, Managing Director (16)

#### **D. Sansutwa Simtali, Consulting Engineers**

Mr. Mng'ong'o, Managing Director (former Chief Port Engineer for THA, Chief Engineer at Port of Dar Es Salaam, EAC ports engineer - Tanga, Mombasa, Mtwara, etc.) (17, 23)

- E. Tanzania Coastal Shipping Line Ltd.
1. Mr. Flottum Co-General Manager (NORAD Financed Manager) (21)
  2. Mr. Gundersen, Co-Traffic Manager (NORAD Financed Manager) (21)
  3. Mr. Mwambenja, Traffic Manager (21)
- F. Norwegian Development Co-Operation (NORAD)
- Mr. Stenersen, Senior Project Officer, Maritime Transport (21)
- G. Tanzania Railways Corporation
1. Mr. Makoi, Assistant General Manager (Operations) (21)
  2. Mr. Kieran, Assistant General Manager (Corporate Development) (CIDA) (21)
  3. Mr. Mukama, Port Officer, Mwanza South Port (27)
- H. Canadian International Development Agency
- Ms. Ross, Project Officer Tanzania Section (21)
- I. National Construction Council
- Dr. Mlingwa, Executive Director (22, 30)
- J. Delegation of the Commission of the European Communities
1. Mr. Bode Technical Advisor, Roads (22)
  2. Mr. Davies Technical Advisor, Rail (22)
- K. Mwananchi Engineering & Contracting Corporation
1. Mr. Mponzi, Director General (22)
  2. Mr. Lupilli, Director Technical Services Production & Equipment Mgmt. (22)
- L. Tanzania Zambia Railway Authority
1. Mr. Mweemba, Corporate Planning Manager (23)
  2. Mr. Ngonyani, Principal Planning Officer (23)
  3. Mr. Mkamba, Principal Mechanical Officer (23)

**M. World Bank Group**

Mr. Nathan, Project Officer Highway Loans 5 (TRM) & 6  
(Rehabilitation) (24)  
Mr. Crookes, Financial Analyst, EAFT  
Mr. Abe, Division Chief, EMPTR

**N. Tanzania Harbors Authority (Tanga Port)**

1. Mr. Nandala, Port Manager (26)
2. Mr. , Port Operations Officer (26)
3. Mr. Hajji, Port Engineer (26)

**O. Kaudo (Retco Dodoma)**

1. Mr. Ngalawa, Chief Accountant (28)
2. Mr. Amani, Traffic Manager (28)
3. Mr. Sondhi, Advisor to Mechanical Engineer (28)
4. Mr. Solomon, Administrative Manager (28)
5. Mr. Tamel, Workshop Manager (28)
6. Mr. Kimbesi, Traffic Officer (28)

**P. Dodoma Regional Government**

Mr. Makulukulu, Regional Engineer (28)

**Q. Dodoma Rural District Engineer's Office**

1. Mr. Taratibu, District Road Inspector (28)
2. Mr. Mbeyera, Civil Engineer (28)

**R. Danish Aid (Danida)**

Mr. Wagn Winkel, Counselor (Dev. Coop.)

**S. Ministry of Agriculture**

1. Mr. Lyimo, Planning Officer, Directorate of Planning
2. Mr. Banda, Marketing Development Bureau
3. Mr. Okaju, Senior Agricultural Officer (Tanga)
4. Mr. Eryo, Agricultural Field Officer (Tanga)

**T. Cotton Marketing Board**

Mr. Wasira, Marketing Manager

U. University of Dar es Salaam

Dr. Ndulu, Head of Economics Department

OUTSIDE TANZANIA

U. Southern African Transport Coordinating Committee

Mr. Figueredo, Chairman SATCC Headquarters Maputo (Harare:  
8, 9)