SOUTHERN AFRICAN ISSUES

TRANSPORT IN SOUTHERN AFRICA

T L Kennedy

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Southern African Issues is the title of a new series of monographs focusing on practical aspects of regional relationships.

TOM KENNEDY is a graduate of the University of Kentucky, where he also undertook graduate studies in geography. He has been associated with the Council for Scientific and Industrial Research (CSIR) since 1981, specialising in Transport Economics, and is currently with the Road and Transport Technology Division. In addition to consultancy work with private sector and government agencies, analysing regional transportation problems in Southern Africa, he has travelled extensively in the same capacity in countries as far afield as Canada and Bangladesh.

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T L KENNEDY

The South African Institute of International Affairs

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Jan Smuts House
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INTRODUCTION

Never before have politics and transport been so closely intertwined in the Southern Africa region. The physical condition and tenuous security surrounding many of the region's 'traditional' routes to the sea have dictated that a large share of the region's traffic be dispatched via South African transport routes and ports, much to the political embarrassment of many of these countries' leaders.

This embarrassment is due to the existence of apartheid in South Africa and also because the transport routes and harbours in that country are the most efficient and serviceable in the region. This conflict between ideology and pragmatism has plagued most of the region since Zimbabwe's independence and the creation of the Southern African Development Coordination Conference (SADCC) in 1980.

This investigation is intended to provide a description and rational evaluation of regional transport infrastructure; to evaluate the likelihood of success of rehabilitation projects; and to identify actions which should be undertaken to increase the viability of the region's transport system.

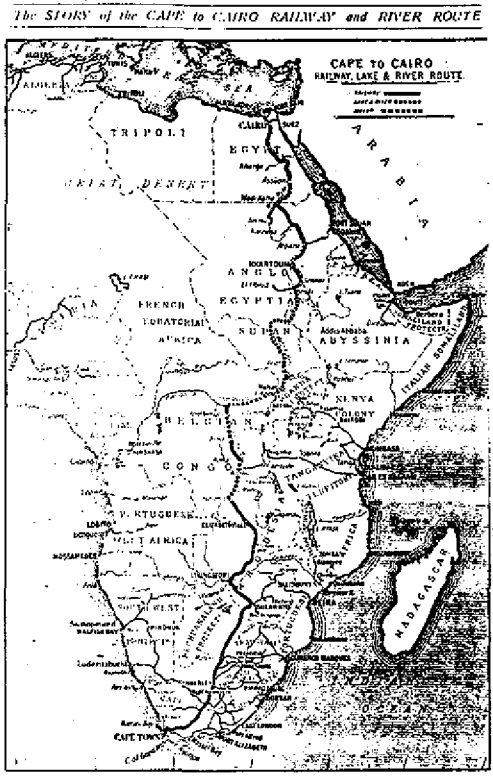
The goal towards which all countries in the region should strive is a regional transport system which will allow 'the flow of goods, via the most cost effective route, on the basis of free economic choice, with a minimum of political distortion'. Achievement of this goal will only be possible through SADCC's development programmes and the identification and implementation of rational transport policies by all countries in the region.

This study includes a considerable amount of detailed description of the condition of many of the region's transport facilities. It is not meant to be the usual diatribe directed at transport facilities in SADCC countries, nor is it intended to be a fanciful comparison with the 'way-it-used-to-be' scenario, when the colonial powers controlled many Southern African countries, and the transport and port systems carried many times the tonnage being moved today. Instead, it is meant to be a realistic

impression of their present condition and future traffic-carrying capabilities, based on observation and research, as well as identification of specific actions and policies which should be adopted by both SADCC as an organisation and by South Africa to create an improved transport network for the region.

To provide the reader with some perspective regarding the development of transport in each country, some historical background is given where appropriate. The existing transport system is largely a product of the history of each country, and the 'flavour' of that history will add to the appreciation of the region's transport situation today.

In addition, some anecdotes of recent travellers to theee countries are included at the beginning of the country descriptions to give the reader a 'feel' for the realities associated with travelling in the region and the very real risks sometimes involved.



HISTORICAL PERSPECTIVE - THE 'CAPE TO CAIRO' DREAM

While the phrase 'Cape to Cairo' was not invented by Cecil Rhodes, most of his efforts directed at making this dream a reality.

The 'Cape to Cairo' idea originated in a pamphlet published by Edwin Arnold in 1876. Sir Harry Johnston communicated it to the British Foreign Office, inspiring the imagination of Lord Salisbury, who allowed it to be proclaimed publicly in 1888 and 1889. The general policy of a north-south extension of British control in Africa was described in The Times of 22 August 1888 - a mechanism Lord Salisbury thought a useful means to prepare the public mind for coming events in African policy. While he never publicly stated that the 'Cape to Cairo' ambitions were an integral part of British foreign policy, the subject was discussed in his presence with frequent smiling acquiescences on his part.

Britain's general policy in Africa was that of treaty-making with local tribes to protect British interests against any sudden intervention by rival European powers. A native chief typically agreed not to cede his territories or any special control without the prior consent of the British government. Right of free passage for British missionaries and traders across their lands was also assured. In return, 'native rights' were fully recognised.

Rhodes had considerable imperialistic ambitions, as he attempted to secure vast land concessions east and north of Bechuanaland, and wanted the British government to give him a charter so that his company might govern the lands between the Limpopo and Zambezi Rivers. He soon began touting the idea of 'painting the map of Africa red' for Britain from the Cape to Cairo.

In 1898 at the Cannon Street Hotel in London, Cecil Rhodes proclaimed his real ambitions with regard to British expansion in Africa:

> I want two million pounds to extend the railway to Lake Tanganyika - about 800 miles ... Look at the matter. You get the railway to Lake Tanganyika, ... and ... you have Kitchener coming down from Khartoum. ... It is not imaginative; it is practical. That gives you Africa - the whole of it ... the conquest of Africa by the English nation is a practical question now.

It is not recorded if anyone actually made the trip from the Cape to Cairo within the continent of Africa, but in 1899 Major Edward Scott Grogan accomplished a similar feat. He and Mr A H Sharp started out on a shooting expedition in Portuguese East Africa and ended up travelling from Beira to Cairo. What made the journey incredible was that these individuals had no backing from any government, scientific society or other organisation. They began their journey in October on a coastal steamer from

Beira to Chiromo, travelled up the Zambezi and Shire Rivers, continued overland to the southern Sudan, then went by Egyptian gunboat to Khartoum and on to England in the early days of 1900.

Rhodes never achieved his dream of a rail system stretching from the Cape to Cairo, but by the 1960s, the region's transport network very nearly resembled the system of today, with the exception of the Tazara line between Dar es Salaam and Zambia, and the Beit Bridge extension of the then Rhodesian Railways. Both links were completed in the mid-1970s.

With the independence of many countries in the region during the 1960s, three major events came about: the departure of skilled labour and management; the emergence of internal insurrections; and severe economic problems. The effects of these are still in evidence today in the form of inadequate management; a very unstable security situation ranging from periodic acts of sabotage to outright line closures; and economic difficulties ranging from irritating and debilitating shortages of foreign exchange to total collapse of the national economy.

An obvious answer to these problems was overseas financial and technical assistance, and to seek this, the Southern African Development Coordination Conference (SADCC) was established in Lusaka in April 1980 after an exploratory conference was held in Arusha, Tanzania, in July 1979. The Lusaka conference issued a declaration which identified four broad development objectives:

1. the reduction of economic dependence, particularly, but not only, on the Republic of South Africa;
2. the forging of links to create a genuine and equitable regional integration;
3. the mobilisation of resources to promote the implementation of national, interstate and regional policies;
4. concerted action to secure international cooperation within the framework of our strategy for economic liberation.

It is interesting to note that there are various versions of the wording of objective number 1. The above is taken from the 1986 SADCC Macro-Economic Survey, but in the proceedings of the 1982 meeting in Blantyre, the wording was presented as '1. the reduction of external dependence and, in particular, dependence on the Republic of South Africa;'. The shift from 'in particular' to 'particularly, but not only' may only be an error of interpretation, but it may also indicate a possible softening of attitude towards the Republic.

Transport and communications is one of eleven areas of coordination identified by SADCC, and towards this end the Southern African Transport and Communications Commission (SATCC) was created. Its technical unit is located in Maputo, staffed primarily by foreign transport specialists. SATCC has held annual meetings since 1980, to identify projects and elicit financial support from donor governments and agencies.

At the most recent SATCC meeting in Arusha during January 1988, 192 projects were identified, valued at US$4 305,6 million. Of this, secured funding amounted only to 39%, or US$1 686,5 million. These projects and their value are shown in Table 1. A complete list of all SADCC transport projects is shown in the appendix.

TABLE 1 SADCC TRANSPORT PROJECTS (millions of US$)

PROJECT TYPE	NO. OF PROJECTS	PROJECT COSTS
Coordination	23	51,4
Training	19	59,6
Maputo Port Transport System	19	718,9
Beira Port Transport System	5	590,0
Nacala Port Transport System	5	277,9
Dar es Salaam Port Transport System	9	609,9
Lobito Port Transport System	4	340,2
Intra-Regional Surface Transport	33	692,6
Civil Aviation	18	250,5
Telecommunications	37	664,6
Meteorology	10	19,8
Postal Service	10	30,2
TOTAL	192	4305,6

Source: SATCC Project List, January 1988

Many projects are grouped into 'port transport systems', which represent several projects havung the common goal of enhanced transport links between inland locations and strategic ports. These were shown in Table 1 for Maputo, Beira, Nacala, Dar es Salaam and Lobito. Many of the SADCC-sponsored projects are in fact internal transport projects which have been conveniently placed under the SADCC ''umbrella' to be better placed for receiving financial support.

In SADCC's analysis of comparative routes, the element of distance is frequently the only criteria. Dar es Salaam may be 767 kilometres closer to the Copperbelt than Durban, but unless services at the port and along the route are efficient and practicable, reducing distance would be ineffectual.

Many of the landlocked SADCC countries argue that they need a choice of several routes to the sea to avoid vulnerability to 'cut off', should any one route become inoperable. In theory, this is sound judgement - in the light of Africa's realities, it could lead to a waste of precious resources. In a region of scarce foreign exchange, necessary for the supply of spare parts required to maintain a transport network, and the near-total lack of competent lower and middle management, just one efficient route may be all that any country can realistically afford.

Security is an issue that has not been directly addressed by specific projects to date, but the success or failure of most projects depend on it. At SADCC's January 1988 meeting in Arusha, this factor was raised as an integral part of many regional development projects. The chairman of the SADCC Council of Ministers, Mr Peter Mmusi, stated that 'economic activity has generated and justified investment in enhanced security'.

A report by a United Nations consultant on behalf of the Swedish government came out strongly in support of the position that development assistance should address security issues. This report, which was widely circulated in Europe, influenced the EEC decision to allow up to five percent of the US$140 million pledged to Mozambique under Lomé III in November 1987 to be used for civil defence aid projects.

Spain has sponsored a pilot agricultural project that includes training in Spain of a complete unit of the Mozambique Rural Guard. Portugal and Italy may also become more active in the area of defence. While Britain provides military expertise to Mozambique, Zimbabwe, Zambia, Lesotho and Swaziland, the Nordic countries generally avoid military involvement. It is reported, however, that Sweden may be reconsidering its position and 'find other ways to protect our investment'.

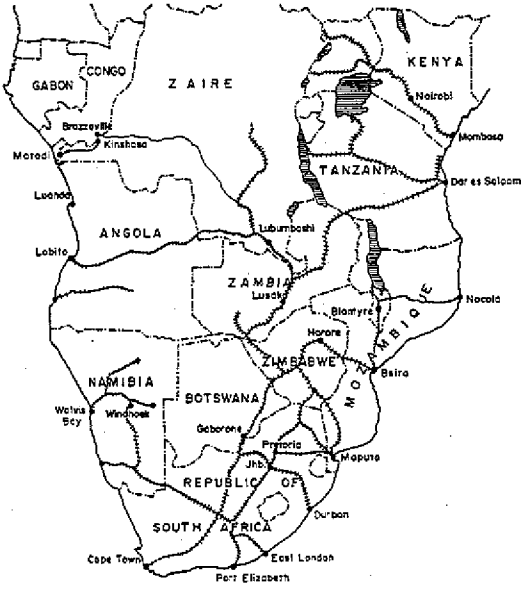
It is clear that the major donor countries have recognised the need for greater security in the region and that the issue will become more central to major projects in sensitive areas.

The ultimate success of the SATCC investment programme will depend on a number of factors, such as the strengthening of management, maintenance capabilities, and positive influence on transport policies. These factors will be discussed in greater detail in the last chapter.

DESCRIPTION OF EXISTING ROUTES

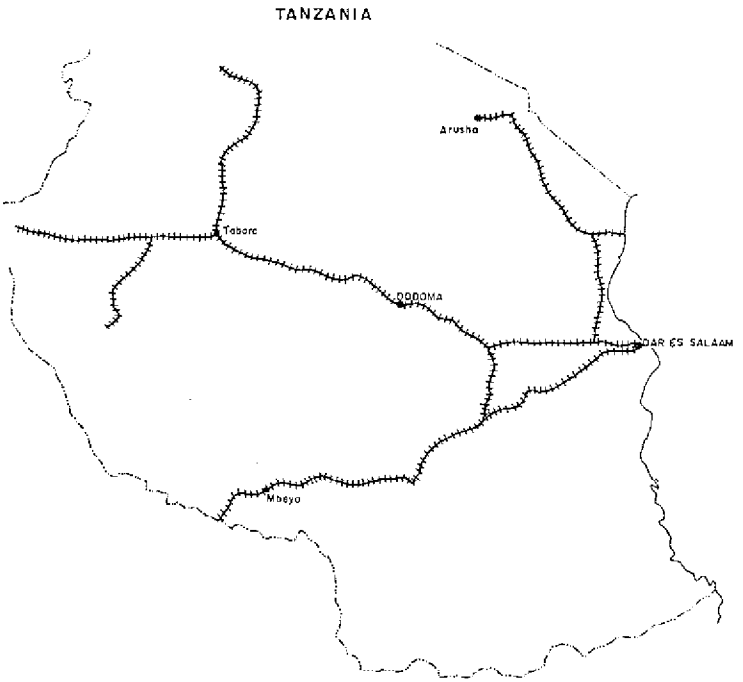
The transport routes in Southern Africa today (apart from the South African routes) are either plagued by bad management, terrorist attacks, or serious shortages of foreign currency - and sometimes by all three. For these reasons, the routes to the sea via South Africa are the most reliable transport corridors. Exhibit 1 shows a map of the principal routes. This dependency on South Africa is the element the SADCC countries are trying to reduce through an internationally-sponsored programme of infrastructure rehabilitation of their 'natural' routes. The efficacy of this rehabilitation programme is yet to be realised and, except for isolated cases (Zambian copper, for example), the South African routes are being used more than ever.

EXHIBIT 1
PRINCIPAL RAILWAYS OF SOUTHERN AFRICA



The inherent problems associated with these routes will become evident through a detailed description of the region's strategic corridors. These will be described in terms of the relevant country and ports within that country, beginning with Tanzania and continuing southwesterly.

Tanzania



What is your business here at the Tazara station?

I am just waiting for the general manager - he is at lunch and has an appointment with me at two o'clock.

What is your name? Let me see some identification.

I have an appointment with the general manager - he is expecting me.

You cannot just wander around anywhere here - no one is certain from where you come and your purpose - I have a record of your name and the police will be notified.

With the exception of a few strips along the coastline, particularly the Mediterranean littoral, and a deep incursion down the valley of the Nile, the continent of Africa resisted the intrusions of civilisation for many centuries.

The physical features of Africa's coasts provide one explanation why the interior and its peoples remained immune and remote from outside influences until so late a stage of history. Apart from the Nile Valley, the only other accessible waterway into the interior is the Congo River, with its deep-water estuary. The coast of present-day Tanzania - some 758 kilometres long - is difficult to approach because of numerous coral reefs and shifting sand bars at the mouths of rivers. There are, however, four good natural harbours - Tanga, Dar es Salaam, Kilwa and Mikindani Bay.

Dar es Salaam was first established as an Arab settlement in 1862 by Sultan Majid, who planned to build a new capital for his dominions. After his death in 1870, it was abandoned and fell into ruins. Not until it became a German garrison town in 1887 did Dar es Salaam acquire importance.

Early transport routes in the country centred around the slave trade and were pioneered by Arab traders coming from the coast to the inland sources of their human commodities. Landfall was made at Bagamoyo, a town just 72 kilometres north of the present site of Dar es Salaam. Bagamoyo means 'lay down the burden of your heart', and is described as a 'beautiful place, with a line of rustling coconut palms on the shore and beyond them, in the right season, one of the loveliest sights of Africa: the flamboyant trees that spread like chestnuts and blaze with the brightest shades of scarlet, flame and orange'.

From Bagamoyo, the slave routes led from one watering place to another, heading for Kazeh (now Tabora) in central Tanganyika, some 500 miles from the sea. From Kazeh, the paths struck out in all directions: directly north towards the southern shore of Lake Victoria; round the western side of the lake towards the country

known as Karagwe; due westward to Ujiji on Lake Tanganyika; and southward towards Lake Nyasa (Lake Malawi). Progress was extremely slow and only possible in dry weather. After crossing Lake Tanganyika, all the Congo was open to the slave traders. It was said that during the 1860s, 500 000 caravan porters passed through Tabora.

Unfortunately, for the two generations that Arab traders of slaves and ivory penetrated the central African interior, they produced no maps. Information was passed on by word of mouth, subject to all the errors caused by the linguistic complexities of the often warring tribes.

By the middle of the nineteenth century, the mystery of the source of the Nile had become - in Harry Johnston's phrase - 'the greatest geographical secret after the discovery of America'. Every expedition sent up the Nile from Egypt returned defeated. Subsequent explorations were sent down the east coast of Africa via the Indian Ocean in an attempt to reach the river's source from the south. It was not until the 1850s that Sir Richard Burton and John Hanning Speke, as well as others, kept records of their journeys and documented the inhabitants of the central African regions. This exploration resulted in the opening-up of the central parts of present-day Tanzania.

Germany's interest in the region was aroused by Baron von der Decken's visits to East Africa between 1860 and 1865. Two merchants from Hamburg had established successful businesses on the island of Zanzibar, and there was considerable German interest in the prospect of commerce on the mainland. The emergence of a strong, united Germany after the Franco-Prussian War in 1870 led to a change of outlook and support for the idea of a German colonial empire in the tropics. In addition to the motivation of gaining prestige, it was argued that Germany needed new sources of raw materials, new markets and outlets for the energies and resources of its population. German settlement in the territory increased and in March 1895, the Colonial Government of the German Foreign Office, the Deutsch Ost

Afrikanische Gesellschaft, and the Deutsche Bank, formed a joint committee to consider plans for a central railway from the coast to Lakes Tanganyika and Victoria. This line and others subsequently built by the Germans became the core of the present-day Tanzania Railway Corporation (TRC).

The TRC network's main orientation is east-west. It has a north-south line dating from the days of the East African Railways, when the system was operated jointly with Kenya and Uganda, but transport routes between Tanzania and the countries to the south have historically been of secondary importance. Since the construction of the Tazara Railway in 1975, this has changed. The line links Dar es Salaam with the Zambian Railway system at Kapiri Mposhi and has made Dar es Salaam an important port for Southern African traffic, in particular for Zambia, which was deprived of its traditional rail links to the Atlantic Ocean when the Benguela Railway was closed and when Rhodesia's Unilateral Declaration of Independence (UDI) prompted the closure of the Victoria Falls frontier.

Dar es Salaam Port

Tanzania and Zambia are the primary users of the Dar es Salaam harbour (48% and 38% of the port's traffic, respectively), with the remainder of the traffic for Burundi, Zaire, Malawi, Rwanda, and Uganda. Total dry cargo amounted to 1,8 million tons and bulk oils to 1,3 million tons in 1985. Container traffic is also handled, with just over 40 000 TEUs (Twenty foot equivalent iso-containers) were moved during 1985. The construction of a modern container terminal is one of the major port improvement projects being undertaken at the moment. It is reported that a 120 000 TEU annual capacity will exist when the project is completed in mid-1988.

Until 1956, when the first two deep-water berths became operational, all goods were handled by means of lighter vessels that shuttled between the Malindi wharf and the anchored ships. The port now consists of eleven berths; the Kurisani oil jetty,

which serves oil tankers bringing in refined petroleum for use within Tanzania; the single-point mooring facility at Mjimwena, which is an off-shore tanker berth for discharge of crude oil for refineries in Dar es Salaam as well as for transit to Zambia via the Tazama pipeline to the refinery at Ndola; and the Malindi wharf, which serves smaller vessels operating along the Tanzanian coast and to nearby islands.

The Kurisani oil jetty can handle tankers of up to 567 feet in length, 32-foot draft, and 36 000 deadweight tons. Deep-water berths numbers three to eleven were constructed between 1969 and 1970, as were the transit sheds and stacking yards, which include a fire station, police station and workshop.

The port's stated capacity is 2,5 million tons of dry cargo and 2,0 million tons of bulk oil products, but operational inefficiencies and lack of reliable handling equipment make this capacity unrealistic. Some of these deficiencies will be described in the following section.

Port efficiency

While delays in the berthing of ships are generally minimal in comparison to the severe delays of up to several weeks three to four years ago, the port area is characterised by congestion on the quayside and in the container stacking areas, with literally hundreds of containers waiting to be loaded or unloaded, frequent breakdowns of cargo handling equipment, and lack of effective managerial control over port operations.

A container ship recently spent four days in port to unload 300 containers and load 250 - usually a one-day operation at an efficient port such as Durban. On one day in 1986, there were as many as 1 000 containers on the quays, some of which had been there since 1984. Advance information regarding container tonnages and destinations for containers is also rare, so that additional time is needed to prepare a proper loading plan for a ship after arrival. To avoid lengthy delays in port, it has

become a common practice to bribe cargo handlers, as port supervision is weak during the day and virtually nonexistent during the evening and night shifts.

Another serious problem is pilferage. There are many reports of extensive damage to and theft of imports. For this reason, Dar es Salaam has acquired a reputation as a port that can move exports reasonably well, but one to be avoided for the handling of valuable imports.

Port rehabilitation projects

Three major projects are currently under way: rehabilitation of the lighter quay; rehabilitation of berths one to eight; construction of a container terminal. A brief description of each follows.

Rehabilitation of the lighter quay

This will allow up to six vessels to be worked, if the lighter fleet is rehabilitated. The lighter vessels now lie derelict on the shore. The project has been in progress for eight years and the present contractor has been taken to court for noncompliance.

Rehabilitation of berths one to eight

The project entails a total rehabilitation of sheds, quaysides and roads. So far patchwork repairs of quay surfaces are in progress. One berth at a time is out of service during rehabilitation. Completion is scheduled for sometime in 1989. Most of the financing comes from the Swedish government.

Construction of a container terminal

Completion was originally scheduled for early 1988, but progress has slipped by at least four months. Nonetheless,

the project should be completed sometime during 1988. Several countries are involved in financing, including Finland, Norway and Italy. The World Bank has a representative in Dar es Salaam to coordinate the efforts of all parties involved.

The Tazara Railway

The Tazara Railway was completed in 1975 at an estimated cost of US$500 million, financed and constructed by the People's Republic of China. Its purpose was to provide Zambia with a reliable transport route to the sea, as its traditional routes (the Benguela line to Lobito and the Rhodesian route through Victoria Falls and Mozambique) had become inaccessible. Despite studies by the World Bank and the United States government warning that the line would not be economically viable, the Tanzanian and Zambian governments, for reasons of political independence, decided to build the line to free them from the traditional routes. In fact, the line is often referred to as the 'Great Uhuru Railway' (uhuru means 'freedom' in Swahili).

Dar es Salaam Port is served by both the Tazara Railway and the Tanzania Railway Corporation (TRC). The Tazara primarily serves the Zambian market, with some local agricultural traffic within Tanzania, while the TRC serves central and northern Tanzania. The TRC handles a considerable amount of traffic from Rwanda, Burundi and Zaire via the ferry services on Lakes Victoria and Tanganyika.

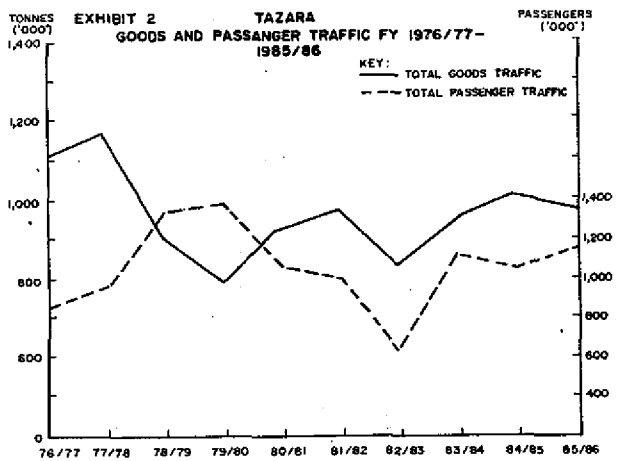
While both railways serve the Port, their gauges are different. The Tazara is compatible with the 'Cape gauge' of 1 067mm, while the TRC's rails are one metre apart. At present, the TRC accesses berths one to seven, while the Tazara reaches berths six to eleven. Depending on the volume of cargo and its destinations, it is sometimes necessary for ships to shift berths to enable the discharge and transfer of goods to the appropriate railway line. The new container terminal will, however, be accessible to both lines.

As can be seen in Table 2, Tanzanian local traffic has increased over recent years, though total traffic over the line has remained relatively constant at just under one million tons.

TABLE 2 TONNAGES CARRIED BY TAZARA (000)

YEAR	ZAMBIA IMPORTS	ZAMBIA EXPORTS	TANZANIA LOCAL	ZAMBIA LOCAL	TOTAL
1976/77	429	500	168	3	1100
1977/78	425	596	236	16	1273
1978/79	271	393	251	6	921
1979/80	204	228	325	33	790
1980/81	235	312	185	20	752
1981/82	252	328	174	42	796
1982/83	241	391	150	42	824
1983/84	294	431	190	58	973
1984/85	284	491	266	55	1096
1985/86	181	357	385	65	988

Exhibit 2 shows trends for goods and passenger traffic carried on Tazara from 1976 to 1986.



Physical description of the Tazara line

The line is single-track, extending 1 860 kilometres from Dar es Salaam to the junction of Zambia Railways at Kapiri Mposhi. The ruling grade is generally 1%, except on the Mlimba/Chozi section where it is 2%. The track consists of 12,5 metre rails of 45 kg per metre, with uniblock prestressed concrete sleepers of 191 kg weight. Sleeper density is 1 520 per kilometre. Stone ballast of the size 25mm to 70mm is used, at a depth of 25cm. The track is designed for an axle-load of 20 tons and a maximum of 70 km per hour.

Eight stations are equipped with route relay interlocking equipment, with colour light signals installed. The remaining stations have electro-mechanical interlocking equipment, together with semaphore signals. The line is equipped with a tokenless block train control system. Communications are provided by a four-pair overhead wire line. The main stations (including Kabwe, the Zambian Railways headquarters) are served by a 12-channel and 3-channel carrier system, utilising one of the four pairs of wire. The remaining pairs are for block working, train control, and for inter-station and maintenance-of-way communications.

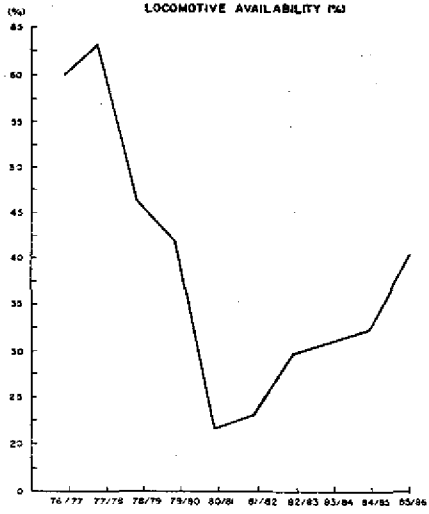
At the time of handover in 1976, there were 86 Deng Hong Feng mainline locomotives and 17 shunting units. Both locomotives types are diesel-hydraulic. Mainline locomotives are of 2 000 horsepower with a maximum speed of 90 kph and shunting units have 1 000 horsepower. All are equipped with both vacuum and air brake systems. The air brake, however, can only be used when a train consists solely of Tazara Railway wagons, as Zambia Railway wagons are only equipped with the vacuum braking system.

In 1979, 12 additional mainline locomotives were purchased from China, but their shortcomings required the purchase of 14 Krupp U30 diesel-electric locomotives (3 200 horsepower) from the Federal Republic of Germany between 1983 and 1985. In addition, a programme to repower some 24 of the older Chinese locomotives with German engines is under way. A recent agreement with the

United States provides for additional locomotives, as well as a comprehensive package of technical assistance, valued in excess of US$47 million.

The Chinese locomotives have never performed satisfactorily - a new design from China, they were essentially a first-generation locomotive. Their many problems resulted in only 50% of rated horsepower being delivered when the units were in operation. This unreliability was so severe that locomotives were operated in multiple in anticipation of en route failures. Locomotive availability has never been more than 57%, and even in the first year of operation, they were available for service only 51% of the time. In Exhibit 3, a graph shows the trends in locomotive availability.

EXHIBIT 3 TAZARA
LOCOMOTIVE AVAILABILITY (%)



Derailments have also taken their toll of Tazara locomotives. During the past ten years, 31 locomotives have been lost for this reason. Derailment has become chronic, but there has been relatively little effort by Tazara management to ascertain the causes and to take preventive action.

Tazara's profitability

The Tanzania-Zambia Railway Act of 1975 stipulates that the Railway should generate sufficient revenues to cover operating costs, interest payments and depreciation, and to meet provisions for pension liabilities and loan repayments, as well as provide for the general reserve. Furthermore, the net operating income should be sufficient to generate an annual return on the net fixed assets. These objectives have never been achieved.

Reasons for this failure have been identified as follows:

- a reduced growth rate for both Tanzania and Zambia, combined with a depressed world market price for metals;
- motive power reliability problems;
- line closures due to strikes, landslides and military insurgency during the period of the Rhodesian war;
- lack of coordination between the Tazara and Zambian Railway systems regarding the interchange of wagons and rates for payment thereof, and the divergent interests of the two railways in terms of revenue. The wagon hire charges were established at US$2,20 per day in 1978, with an eight-day grace period. Current actual cost per wagon-day has been estimated at between US$12-15. The two railways have been unable to reach agreement, with the result that excessive wagon detention times are now commonplace. For example, Tazara wagons spend an average of 18,7 days on the Zambian Railway system; and
- the Victoria Falls interchange point with the National Railways of Zimbabwe is a longer haul for Zambia Railways than to the Kapiri Mposhi interchange with Tazara. For this reason, Zambia Railways favours Victoria Falls, diverting traffic from Tazara.

Tazara's capacity

Tazara management has stated that capecity for the line is two million tons per annum, or eleven pairs of trains per day.

Trains now in operation consist of the following:

3,5 freight trains per day
1,0 passenger trains per day
2,0 company service trains per day

Total: 6,5 trains per day

Based on the Tazara estimates, an additional five trains per day in each direction could be operated before the capacity of eleven trains is reached. These ten additional trains could carry approximately 1,8 million tons annually. Added to the existing 0,98 million tons now carried, the line's total capacity is therefore approximately 2,8 million tons per year.

Nonetheless, with the existing fleet of wagons and serviceable locomotives, very little additional traffic could be moved. The short-term capacity of the line is therefore estimated at 1,1 to 1,2 million tons per year. Even with additional rolling stock, the limitations of the marshalling yards at Dar es Salaam act as a further constraint on traffic growth. The six-track yard, as well as the chronic delays in loading and unloading of wagons at the Port, make the theoretical line capacity of 2,8 million tons virtually unattainable. Yard and terminal congestion would quickly strangle the system. There are no known plans to enlarge the yard capacity at Dar es Salaam.

Road transport

This article on the Tanzanian road system was recently published in the Sunday Times of Dar es Salaam:

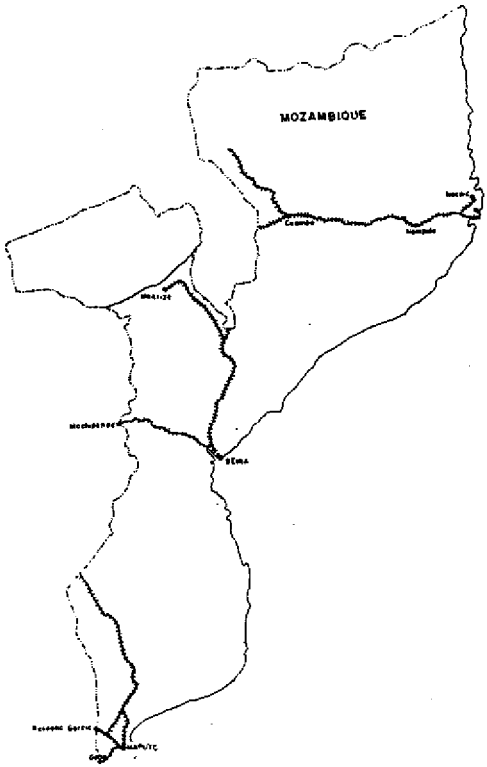
> For many years we have watched helplessly the road network of 50 000 kilometres - of which 5% is bitumised and 29% is primary trunk road - crumble around us, impeding movement to and from the countryside.
>
> ... the frequent cries for Government intervention to speed up delivery of inputs, or haulage of piled-up crops from remote parts, are headlines any day in the media. The feeder roads, which are vital for the ferrying of inputs to the villages and hauling out

> crops, have in some cases deteriorated to the extent of completely cutting off certain parts of the country for a good part of the production season.
>
> This has meant either nondelivery of vital inputs for agricultural production, lowering output or crop pile-ups and spoilage - a further loss to the nation as a whole.

Despite the existence of the Tazara Railway, road haulage is important to Tanzania for local transport of agricultural produce, as well as international movement of urgently required and high value goods, mostly between Zambia and Dar es Salaam. While detailed statistics are not available, some estimates of the extent of this international road traffic can be made.

During 1985, Dar es Salaam Port handled 675 000 tons for Zambia. Tazara Railway reported 538 000 for that country, which leaves a balance of 137 000 of international traffic moving by road. Most of this is moved by Contract Haulage, a Zambian parastatal, and the balance by private Zambian road hauliers. Zambia is very strict about issuing road permits to Tanzanian companies. Tanzania, on the other hand, issues permits freely to Zambian hauliers, probably because of the severe shortage of serviceable vehicles in Tanzania and the high cost or complete absence of spares.

MOZAMBIQUE



Inside the unlit customs shed at Zobue, on the Malawi/Mozambique border:

Please open your luggage.

What is inside this?

Opening my travel alarm clock, I produced two penlight batteries.

Do you have any more of these?

No, I'm sorry, I didn't realise that you needed them.

In the fading light, he replied:

Yes, we have no electricity here. Please, on your next trip...

Mozambique holds the key to the transport problems of the entire SADCC region - the South Africa-Maputo line is under pressure from insurgency attacks, the Beira Corridor functions only during daylight hours, and the Nacala line is virtually closed because of recurrent attacks on the line, which include wholesale removal of tracks.

Instability within Mozambique is by far the most serious problem affecting transport in the region. On almost every rail-line, service is either totally halted or seriously disrupted because of insurgency, therefore rail traffic through the country is far less than what would be offered under more stable conditions. The effects of this are felt not only as higher transport costs for the landlocked SADCC countries, forced to use longer routes, but Mozambique itself loses valuable foreign currency from rail revenue and port payments.

Efforts are being made to attract more traffic to the Mozambique routes as improvements are made to the rail-lines and port facilities, but shipper confidence is far from restored. This lack of confidence shows in reduced volumes of traffic as fewer ships call at Mozambican ports and the resultant infrequent service causes a further traffic decline.

Mozambique has three major ports - Maputo, Beira and Nacala. Each port and their inland transport systems will now be described.

Tonnages handled at each port for 1987 are summarised as follows:

TABLE 3 MOZAMBICAN PORT TRAFFIC (000)

	TOTAL TONS	TRANSIT TRAFFIC	LOCAL TRAFFIC
MAPUTO	2650	1453	1197
BEIRA	1948	1444	504
NACALA	303	1	302

Nacala

On the notice-board at the Nacala railway station, the following passenger timetable is displayed:

depart Nampula 06h00
arrive Nacala 12h30
depart Nacala 14h00
arrive Nampula 20h22

Such precision of scheduled departures and arrivals on a railway located in a war zone in Africa would lead a naive observer to believe that transport operations followed a planned timetable. In fact, on one recent afternoon at 16h00, the train for Nampula was still standing at the Nacala station.

Nacala - a natural harbour

Nacala has been described as the best natural harbour on the east coast of Africa. Unlike Maputo and Beira, Nacala has no siltation problem. Historically, Nacala has been an important port for Malawi. In 1969, 520 554 tons of freight were handled from 341 vessels. Tonnage handled at the port between 1976 and 1984 is shown in Table 4. The container port is being rehabilitated with the assistance of a team from Finland, and is expected to be completed in early 1989. The next phase of port rehabilitation is the general cargo berths, for which funding has been approved, and it is merely a matter for the Finnish contractor to be selected.

TABLE 4 NACALA PORT TRAFFIC (000 tons)

Year	Mozambican traffic	Transit traffic	Total
1976	421,4	161,4	582,8
1986	222,6	0,8	223,4
1987	302,1	1,1	303,2

The railway line extends 800 kilometres westward from Nacala to the eastern regions of Lake Malawi at Lichinga, with a branch line to the Malawi border at Nayuci. The Malawi branch was

completed in mid-1970 and was the primary route until 1983, along with the Beira line, for Malawi's imports and exports. Since 1984, however, the route has effectively been closed for through traffic.

Phase I of the rehabilitation programme has been completed and the line between Nacala and the CFM (norte) (Empresa dos Caminhos de Ferro de Mozambique) headquarters at Nampula is now operational. Phase II - the more difficult task of rehabilitating the line between Nampula and the Malawi border - is under way, but the 'banditos armados' who remove entire sections of rail and launch attacks on trains and crews have brought this programme to a halt. Since the middle of 1988, work crews have returned home until the security situation stabilises.

A total of US$28 million has been spent on the container terminal rehabilitation over the past five years. A recent view of the new terminal is shown in the photograph. With work on the rail-line now stopped and the uncertainty of its resumption, the container terminal is liable to become another of the region's 'white elephants'.

Beira

Legends of the wealth of Prester John's mysterious country fired the imagination of many Portuguese sailors and explorers, including Pero da Covilha and Alfonso de Paiva, who sailed from Lisbon on a mission to investigate the trade of India and Sofala, and to collect information about this land of Prester John.

Historians generally agree that the first Portuguese to sight the bar of the Pungue River, where the port of Beira now lies, was Pero de Paiva. It was only at the beginning of the 19th century, when European countries embarked on a rush for African territories, that Portugal occupied the territory of Mozambique more extensively, giving particular attention to the district of Manica and Sofala.

The town of Beira was subsequently developed and, as provided for in the Anglo-Portuguese Treaty of 1891, the Government of Portugal undertook to build landing places in the Pungue Basin and a railway line between it and the Rhodesian border. Concurrently, work was begun on the estuary of the Pungue that would ultimately transform it into a seaport.

George Pauling, who was responsible for the construction of the Beira Railway, remarked about the difficulties experienced during the construction period: 'At one time, practically every white employee on the job was suffering from fever, and then I fervently wished that I had never heard of the Beira Railway. In one fortnight we lost six white men, including my bookkeeper.'

The original Beira Railway had a two-foot gauge, with rails twenty pounds to the yard. Pauling noted: '... it looked like a toy railway, but was quite capable of dealing with a very large amount of traffic'. The railway was finally completed as far as Umtali in 1898, and the gauge was later changed to the standard of three foot six inches. A year later, the Umtali-Salisbury link was completed.

Improvements were made to the port during the intervening years and, by the 1940s, capacity had reached 5 000 000 tons annually. Traffic peaked in 1965, when 4 346 596 tons were handled, but during the blockade against Rhodesian goods, Beira traffic decreased considerably, and by 1969, tonnage handled had fallen to 2 969 291.

During the fifteen years of UDI, Rhodesia used South African transport routes extensively, even though the Beit Bridge-Rutenga link was only completed in 1974, giving Rhodesia a direct rail link with the Republic. With the emergence of Zimbabwe in 1980 and the consequent removal of trade restrictions, the viability of the Mozambique route was re-examined.

The 'Beira Corridor'

This has become the battle cry of the SADCC countries on the subject of transport independence from South Africa. No other transport corridor on the African continent has been so effectively promoted by governmental and private sector organisations, as well as well-publicised donor conferences. Foreign governments view contributions to the improvement of the Beira Corridor as an indirect blow against the South African government by reinforcing the means with which SADCC countries can finally achieve 'transport independence' from South Africa routes.

The major problem, however, is that the port is in desperate need of essential repair work, the channel must be dredged constantly, and bandit activity along the rail-line causes frequent traffic disruptions, severely limiting the potential capacity of the route.

Description of the rail-line

The rail link between Harare and Mutare (formerly Umtali), as well as the short connecting link across the international border to Machipanda, is operated by the National Railways of Zimbabwe (NRZ). Between Machipanda and Beira, rail serviced is provided by the CFM. On a temporary basis, the NRZ operates over CFM tracks between Machipanda and Gondola to alleviate the shortage of serviceable CFM locomotives, but CFM will operate this segment again as soon as their Garratt steam locomotives have been refurbished.

Physically, the line is single-track throughout, with Centralised Traffic Control between Harare and Machipanda. The CFM uses a system of paper train orders and telegraph communications. The NRZ section's capacity is stated as eighteen trains per day in each direction. At the time of writing, there is only one overnight passenger train, and up to two freight trains per day operate between Harare and Mutare, all drawn by diesel locomotives.

Operation over the CFM section can be subdivided into three sections:

- Machipanda to Gondola
- Gondola to Nhamatanda
- Nhamatanda to Beira

Since July 1986, NRZ locomotives and crews have run through from Lochinvar Yard (Harare) to Gondola, some 120 kilometres inside Mozambique. As this round trip sometimes takes four days or more, the train is 'caboose worked', which means that a relief crew accompanies the train equipped with sleeping accommodation. As CFM receives the full revenue for the Machipanda-Beira section, NRZ are paid for operating the Gondola-Machipanda stretch. The CFM takes over at Gondola, using Garratt steam locomotives as far as Nhamatanda, where diesel units take over for the haul to Beira.

Prior to the inauguration of the 'run through' arrangement, there were serious delays in moving traffic over this route. Traffic for Beira was delivered by NRZ to CFM at the Machipanda marshalling yard, where it usually stayed several days, and there have been reports that backhand payments to the station master were often required to move wagons out of Machipanda terminal. Delays of several months were not uncommon.

CFM's section between Machipanda and Gondola is in effect managed by the NRZ station master at Mutare. He makes regular trips into Mozambique and commands a considerable amount of respect among CFM employees. A recent incident in Gondola illustrates this: twenty-four hours after two derailments in the yard, nothing was moving through. Within thirty minutes of his arrival, one train had departed for Beira and locomotives were being made ready for two more. The CFM crews have the reputation of being capable of working well if given close direction and constant supervision.

During their frequent visits to Gondola and other stations in Mozambique, NRZ personnel deliver bread, soup and other scarce items. This maintains good relations and a measure of

cooperation. The NRZ also has a passenger coach parked at Gondola station which sells food and essential items unobtainable in Mozambique.

Line management is extremely weak on CFM, exemplified by the need for the NRZ station master's presence. If this section of the line reverts back to CFM control, it is likely that the quality of service will deteriorate rapidly. In fact, NTZ supervision should be extended all the way to Beira if maximum efficiency is to be achieved.

The incidents of terrorism along the line are more a nuisance than a serious threat to train movements. Their most serious impact is the reduction in line capacity on account of having to operate during daylight hours only. In fact, operations must stop by 16h00 or 17h00 at the latest each day. Not until the Zimbabwe military inspection trolley passes over the line the next morning (09h00 at the latest) can railway operations resume.

When acts of sabotage are committed, there is usually little damage to the line, which is normally repaired within an hour or so, but only because the NRZ track repair crews are nearby while line rehabilitation takes place. When this programme is completed, such 'quick reaction' will not be possible.

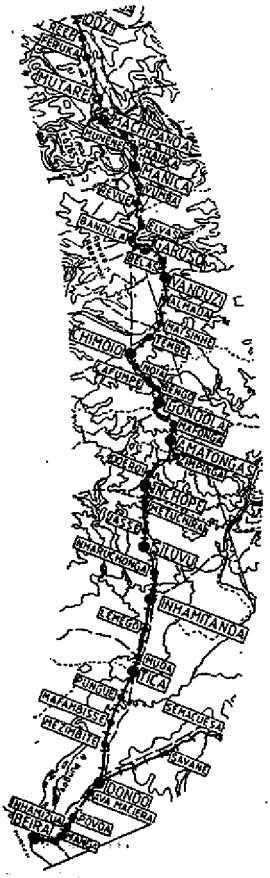
Train length over the route is limited to about 120 axles eastbound, but trains of empties westbound have been operated with up to 200 axles. Most westbound trains are empty and hold the main track at crossing loops. Loaded eastbound trains typically carry tonnage of 1 250 gross tons. There is usually no change in train composition between Harare and Gondola, but on reaching Gondola, trains may be broken up because of the 750 ton limit of a single Garratt locomotive. If a 'dupla' (two Garratts) is operated, a 1 200 gross ton train can be operated through to Beira.

Marshalling yards en route are relatively modest in size. Mutare yard has seven tracks, Machipanda nine, Gondola thirteen, and Nhamatanda also thirteen.

Operating scenario

Typically, a train departs Mutare in the early morning (08h00). Running through to Gondola, the crew returns to Mutare the same day, picking up westbound traffic at Gondola. A second train, if required, leaves Mutare for Gondola around midday, where the crew spends the night, returning to Mutare the following morning. In addition, one ballast train is operated over the line each day while track rehabilitation work is in progress. Running time between Mutare and Gondola is approximately 4,5 hours. Exhibit 4 shows a typical pattern of operation between Mutare and Beira.

EXHIBIT 4 OPERATION SCENARIO FOR BEIRA CORRIDOR



Mutare	train departs 08h00	NRZ operation
Machipanda	(NRZ diesels and crew make one day round trip from Mutare)	
	train arrives 12h00-13h00 Locomotives and crew take return traffic to Mutare same day.	
Gondola	train departs 08h00 (CFM Garratts and crew make one day round trip from Gondola)	CFM operation
Nhamatanda	train arrives 12h00 Locos and crew take return traffic to Gondola same day. train departs 13h00 (CFM diesel and crew make one day round trip from Beira)	
Beira	train arrives 18h00	

The track rehabilitation programme being done by NRZ crews is financed by the NRZ operating budget - hopefully, to be reimbursed at a later stage. The work is good, except that no work is being done on tracks at stations. The track condition at the Gondola marshalling yard is appalling. Sleepers on the main track are rotten, with only one or two fasteners in place to hold the rail to the sleeper (there should be four fasteners). Even where rails are properly fastened, the rotted wooden sleeper provides no support for the 30 kg rail, which readily gives way under the pressure of heavily-loaded wagons being shunted. Two derailments in the yard during a single twelve-hour period are not unusual.

Rehabilitation of the line between Beira and Dondo is expected to be finished by mid-1988, but already necessary maintenance cannot be done without additional outside financial assistance. Austria has pledged US$1 million for maintenance of the line, but it has been stated that this amount is insufficient, and further financing for an estimated US$3,5 million is being sought. The restoration of the eight Garratt steam locomotives by Zimbabwe Engineering in Bulawayo is being funded by the United States Aid for International Development (USAID).

Line capacity

During 1985 and 1986, an average of 1,4 trains per day were operated in each direction. Although the line is only operated during daylight hours, there is reason to believe that additional traffic could be moved, even under such restrictive conditions, given the following assumptions:

- continued daylight operations;
- continued NRZ control of operation between Mutare and Gondola;
- an increase in westbound loadings to balance the traffic; and
- continued NRZ run-through of locomotives and crews.

The practical capacity of the route is estimated as two trains per day in each direction, largely due to the constraint of having to operate only during daylight hours and the incidents of sabotage that frequently cause delays and an accumulation of traffic at Gondola. Even with the relatively low traffic levels at present, the Gondola yard is frequently full. If four trains per day were run, assuming a capacity of 700 net tons per train over the most limiting section and that westbound trains are fully utilised, a total of 2 800 net tons per day could be moved, which would result in an annual capacity of approximately one million tons.

Traffic should also increase when the locomotive rehabilitation programme is completed. These locomotives should not, however, be used to replace the NRZ diesels on the Mutare-Gondola route. They would be more appropriately used to supplement the existing motive power on the Gondola-Nhamatanda-Beira sections and only occasionally operated to Mutare. Under these conditions, one additional train could be operated in each direction.

A second condition for an additional train is a quick-reaction maintenance capability similar to that now provided by NRZ maintenance crews, which would minimise the time required to repair sabotage damage. Another factor that would greatly enhance operations would be for the NRZ to assume total control over all train operations between Mutare and Beira, to provide the strong management necessary to ensure that traffic continues to move even under adverse security conditions.

This additional train would raise the total annual capacity of the line to 1,5 million tons annually. As the gradient restrictions are more severe in the westward direction, the line's capacity can be estimated at 975 000 tons eastward and 525 000 tons westward.

A comprehensive evaluation of train operating procedures and line capacity of the Beira Corridor was undertaken by Mott, Hay and Anderson International Ltd in June 1982. This report evaluated

the line capacity for each of four sections of the Beira-Mutare rail-line. After deducting train paths required for passenger and line service trains, the capacity for freight trains are calculated, as shown in Table 5. These values assume a twenty-four hour operation and therefore can only be taken as optimistic. A more realistic calculation of line capacity under existing daylight running restrictions is shown in Table 6.

TABLE 5 BEIRA CORRIDOR LINE CAPACITY FOR FREIGHT TRAINS
(24-hour per day operation)

Line segment	% theoretical capacity	Trains each way per day
Beira-Dondo	50%	5,7
	60%	6,8
	70%	7,9
Dondo-Nhamatanda	50%	5,6
	60%	6,7
	70%	7,8
Nhamatanda-Gondola	50%	5,4
	60%	6,5
	70%	7,6
Gondola-Machipanda	50%	4,0
	60%	4,9
	70%	5,7

Source: 'Rehabilitation study Beira-Machipanda line and Maputo -Chicualacuala line', Mott, Hay & Anderson International Ltd, June 1982.

TABLE 6 BEIRA CORRIDOR ADJUSTED LINE CAPACITY
(12-hour operation)

Line segment	Trains per day
Beira-Dondo	2,79
Dondo-Nhamatanda	2,75
Nhamatanda-Gondola	2,67
Gondola-Machipanda	2,01

In the light of this information, the estimate of three trains per day may seem a bit optimistic, but as the line has been upgraded since the 1982 study, and the NRZ run-through arrangement has since been inaugurated, three trains per day could be achieved.

Recent Beira experience

There is evidence that the Beira Corridor may have been oversold and too soon. Although traffic through the port increased considerably during the second half of 1987 and the early part of 1988, there are many problems and delays. Tonnage interchanged between the NRZ and CFM at Mutare increased from 229 975 tons during the period July 1985 - June 1986 to 483 964 tons a year later, representing a 33% increase in westbound and 58% in eastbound traffic. Nonetheless, delays to some containers have exceeded sixty days - the average container delays in the port ranged from 20,4 days in October 1987 to 17,6 days during December, hitting a peak of 23,2 days in November. Container traffic has been moving on a 'last in, first out' basis, as the lack of handling equipment prevents workers from reaching many containers. Transit time between Beira and Harare ranges from three to fourteen days.

The rehabilitation programme in progress has closed several berths, increasing the already severe congestion and prolonged delays. Beira was without electricity for sixty-five days in 1987, further exacerbating the problem. In 1986, the town was in the dark for 195 days! The entrance channel to the harbour is in need of dredging, but channel buoys have been repaired and there is some navigation at night.

Sabotage to the rail-line remains a problem. In an incident late in 1987, a ballast tamping machine detonated a double landmine, killing both the operator and his assistant. The tamping machine, which was on lease from South Africa, was completely destroyed. In early August 1987, an explosion destroyed a bridge near the Pungue (and killed the saboteur) and traffic was suspended for two days. Not all derailments are caused by terrorist action - in November 1987, a NRZ train was derailed east of Chimoio because of driver negligence, which blocked the line for a week.Delays seem to have abated, but the outlook for the remainder of 1988 is not good, as some rehabilitation work is far behind schedule, while other major projects are just getting under way.

Tonnages handled at the port during 1987 have increased over 1986 levels, as is shown in Table 7.

TABLE 7 BEIRA TONNAGES (thousands)

	1986	1987
Mozambique traffic		
imports	453,5	414,1
exports	146,4	172,9
Transit traffic		
inbound	656,7	1047,7
outbound	71,6	312,8
Total	1328,2	1947,5

There is, clearly, greater capacity on the rail-line than at the port, and CFM's occasional reluctance to accept more traffic on the rail-line appear to be well-founded. Nonetheless, the future of Beira and its importance to Zimbabwe and the rest of the SADCC region may well lie in what is perhaps the most important rail rehabilitation project in the region - the Maputo-Chicualacuala railway line, also known as the 'Limpopo Line'. This will be discussed in the following section.

Maputo

Sometime during the first half of the sixteenth century, a ship returning from India anchored in Delagoa Bay, probably forced in by a storm or to take on fresh water. Records indicated that while there were many possibilities of establishing commerce with the natives, mainly in ivory, no further ships called again for many years at this estuary, the swampy banks of which were a danger to navigation. Not until 1544 was a trading post built on the right-hand bank of the bay and, by decree of the King of Portugal, it was named Lourenco Marques, in honour of the navigator who made the first reconnaissance of the bay and its five rivers. This post was serviced by a ship that called once a year.

The discovery of gold in the Boer republic of the Transvaal in the mid-1880s enabled President Kruger to renew the search for an outlet to the sea independent of British control at the Cape and Natal. The Portuguese were just as anxious to construct a link between Lourenco Marques and the Reef because of the prosperity it would bring to the colony of Mozambique. The railway reached the Transvaal border in 1890. The British would not give permission for the railway to climb up the Nkomati valley through Swaziland, so it had to follow a more difficult route. The first train ran from Pretoria to Delagoa Bay in 1894. General Joachim Machado planned the route and was knighted for his efforts in 1902.

There were no serious geographic barriers to building the railway, but malaria, dysentery and the oppressive humidity of the region caused the death of hundreds of construction workers while the line was being built.

With the railway under construction, it was apparent that the port would have to be developed to handle the growing trade. The first ship, the 'Swazi', berthed in the deep sea wharf on 31 August 1902. Over the intervening years, the port facilities were expanded to become a major harbour on the east coast of Africa. By 1969, 12,6 million tons were moved through the harbour. Volumes handled during recent years have been less than 10% of that amount.

Maputo Port

There is an extensive rail network serving the port of Maputo, although most of it is in a dilapidated condition. Only about one-third of the tracks are usable - the broken rails, rotted sleepers and general absence of effective maintenance make derailments literally a daily occurrence. Many of the yard tracks are sunk into the mud, so that proper inspection and repairs are a difficult and time-consuming task. Some badly deteriorated tracks, with sleepers that were virtually dust, have

been repaired at the Matola terminal, but the wooden sleepers used in replacement were in such poor condition, most other railways would never consider using them. Many unserviceable tracks are clogged with rusting locomotives, freight wagons and passenger coaches. Much of this equipment was damaged in sabotage incidents and derailments, but if a funded repair programme was made available, they could be salvaged. CFM frequently claims to be short of serviceable wagons.

Two major problems with the port and harbour are the need for rehabilitating the shoreside cranes and dredging the channel. Considerable work has been done. A German team recently repaired the twenty-eight MAN cranes. Most of the very old British-built cranes are beyond repair. Forklift trucks and most cranes are now in working order. The dredging programme for the Polana Channel is also complete. Its final depth is 7,4 metres, or thirty-three feet in neap high water and thirty-seven feet on spring tides. The dredger is to remain in the Polana Channel until mid-1988, before returning to Beira.

The container terminal operates smoothly, though the number of containers handled is relatively low. The container area is uncrowded, with room for expansion if necessary. Volumes are about 8 000 boxes per year at present. The Port of Liverpool consulting organisation, Portia, is in charge of operating the container terminal, the sugar terminal, and the steel berth. The Portia management team has five individuals at the container terminal and three at the sugar terminal. Each team member is on three-year contract and the team enjoys a good reputation at the port. The McMyller bulk tippler, the coal terminal at Matola, and the general bulk terminal are managed with the assistance of a South African team.

Although overseas countries have directed aid to Maputo in some areas, many of them are reluctant invest in Maputo, as it is seen as a 'South African' port, and that improvements will not be of direct benefit to SADCC countries.

Swaziland is Maputo's chief user - for the month of September 1987, half the traffic flowing through the port was Swazi sugar and coal. The other major user is Zimbabwe, accounting for approximately one-third of total traffic, and composed primarily of sugar, molasses and steel. South African traffic is down due to lack of shipper confidence in the port and the depressed coal market. A breakdown of Maputo's traffic is given in Table 8.

TABLE 8 MAPUTO TONNAGES (thousands)

	1986	1987
Mozambique traffic		
imports	826,8	916,4
exports	188,4	280,0
Transit traffic		
inbound	77,1	21,9
outbound	1432,4	1439,8
Total	2524,7	2658,1

Note: above tonnages include Matola

This indicates that 45% of Maputo's traffic is Mozambican imports and exports, with the remainder being transit traffic for Zimbabwe, Swaziland and South Africa. While Mozambican traffic showed significant increases for 1986, transit traffic was relatively static. Inbound transit traffic is also insignificant, reflecting a reluctance to use Maputo for imports - a traffic imbalance also found at Beira, although not so dramatic. This means that trains arrive at Maputo loaded but invariably return empty - a very poor utilisation of equipment for the railway.

One possible way to improve this situation is to offer incentive rates for imports routed through Maputo. With so much unused capacity, the cost of moving additional imports would be marginal, so that additional revenue would probably cover all operating costs, as well as make a contribution towards fixed obligations. The CFM should consider this seriously, as the added revenue in much-needed foreign currency would benefit the port as well as the railway.

Prospects for increased tonnages

Maputo Port's realistic cargo handling capacity is probably not as great as the twelve million tons that were handled in 1969, but there is room for considerable traffic increases before congestion reaches unacceptable levels. Several realities may prevent these traffic increases: first, the lack of incentives and an unmotivated work force; and secondly, a less than total commitment from contributors to SADCC rehabilitation projects. Realistic estimates of Maputo's handling capabilities put the upper limit at eight million tons.

1. An unmotivated work force

With the near-total deterioration of Mozambique's economy, the local currency (metecais) is all but worthless. Such a strong black market exists for hard currency and any other desirable and unavailable commodity that the incentive of most people to work in ordinary employment is nearly nonexistent. This 'alternative economy' encourages workers to gain employment simply to obtain a Maputo residence permit and then to make only a token appearance at work on one or two days a week, because time spent dealing on the black market is much more lucrative. Employees cannot be dismissed for failure to show up for work, so their residence permits are secure and, although relatively unimportant, their salary in metecais is permanent. The promise of a ten to twenty percent bonus for improved productivity on the job did little to increase worker motivation.

Even among members of the Portuguese community who elected to stay after the Frelimo takeover in 1975, the mood is one of resignation and frustration about the present state of the country. High-rise blocks of flats have stood unfinished since 1975, even though housing is in desperately short supply. Spare parts for cars are unavailable, so most vehicles are in a deplorable state of repair. There is only one dentist in the city. Portuguese still hold many of the lower and middle management positions. Their general

disenchantment combined with an unmotivated labour force hold minimal prospects for improvement.

Because of this, if improvement projects in the country are to succeed, expatriate management teams must be involved, such as those provided by Portia at the container terminal, so that local expertise can be developed. Staff training programmes to build up a competent local labour force are vital, as is an assured supply of spare parts.

The Mozambican government, however, is very cautious about allowing a wholesale 'takeover' of transport functions in their country. They have allowed the NRZ to operate a portion of the Beira Corridor, but only on a temporary basis. If done in a reasonable and appropriate manner, foreign involvement could result in some improvements.

2. Weak commitment from SADCC supporters

The port of Maputo is seen as a natural port for South Africa by most SADCC countries, as well as by many donor countries, and aid to Maputo is seen as tantamount to assistance to South Africa. Because of this, Beira and Nacala are regarded as the natural ports for Zimbabwe and Malawi and should therefore be given maximum assistance.

A commonly held view in SADCC countries is that the South African Transport Service (SATS) is deliberately diverting traffic from Mozambican ports by offering low-priced contract rates for Zimbabwean traffic through South African ports. Thisimplies that these rates are below cost and inspired politically by the South African government to increase SADCC-members' dependence on South African routes. If one examines recent trends within SATS and the need to negotiate any such contracts on strictly business principles, it is highly unlikely that SATS contract rates are below cost.

Plans for rehabilitation

A master plan for the port drawn up by South African consultants and businessmen is being implemented in three phases. Phase I was begun in June 1987, funded by South Africa through a soft loan of R3 million. It provides for management, maintenance and essential rehabilitation; Phase II involves infrastructure development; and Phase III will develop facilities to meet the long-term needs of port users. The project's aim is to increase traffic throughput to eight million tons per year over a five-year period. Other improvements include installation of two CMI container cranes financed by Italy. Britain, the Netherlands, India, and a Scandinavian group are also providing assistance.

Rail routes to Maputo

There are three major rail routes serving Maputo:

- Maputo to South Africa via Komatipoort (88 km)
- Maputo to Swaziland via Goba (64 km)
- Maputo to Zimbabwe via Chicualacuala (528 km)

The line to Zimbabwe via Chicualacuala (the Limpopo Line) is not operational over its entire distance because of terrorist activity. The United Kingdom is funding a UK£12 million rehabilitation project. The lines to Komatipoort and Goba are operational, although only during daylight hours and subject to service disruptions.

Maputo to South Africa

Security is a serious problem on this line. During December 1987, the line was in operation for six days only, causing delays and possible loss of export orders. The situation was aggravated by a heavy loading schedule planned for December.

The line is single-track throughout, with recently-laid concrete sleepers, and is generally in good condition. The train control system used contributes to the line's limited capacity. This is done by means of paper train orders given by telephone to the train drivers at each station. Only one train is allowed in each track section and no following movements are permitted. Once a train leaves a station, no other train is permitted in that section until the station master at the next station notifies his colleague at the previous station by telephone of the train's arrival, a very cumbersome and slow system. It is entirely dependent on the open wires between stations and subject to occasional destruction by natural hazards as well as sabotage, so that communication breaks down completely, halting all operations. There is also no central train 'control' - trains are simply monitored from station to station.

Another problem is the the difference in train sizes between SATS and CFM. Trains arriving at Komatipoort station over SATS lines generally have thirty-nine wagons. The CFM limits trains in Mozambique to 1 850 gross tons for a single locomotive unit, or about thirty-two wagons. For double-headed trains, the limit is 3 200 tons. Due to the shortage of serviceable locomotives, double-headed trains are almost never operated. Therefore, 39-wagon trains arriving Komatipoort must be broken up into 32-wagon trains - Maputo, so that some block loads are separated. This is a particular problem for coal traffic - blocks of different-sized coal are often split, delaying the entire shipment at Maputo harbour.

Traffic frequently builds up at Komatipoort station, waiting to be picked up by CFM trains. The present practice is for CFM to pick up and deliver trains to and from the SATS interchange at Komatipoort. Inspection of goods trains and immigration checks for passenger trains are done at Lebombo, just east of the Nkomati River bridge inside Mozambique.

The CFM yard master at Ressano Garcia usually communicates with Komatipoort every morning, to advise the number of trains that will arrive at Komatipoort from Maputo during the following twenty-four hours, and to discuss the priority of traffic to be moved. The number of trains promised rarely appears, however, and the instructions regarding traffic priorities are nonexistent. Consequently, the SATS yard master usually instructs the CFM crew to take the 'oldest' traffic to Maputo.

A typical sequence of events at Komatipoort is for the CFM locomotive to arrive at 11h00 with empty coal trucks, departing again with passenger coaches and a load of Zimbabwe steel at 12h20. Arrival time at Lebombo is 12h45, where forty-five minutes is spent inspecting the train and completing customs and immigration formalities. The CFM crew spends about an hour longer at Komatipoort than is necessary, as the SATS crew makes up the passenger train long before the arrival of the CFM locomotive. In that extra time, the CFM crew buys food at the Komatipoort café for resale in Mozambique for big profits.

With regard to yard office procedures, SATS produces a computerised train list showing each wagon number, commodity, tare and gross weight. The CFM crew picking up the wagons prepares a similar list manually, theoretically on the basis of a physical 'walk' of the train. The SATS yard clerk compares the two lists and signs the CFM list as correct. In reality, the only comparison made is to ensure that the number of wagons tallies on both lists, and no verification of the identity of each wagon crossing the border is made.

A further problem is the 'blocking' of trains, which refers to the standing order of wagons that make up the train. The CFM insists that SATS block all trains for Maputo by country of origin, grade of coal, etc. SATS claims that Komatipoort is often used as a storage depot for traffic from Zimbabwe, Swaziland and South Africa, a necessary practice because of the erratic frequency with which CFM takes Maputo-bound traffic to Ressano Garcia and the breaking up of SATS' 39-wagon trains into

32-wagon trains for CFM, as discussed previously. SATS also complains that CFM delivers unblocked trains to Komatipoort - wagons for the National Railways of Zimbabwe (NRZ) are interspersed throughout the train, as are low- and high-sided gondolas, which should be grouped together. SATS must then break up the train and reassemble the wagons in the required sequence - a time-consuming and expensive task.

Long turnaround times for SATS wagons in Mozambique are also a major problem, although SATS is compensated R39 per wagon per day while held by CFM, beginning twenty-four hours after delivery to CFM. Unpredictable turnaround times are one of the principle reasons for SATS' reluctance to enter into through-tariff agreements with CFM, which would result in a more attractive and competitive rate structure. Train frequency over the line is presently averaging at five trains per day in each direction One of these is a mixed passenger/freight train.

Maputo-Chicualacuala

The direct line between Maputo and Zimbabwe, also known as the Limpopo Line, but it is closed to through-traffic at present, primarily due to the security situation, but also because of the dilapidated track conditions. The only traffic moving on the line is concentrated at the two end points - between Maputo and Magude, and between Chicualacuala and a point near Choque. During the period January-October 1986, only 10 904 tons were moved over the line.

As mentioned earlier, the United Kingdom is funding a UK£12 million rehabilitation programme, part of which is for the reconstruction of the Limpopo Line, as well as for repairs to the yard tracks at the Maputo terminal. At present, the line is laid with 30 kg rail and wooden sleepers. The project provides for 45 kg rail and some ballast renewal, as well as for 30 kms of terminal tracks and 63 switches to be renewed within the Maputo terminal area.

Recent developments indicate that NRZ crews are working from the Chicualacuala end of the line towards Maputo, with the assistance of units from the Zimbabwe Army. Whether this project will succeed is yet to be seen, but it could prove to be the most significant rail-link in the SADCC region if it does. Maputo is a much more suitable port for most of Zimbabwe's needs than Beira and, with a non-South African corridor to Maputo, the Beira Corridor will probably lose much of its current international appeal.

During 1981, when through-traffic was operated over the Chicualacuala line, nearly 1,5 million tons were moved, with an average train frequency of 2,7 per day. Tonnages moved by direction were as follows:

MAPUTO-CHICUALACUALA ANNUAL TONNAGES (1981)

Up direction	645 300
Down direction	829 800

The line's capacity has been investigated in detail, showing that limitations exist between Magude and Barragem, where the maximum theoretical capacity is 12,1 trains per day in each direction. After deducting passenger and service trains, theoretical capacity is 7,6 trains per day.

Practical capacity, however, is considerably less. The actual percentage of theoretical capacity that could reasonably be achieved depends on several factors: the type of train control in use; the skill of station employees; and knowledge of conditions on the routes in question. Percentages usually range from 50% to 70% of theoretical capacity. The number of through freight trains per day has been estimated for the line's most restrictive section as follows:

CHICUALACUALA LINE PRACTICAL CAPACITY

(trains per day) Magude-Barragem	% of theoretical capacity
3,8	50%
4,6	60%
5,3	70%

This practical capacity will only be possible when the current rehabilitation programme is complete and if the security situation can be resolved, allowing 24-hour operations.

If the Maputo-Chicualacuala line is successfully rehabilitated, Zimbabwe's goal of reduced dependence on South African transport routes will be realised. As described more fully elsewhere in this paper, relying on the Beira Corridor for the bulk of Zimbabwe's traffic has serious drawbacks. A reliable route to Maputo avoiding South African territory will have a greater impact than a functioning Beira line. Maputo Port is more suited to handling a wider range of commodities than Beira, and the rail route to Maputo has the advantage of easier gradients (1 in 100 maximum in the loaded direction) when compared with the difficult topography on the Beira line.

Security, of course, is the key to the Limpopo Line's success. Relations between Zimbabwe and Mozambique are strained over this issue. Whether Zimbabwean troops will be allowed to provide long-term security for the line has not been decided. Some British-trained Frelimo troops have already been despatched to the area, with encouraging results.

Nonetheless, there is some traffic moving over the line, primarily local traffic between the Zimbabwe border and a point about 80 km inside Mozambique, and also from Maputo as far as Magude. There are reports of some through-traffic being moved between Zimbabwe and Maputo. Because of the precarious security situation, however, it is doubtful whether the line will be able to carry significant amounts of through-traffic before conditions are stabilised. The CFM have claimed that the line will be open for traffic by September 1988.

Maputo-Goba

This is the direct line between Maputo and Swaziland. It is often out of service because of sabotage or derailments. For example, on 9 April 1988, the line was closed after a derailment and not reopened until 18 April. It was also closed for most of May.

On the SADCC project list is a US$20 million rehabilitation programme for this line. Italy has also expressed interest in the project, but it is doubtful whether work will start in the near future.

Because this line is so unreliable, most of Swaziland's rail traffic for Maputo moves via SATS through Komatipoort. The road between Swaziland and Maputo is usually passable, and a considerable amount of freight is hauled over it.

The trend in traffic since 1981 is shown in Table 9, and the tonnages by railway of interchange in Table 10.

TABLE 9 TONNAGE MOVED OVER CFM (Sul)(thousands)

	Local	International	Total
1981	936	4647	5583
1982	1154	4196	5350
1983	860	2600	3460
1984	1030	2140	3170
1985	550	1970	2520
1986	490	2050	2540

FIGURE 10 CAMINHOS DE FERRO DE MOCAMBIQUE (SUL)
tonnages conveyed Jan-Oct 1986

Originating railway	Total tons	
SATS	970 788	
NRZ	10 771	
SR	361 130	
NRZ (via Komatipoort)	305 659	
sub-total		1 648 348
Terminating railway		
SATS	15 479	
NRZ	133	
SR	4 911	
NRZ (via Komatipoort)	51 089	
sub-total		71 612
Mozambique local traffic		408 683
TOTAL TONNAGE		2 128 643

Malawi

An Egyptian attaché was recently posted from Mauritius to his Embassy in Malawi . He asked his new boss in Lilongwe about the best way to ship his container loaded with his household goods to his new post. The Ambassador immediately advised a routing via Durban. The attaché, however, had a twinge of conscience about routing his belongings through South Africa and said that he would prefer to ship them via Dar es Salaam. His boss again recommended the Durban routing, but the attaché decided on Dar es Salaam anyway. Three months later, they found his empty container at a remote station in Tanzania - the whereabouts of the contents are still a mystery.

The Tete Corridor - Malawi's lifeline

By eight o'clock, under a starlit Mozambique sky, most of the inhabitants of Zobue - just inside Mozambique on Malawi's southwestern border - had all drifted past the convoy of sleeping trucks to their village by the side of the road. Members of the Zimbabwe army, camped just up the road adjacent to the unlit Mozambican immigration office, mingled with the villagers, chatting up the girls and exchanging anecdotes with the truck drivers.

At 06h55 the following morning, the first of the Zimbabwe army personnel carriers, with a white skull & crossbones painted on the side, moved past the line of trucks to the front of the convoy. Within minutes, the entire convoy of some 150 vehicles came to life, moving about two kilometres down the road, to stop and regroup to allow stragglers to catch up, then began the 250 kilometre dash to Zimbabwe.

Along the way, the carcasses of vehicles destroyed by MNR attacks are seen by the side of the road, almost totally overgrown by vegetation. The panic in the driver's face was clear, as an alarm buzzer sounded in the cab, so that he had to stop the vehicle to investigate quickly.

The protection the Zimbabwe army gives the convoy is somewhat illusory. Although the military personnel carriers sometimes work their way between the trucks while the convoy is on the move, for most of the time they are not in sight. During most of the trip, as each bend in the road was rounded, all that could be seen ahead was empty road and the high bush growing menacingly close to the edge of the road.

Railway development in Malawi

> It will thus be seen that before the railway came, communication between the port of Chinde and Blantyre depended on 310 miles of very imperfect and unreliable river navigation, available only for about 3 out of 12 months, and a cartage of 28 miles with a rise of 3 000 feet; and when this means of communication was not available, all goods had to be carried on the heads of native porters, and passengers by 'machalla', a kind of hammock slung from a pole.

This is how the present-day country of Malawi was described in a booklet entitled 'Information for Intending Settlers', published in London just after the turn of the century. While its stated purpose was to encourage settlement, a second motive was to exert pressure on the British government to provide or guarantee finance for the extension of the existing railway line northwards towards Lake Nyasa (now Malawi) and southward to the Zambezi river. The difficulties of river navigation made it impossible for the country to develop without the construction of a railway.

The railhead was established at Port Hearald (now Nsânge), sixty miles above the Portuguese station of Villa Bocage, at the head of the navigable section of the Zambezi River. From this point, the railway pushed 109 miles northward to Limbe and Blantyre. In consideration for the health of staff, the hilltop town of Limbe was chosen as the location for railway workshops and headquarters, where they remain today. The first train arrived in Blantyre in 1908.

By 1915, the utility of the railway was measurable - the value of exports was £173 000, a fivefold increase since the turn of the century - and only possible because of the railway.

In 1922, the Trans-Zambezia Railway opened its line from a point near Beira to Muracca on the southern bank of the Zambezi River, reducing the journey from the coast to Blantyre from up to two weeks to only forty-eight hours. In 1935, a 4 000 metre bridge was constructed over the Zambezi, which included forty-seven spans and was, at the time, the longest railway bridge in the world. This completed the line between Beira and Nyasaland. At the same time, the lake was linked by rail with Blantyre. Chipoka was chosen as the lake port, and Salima as the railhead. No further construction took place until the Salima-Lilongwe line was completed in 1979, which was extended as far as the Zambian border town of Mchinji in 1981.

The impact of transport

Malawi had one of the most impressive records of economic growth in Africa until 1982/83, but since then the economy has declined, largely as the result of transport problems beyond its control. An additional burden has been the influx of more than 400 000 refugees from Mozambique into Malawi. This single fact has made Malawi a net food importer for the first time.

The closure of the Mozambican ports and connecting railway lines in 1983/84 were the chief cause of Malawi's economic decline. Most of the country's foreign trade is now routed via Durban, and the additional cost has been estimated at nearly US$100 million per annum. In 1986, the budget deficit was $50 million - almost entirely due to transport problems.

Malawi is presently expanding its road haulage industry, but they find themselves at a competitive disadvantage with their counterparts in South Africa and Botswana. Because of the economic crisis in Malawi and the subsequent devaluation of the Kwacha (K), there has been a rapid escalation of vehicle operating costs.

Description of transport routes

The Nacala Line: Until intensified insurgency activities by Renamo guerrillas in Mozambique halted virtually all traffic in 1983/84, Malawi relied almost exclusively on its direct rail links to the ports of Nacala and Beira to move the majority of its foreign trade. The cost of using these ports was relatively low, as the Mozambican rail tariff was virtually the same as Malawi's. Malawi Railways therefore deliberately kept rates down to ensure that the cost of transporting Malawian goods would remain as low as possible through both Malawi and Mozambique, but events have forced Malawi to seek alternative ports and inland routes.

A return to normal operations on this line is regarded as absolutely vital to the future of Malawi. It was cut by Renamo

in 1984 and since then, trains have been running only on the Malawian section and just inside the Mozambican border as far as Cuamba.

In 1983, a Portuguese-French consortium was awarded the contract to rehabilitate the line, with Canada supplying the rails. The Nacala-Nampula section was completed in November 1986, and work on the Nampula-Malawi border section was supposed to commence in April 1987, but was delayed by a Renamo attack which destroyed large segments of the line. The damaged sections were replaced and the line guarded by Malawian troops. It was hoped to start running two trains per week from June 1988 and to complete the rehabilitation by 1989-1990, but attacks have been renewed and reconstruction has ceased.

Nacala is considered to be the best harbour on the East Coast and could handle all Malawi's exports plus 50% of its imports - about 75-80% of its foreign trade - as well as some traffic for Zambia.

The Beira Line: This line has not been operated since 1983 because of sabotage and lack of maintenance. A daily passenger train runs on the Malawi section, but the line in Mozambique is reported to have been very poorly maintained even prior to independence. Many observers believe that it requires total reconstruction. It is part of Phase II of the Beira Corridor Project. Beira would be a useful ancillary port for Malawi, especially for some break-bulk cargo.

Alternately, some traffic could be moved through the 'Beira Corridor' route via Zimbabwe - road haulage from Malawi to Harare and then by rail to Beira. Unfortunately, Zimbabwean traffic takes priority on this route.

The Tete Line: Much of Malawi's foreign trade is conveyed by road convoys under military guard through Mozambique's Tete region to the Zimbabwe border at Nyamapanda. Guerrilla activity occurs spasmodically and the route is dangerous - the 280 km through Mozambique takes ten hours.

The road is paved throughout, but in bad condition, with potholes and trenches across the road between Zobue at the Malawi border and Moatize at the Zambezi River crossing. Some of the potholes are as much as thirty centimetres deep, requiring vehicles to come to a virtual halt to avoid serious damage. From Moatize to Changara, the road is good, as it was recently upgraded, and speeds of 100 km per hour can easily be maintained, but progress is impeded by a ten kilometre detour over poorly maintained gravel with very steep gradients just south of the town of Tete. The thirty-eight kilometre stretch between Changara and the Zimbabwe border is also bad, with numerous potholes and trenches, some of which have been filled with dirt and broken pieces of asphalt in a crude repair attempt.

In terms of security, the worst stretches are between Zobue and Moatize, where vegetation is thick and grows truck-high close to the road. Especially dangerous are the forty kilometres just northeast of Moatize, where the bodies of several vehicles and containers can be seen rusting in the bush - the relics of previous attacks. The Changara-Nyamapanda section has similar vegetation, as well as potholes and trenches. Another limiting factor is the suspension bridge at Tete, as only one vehicle at a time is allowed over the bridge.

The Zambia Route: Some export and import traffic uses the Zambia-Botswana route, especially hauliers registered in South Africa and Botswana. Fuel imports have to be transshipped to rail at the Mchinji terminus, while container and break-bulk traffic may be trucked as far as Lilongwe. There has been some talk of constructing a rail link through Zambia between Mchinji and the Tazara Line, but the idea seems to have been shelved - at least for the time being. If the Nacala line becomes operational again, a rail link through Malawi would be useful to Zambia. Some tea is transported by road to Lusaka and then railed via Tazara to Dar es Salaam, but there are delays in obtaining rail trucks and losses from pilferage.

The 'Northern Corridor': Certain problems face Malawi's existing routes through South Africa. Since the loss of routes through Mozambique in 1984, Malawi has depended almost entirely (an estimated 95% of imports and exports) on South African outlets, but the threat of international sanctions against South Africa, with the possibility that the Republic will close its borders in retaliation, forces Malawi to develop an alternative.

The 'northern corridor' route uses rail transport as far as the lakeside port of Chipoka, where containers are loaded onto a lake vessel for shipment to Chilumba near the northern end of Lake Malawi, then transferred to trucks and ferried by road to Mbeya in Tanzania, where a further transfer is made to the Tazara Railway for transport to Dar es Salaam. Transit time is between three and four weeks.

Variations to this rail-lake-road-rail route include road haulage all the way to Dar es Salaam via Zambia and Tanzania or by road via Zambia to link up with Tazara. For the road route, transit times have averaged ten days, and between twenty and twenty-five for the road-rail combination. Rates for a six-metre container are US$2 205 dollars - approximately K210 per ton - compared to K110 per ton via South Africa. Because of the low volumes moving over this route, however, few operators are able to provide a regular service.

Other problems for Malawi in using any of the 'northern corridor' routes are, as discussed earlier in the section on Tanzania, the Tazara Railway and the port of Dar es Salaam. There are often serious coordination difficulties between the railway and the port, resulting in long delays, and sometimes storage charges have exceeded the value of the goods. A proposal has been made to establish a bonded warehouse for Malawian goods at both Dar es Salaam port and the Tazara transshipment point at Mbeya. This would help to prevent pilferage, but it is at least two years away from fruition.

Congestion at the port is itself a problem - at the moment, levels are acceptable, but should volumes increase, severe congestion and delay can be expected. Transport users have tried to avoid Dar es Salaam if possible because of serious problems experienced in the past. It is a vicious circle: lack of confidence in the Dar es Salaam route means low volumes; low volumes make the route unattractive to hauliers on account of the low probability of return loads - with the result that transport costs are high and there is little chance of the route becoming 'fluid'.

At present, a large foreign aid package is being developed to fund capital improvements which will make the 'northern corridor' a viable option. It includes purchase of a new lake container-vessel; improved lifting equipment at Chipoka, Chilumba and Mbeya; improvements to the road through northern Malawi; and the construction of a terminal dedicated to Malawian traffic only at Dar es Salaam.

The Malawian Ministry of Transport claims that 350 000 tons could potentially be moved over this route after rehabilitation, but the biggest problem to overcome is that of coordination, which no amount of capital investment can produce.

The Mtwara Route: The possibility of using Mtwara in southern Tanzania as a port for Malawi is being discussed by the two governments. Mtwara served the abortive Tanganyika groundnut scheme in the 1940s. The harbour site is excellent, but additional facilities would be required. The road to Mbamba Bay is in poor condition and port facilities there are nonexistent. For much of the way, the terrain is mountainous. An estimated K180 million would be required to reconstruct the Mbamba Bay-Tunduru section to a standard adequate for carrying heavy vehicles. Funds have not been allocated and it is unlikely that the project will be implemented.

The South African Route: Routes through South Africa to the port of Durban have proved to be the only reliable ones. The two 'corridors' to the Republic are: through Zambia via Mchinji border post in Malawi and Botswana by road (some is transshipped to rail at Lusaka); or through Zimbabwe via Mwanza border post in Malawi, crossing the Tete region in northern Mozambique under Zimbabwean military escort, most of which is transshipped to rail at Harare for movement in block trains to Johannesburg and Durban.

Today the majority of traffic is moved by road to and from Durban, with a smaller proportion going via Dar es Salaam, and some sugar via Harare to Beira. Of the five major exports in 1985, Durban handled all the groundnuts, 95% of the tobacco, 90% of the coffee, 78% of the sugar, and 75% of the tea. Because the Durban route is so much longer, transport costs for exports are higher than for competitors in neighbouring countries. For example, between Malawian and Zimbabwean tea, the transport cost differential is fifteen tambala per kilogram. If it could use Nacala, Malawian tea would be cheaper than Zimbabwean on world markets.

Permits and traffic share

The foreign exchange shortage may cause Malawian road hauliers lengthy exchange control delays in obtaining funds to purchase permits in neighbouring countries. Mozambican permits for the Tete route, however, may be purchased in Malawian kwacha through the local Chamber of Commerce. The permits are a book of coupons - a system that operates efficiently and is regarded by hauliers as the best in Southern Africa. Third-party insurance for Zambia may also be purchased in kwacha through a local insurance company. Permits for Zambia and Zimbabwe are not difficult to obtain, while a Tanzanian permit may be purchased at the border for $100 in Tanzanian currency.

hauliers operate in Malawi, South Africa does not reciprocate or show much sympathy for Malawi's international transport problems. One operator had to wait eighteen months and another waited two years before they were granted permits for the Johannesburg run, while South African hauliers have no problems obtaining permits for Malawi. It is no wonder, therefore, that there is a strong call for South Africa to give greater assistance, especially to be more flexible and allow Malawian transporters to operate through to Durban. Hopefully this is receiving attention, as some permits were issued to Malawian hauliers recently.

Volumes transported

Tonnages moved during 1987 by road through Malawi's three main border posts are shown in Table 11. The border posts are Mchinji on the Zambian border; Mwanza on the Mozambican border; and Kaporo on the Tanzanian border. Only 2% of imports and 5,8% of exports move via the Tanzanian 'northern corridor'.

The remainder of the tonnage is almost evenly divided between Mchinji and Mwanza - 46,8% and 51,2% of imports and 34,7% and 59,5% of exports, respectively.

TABLE 11 MALAWI IMPORTS & EXPORTS BY BORDER POST - 1987 (tons)

BORDER POST *	Kaporo	Mchinji	Mwanza	TOTAL
IMPORTS				
Fertiliser	2 307,0	35 396,0	62 668,0	100 371,0
Machinery	3 160,7	1 372,6	2 425,0	6 958,3
Salt		553,0	12 039,0	12 592,0
Wheat/flour	1 671,0	900,0	13 433,0	16 004,0
Iron/steel	254,0	2 245,0	9 074,0	11 573,0
Paper	42,3	2 159,1	5 950,0	8 151,4
Lime/cement	368,0	10 204,0	728,0	11 300,0
Textile/materials			217,0	217,0
Tallow			2 415,0	2 415,0
Petrol	1 220,0	33 385,0	268,0	34 873,0
Gas oil (diesel)	4 164,0	42 892,2	19 338,0	66 394,2
Paraffin		364,0	95,0	459,0
Lubricant	36,0	410,0	1 855,0	2 301,0
Jet A-1	3 228,3	7 162,0	2 060,0	12 450,3
Aviation gas		95,0	31,0	126,0
Maize	61,0	8 876,0	24 900,0	33 837,0
Coal/coke		3 235,0	17 957,0	21 192,0
Other	7 813,1	13 588,1	60 456,0	81 957,2
TOTAL IMPORTS:	24 325,4	162 937,0	235 909,0	423 171,4

continued

TABLE 11 - continued

BORDER POST *	Kaporo	Mchinji	Mwanza	TOTAL
EXPORTS				
Sugar	207,0	25 448,0	60 192,0	85 847,0
Tobacco	2 336,5	31 940,7	27 647,0	61 924,2
Tea	5 836,8	2 563,7	24 168,0	31 568,5
Maize seed	3 205,5	368,0	1 256,0	4 829,5
Groundnuts	27,0	756,0	10 449,0	11 232,0
Produce	3 146,3	1 704,0	20 121,0	24 971,3
Coffee	105,5	67,0	340,0	512,5
Cotton seed	30,0		1 162,0	1 192,0
Cotton		1 144,0	778,0	1 922,0
Other	375,0	3 321,5	24 014,0	27 710,5
TOTAL EXPORTS:	15 269,6	67 312,9	170 127,0	252 709,5
TOTAL IMPORTS & EXPORTS:	39 595,0	230 249,9	406 036,0	675 880,9

Source: Ministry of Transport, Lilongwe
* Kaporo - on Tanzanian border
Mchinji - on Zambian border
Mwanza - on Mozambique border - route via Tete to Harare

Statistics for the first quarter of 1986, showing the tons carried, the number of vehicles crossing each border, and the tons per vehicles are shown in Table 12, for all border posts combined.

TABLE 12
MALAWI - TONS PER VEHICLE (ROAD TRUCKS), 1ST QUARTER 1986

	TONS	VEHICLES	TONS/VEHICLE
IMPORTS			
Paper	2 726,9	102	26,7
Coal/coke	7 597,1	299	25,4
Fertiliser	7 192,3	269	26,7
Diesel	17 213,2	569	30,3
Petrol	7 687,2	281	27,4
Paraffin	493,7	14	35,3
Iron/steel	4 413,0	152	29,0
Wheat/flour	3 830,1	138	27,8
Auto parts	1 512,8	70	21,6
Jet A-1	3 214,6	99	32,5
Aviation gas	30,0	1	30,0
Salt	3 270,5	111	29,5
Textiles/materials	337,6	15	22,5
Lime/cement	10 849,2	400	27,1
Mixed/other	21 662,6	903	24,0
EXPORTS			
Tea	15 157,5	675	22,5
Coffee	161,1	7	23,0
Tobacco	8 496,0	348	24,4
Sugar	11 612,6	391	29,7
Maize	632,3	26	24,3
Groundnuts	372,4	19	19,6
Produce	1 707,3	67	25,5
Cotton	634,1	29	21,9
Other/mixed	3 902,9	219	17,8

Source: Malawi Ministry of Transport, Lilongwe

The vehicles' country of registration is, however, more significant, shown graphically in Exhibit 5. For both the Mchinji and Mwanza border posts, Zimbabwe-registered vehicles predominate. The balance of traffic through Mchinji is almost evenly divided between Malawian, Zambian and South African hauliers, but at Mwanza, Zimbabwean vehicles by far outnumber the others, with Malawian vehicles a poor second - about a third of the Zimbabwean total. The Kaporo route to Tanzania is dominated by Malawian registered vehicles, even though (as already mentioned) this 'northern corridor' is not yet much used.

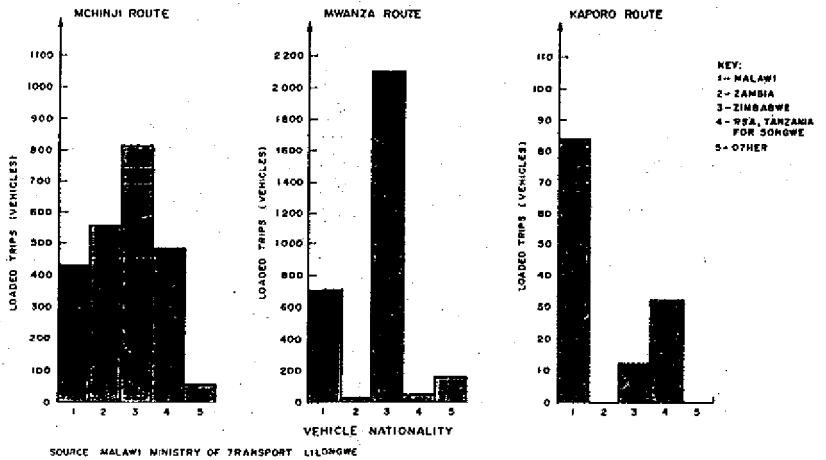


EXHIBIT 5 *NUMBER OF TRIPS BY VEHICLE NATIONALITY 1 st QUARTER 1986*

Route effectiveness

All operators, agents and transport users interviewed agree that the South African route works well - at a price.

As discussed previously, the rail routes to Nacala and Beira provided adequate transport for Malawi's needs at relatively low tariffs. With a shift to almost total dependence on road transport, Malawi's total transport costs have increased tremendously, compounded by two problems: most of the routes lie through foreign countries and transport charges must be paid in scarce hard currency.

Malawi is estimated to pay an additional K102,3 million per year in transport charges, as shown in Table 13. These exclude port charges and ad valorem wharfage. Calculations were made by comparing existing road transport costs (combination road/rail where applicable) with rail charges paid for goods shipped via Nacala and Beira. The latter were obtained from an inspection of railway waybills at the Lilongwe freight station for goods shipped via Mozambique in 1983. These were updated to estimated 1986 levels by applying an annual inflation rate of 10%.

TABLE 13 MALAWI'S TRANSPORT PAYMENTS - 1985 TRAFFIC

	Annual tonnage	Transport cost (millions of Kwacha) via RSA	via Mozambique	Difference
IMPORTS				
Fertiliser	138 572	26,9	6,7	20,2
Salt	25 413	4,9	1,2	3,7
Wheat/flour	21 670	4,2	1,0	3,2
Iron/steel	23 744	4,6	2,4	2,2
Coal/coke	33 268	6,5	1,6	4,9
Paper	10 632	2,1	1,3	0,8
Machinery	3 642	0,7	0,7	----
Fuel	118 741	58,5	11,0	47,5
Other	122 148	23,7	14,9	8,8
TOTAL				91,3
EXPORTS				
Sugar	138 001	13,1	7,3	5,8
Tobacco	72 067	8,5	8,0	0,5
Tea	39 285	4,6	4,9	(0,3)
Maize	60 293	5,7	2,9	2,8
Groundnuts	6 452	0,6	0,3	0,3
Cotton	8 747	0,8	0,4	0,4
Other	31 054	3,0	1,5	1,5
TOTAL				11,0
GRAND TOTAL				102,3

Note: add GST via RSA

Transit times

The South African route: On a fairly consistent basis, transit times are on average twenty-one days on the road-rail route to Durban via Tete. Trans-shipment to rail at Harare is usually done with a minimum of delay, as the NRZ operates a regular unit train to the South African border at Beit Bridge, where SATS takes over. Insufficient capacity on the unit trains has in the past delayed containers of tobacco at Harare - a headache for the exporter, who had to wait an additional week in Durban until the entire shipment could be consolidated.

On occasion, urgent shipments must be sent by entirely by road to South Africa, which usually takes about eight days, either all the way to Durban, or trans-shipped to rail at Zeerust. Charges for the all-road route are approximately 15% higher than for the road-rail route through Harare. A serious drawback with the all-road route is that there are not always hauliers with appropriate permits available, so that exporters must rely on hauliers bringing imports into Malawi who are looking for return loads. A balanced flow of freight is essential to ensure the availability of vehicles, to minimise the very high cost of one-way movements, and to provide a supply of containers in Malawi for exports.

The Northern Corridor: Between Malawi and Dar es Salaam, traffic moves either entirely by road or by the rail-lake-road- rail route described earlier. On the all-road route, transit times are on average sixty-five hours; on the combined route about eighteen days. Tariffs are only about 10% cheaper on the lake route at present.

A problem on both routes is the poor road conditions north of Karonga in Malawi. On the lake route, loading/unloading equipment and barge capacity are inadequate. The existing barge can only carry twenty-five containers, operating every four days between Chipoka and Chilumba. At Chipoka, a railway breakdown crane transfers containers and at Chilumba, a 40-ton mobile crane is used. Malawi owns a CAT V925 container lifted located at Mbeya in Tanzania, which is operated by AMI.

The Northern Corridor rehabilitation programme includes West German aid for road repairs and to purchase a new container vessel with a forty-five container capacity; the United States is funding wharf improvements and gantry cranes for Chilumba and Chipoka; and Britain will finance the construction of Malawian cargo centres at Mbeya and Dar es Salaam. Only the German aid package remains to be ratified. The Malawian Ministry of Transport should finalise planning by September 1988, and construction is scheduled for completion by 1990/91.

While this rehabilitation of roads, harbour facilities and lake vessels will undoubtedly benefit Malawi and Tanzania, it is unlikely that the rail-lake-road-rail route will ever provide superior service or lower rates than the all-road route to Dar es Salaam.

Reliance on foreign operators

Until three years ago, Malawi had a satisfactory rail service to meet its needs, supplemented by a very limited road haulage industry. As shown in Figure 5, approximately 80% of Malawi's goods are now carried by foreign registered vehicles, primarily from Zimbabwe, South Africa and Zambia.

Some Malawian government officials feel that this 'dependency' on foreign hauliers forces Malawi to pay higher charges to foreign operators who are trying to maximise their profit, at Malawi's expense. If Malawi developed a good road transport infrastructure, so the reasoning goes, costs should decrease, putting Malawi in a stronger position. A flaw in this argument is that high duties and excise taxes on spare parts, as well as cost increases due to devaluation, make the cost of operating a truck much higher for Malawians than for South African or Zimbabwean operators. Cost comparisons have been done, based on a Mercedes 2638 horse and a 40-foot tri-axle trailer with thirty tons capacity, utilised over 150 000 kilometres per year. The distance estimated seems a little optimistic, especially for

Malawian hauliers, but the comparison is still valid for contrasting relative costs. The calculations were made using an exchange rate of one Kwacha to SARand 1,12. At current exchange rates, the cost to a South African operator are a bit higher.

Vehicle origin	Cost per vehicle km (Malawi Kwacha)
Malawi	K2 593
Zimbabwe	K1 817
South Africa	K1 531

To enable Malawian hauliers to become more competitive, the Malawian Chamber of Commerce and Industry has requested that local road hauliers be exempted from excessive duties and levies on motor vehicles and spares, and the following specific recommendations have been made:

- removal of duties, levies and surtax from vehicles above a 200-BHP engine;
- removal of all duties, levies and surtax from spares;
- removal of duties, levies and surtax from all vehicle tires over size 10.00 X 20; and
- the establishment of a central clearing house to assist local operators in processing documents, obtaining permits and arranging for return loads.

As yet, the Malawian government has not responded, although a regulation recently introduced restricts the right of foreign hauliers to carry goods between Lilongwe and Blantyre, so that either local road hauliers or the Malawian Railways have the opportunity to move this traffic. Enforcement of this regulation is not consistent, however, and it has been reported that Zimbabwean hauliers are exempted. In effect, the regulation ensures that foreign hauliers bringing in imports bound for either Lilongwe or Blantyre via the Mwanza or Mchinji border posts must take their return loads out via the same route. A South African haulier, for example, can no longer bring in a load of imports for Blantyre, then run empty to Lilongwe to pick up a load of tea bound for Durban.

The creation of MITCO

In 1983, the Malawi International Transport Company (MITCO) was set up to seek ways in which to reduce the country's transport costs by searching for alternative routes suited to Malawi's needs and balancing the movements of import and export cargo. Opinion regarding MITCO's success in achieving these objectives is divided. It has been accused of being just another level of bureaucracy that Malawian hauliers have to contend with and relatively ineffectual against the legal and economic realities of the Southern African transport environment.

Development of road transport infrastructures

The Malawi government has started a programme to train sufficient qualified drivers, to acquire a fleet of vehicles suitable for international haulage, and to institute the procedures necessary for obtaining enough South Africa haulage permits to ensure return loads. Forty drivers, owners and owner-drivers are expected to complete the first training course.

To provide the commercial transport industry with information regarding the occupation, the Malawian Road Traffic Department publishes a monthly newsletter, The Transporter. It outlines for local businessmen the basic requirements for entering the trucking business, gives useful principles for costing road traffic, as well as the reasons for the need to build a strong Malawian road transport industry, and represents the very basic, unsophisticated but essential documentation needed in a landlocked country like Malawi.

Malawi's need for an independent road transport system is understandable, but whether 'own transport' will lower existing total costs is debatable. Development through education and training, acquiring and maintaining a fleet capable of hauling a substantial portion of the country's 800 000 tons of traffic, will not be an easy task. Even if this programme is successfully

implemented and the inordinately high level of duties and taxes now imposed on hauliers removed, it is unlikely that total transport costs would be reduced. If costs and efficiency could equal Zimbabwean and South African hauliers, the best outcome would be stimulation of the Malawian economy because profit, which now flows south, would be retained in the country.

Besides the need for reliability, frequency, and lower costs, a related problem is the need for a regular supply of empty containers for reloading with exports. The South African routes work because most of Malawi's imports come from or via the Republic, mostly in containers. The other routes - low density and unreliable - fail to feed the system with enough empty containers for reloading, another reason why the northern corridor and Beira via Zimbabwe are unsatisfactory at present.

Transport operating costs

Operating costs for several types of vehicles have been obtained from Malawian hauliers. It is difficult to calculate a representative cost function as there are wide variations in vehicle utilisation, but nevertheless, a reasonable approximation can be made:

Vehicle type	Fixed cost	Variable cost
	(1986 costs)	
26-ton horse, 3-axle trailer	K 84 716/yr	K 1 278/km
38-ton horse, 3-axle trailer	K 96 344/yr	K 1 522/km

Using these cost functions and making assumptions about utilisation, it is possible to compute an average cost per vehicle. The following costs have been calculated for vehicles in Malawi, using four different assumptions.

Annual kms	Cost per vehicle km 26-ton	38-ton
	(Kwachas)	
40 000	3 396	3 930
60 000	2 690	3 128
80 000	2 337	2 726
100 000	2 125	2 495

These figures include the existing high cost of duties and levies that Malawian operators must pay. Converted to Rands, they are very high operating costs indeed when compared to those for South African hauliers.

A rough 'reasonableness' test can be made using estimates of these cost functions after removing the impact of duties and levies. (This is the proposal made to the Malawian government by the Transport Committee of the Chamber of Commerce and Industry.) Per kilometre, the cost for a 26-ton vehicle at 100 000 kms a year is K1 453 per year without duties and levies. Applying this to the 4 880 km between Lilongwe and Johannesburg and back, the cost is K7 091 for the round trip, and converted to Rands, it is R11 770. This is consistent with information from other sources in Malawi (transport users and forwarders), placing the cost of operating a South African vehicle between the Republic and Malawi at R11 000 and R12 000 per round trip.

Cost functions for domestic transport must be calculated at a higher per kilometre rate because of lower levels of utilisation, due to loading/unloading delays and a generally lower level of managerial expertise and experience in the domestic market place. Therefore, a reasonable cost function for domestic traffic would be based on costs assuming 40 000 kms annually. From this data, costs per vehicle kilometre would be K3 396 for a 26-ton vehicle and K3 930 for a 38-ton vehicle.

Rail costs

Nearly all Malawi's rail traffic is domestic. Some containers are move between Blantyre and Lilongwe and trans-shipped there to road hauliers, but this is a rather limited service.

It is difficult to develop a rail cost function for Malawi because of the current under-utilisation of the rail system. Its infrastructure and equipment are essentially the same now as ten years ago when the railway carried 1 238 thousand tons of freight. During 1984/85, the cost per train kilometre was K21,81, and the average net tons per train was 146,8. All trains operated as 'mixed' trains - goods wagons as well as passenger coaches. On average during 1984/85, each train consisted of 2,34 passenger coaches and 9,2 freight wagons. Brake vans and other non-revenue wagons averaged another 1,77 wagons per train.

Statistics based on vehicle kilometres are as follows:

1984/85	Vehicle kilometres
Goods wagons	7 376 896
Passenger coaches	1 880 196
Van & departmental	1 424 278
	10 681 370

Source: Malawi Railways Compendium, 1984/85

Therefore, the passenger section made up 24,3% and the freight section 75,7%, apportioning the van and departmental vehicle kilometres equally. The cost per train kilometre attributable to freight is calculated to be K16,51 or K0,11247 per ton, using the average net 146,8 tons per train. This K0,11247 per ton kilometre represents an average cost - the marginal costs of additional ton kilometres would of course be much less, given the large amount of under-utilised capacity.

The future of Malawi's transport

Malawi's real choices: Under the current circumstances in Southern Africa, Malawi has only one real choice of transport route - road transport to South African ports. The threat of terrorist attacks has virtually closed the Beira and Nacala rail routes; the service through the northern corridor is too erratic and the port of Dar es Salaam cannot handle a substantial increase in traffic without inordinate delays resulting; and the rail route to Beira through Zimbabwe has a limited capacity, with Zimbabwe's traffic having the highest priority.

Even if the Nacala line were to open tomorrow, Malawi would still have a transport problem, though on a lesser scale than at present. Several freight hauliers in Malawi believe that only container traffic could be handled through Nacala. The 260 000 tons of fuel and fertiliser, mostly in break bulk shipments, would have to be moved through an alternative port. Malawi has been experimenting with the transport of fuel in rubber bags inside containers. Each bag holds 15 000 litres of fuel and, once unloaded, can be rolled up and sent back empty. The idea is still in the testing phase, and there have been contamination problems with containers, but if this can be resolved, it would drastically reduce the cost of transporting fuel into Malawi. Tanker trucks are used at present, which means a 100% empty return trip, whereas containers can be reloaded with exports.
On occasion, exporters specify that a particular (non-South African) port must be used. For example, some tobacco exporters insist on Dar es Salaam, or certain sugar exports bound for the United States must be routed through Beira via Harare, but the economic realities of using these gateways militate against their use for the bulk of Malawi's traffic.

For Malawi's transport routes, the future is not bright. As mentioned earlier, Nacala alone could handle only a portion of Malawi's needs. Even though the rail line from Nampula to Nacala has been rehabilitated, reconstruction on the section from Nampula to the Malawi border has only just begun. The recent deterioration of the security situation along this line and along the Beira route means that re-opening is not likely to be soon.

Looking at a 'worst case' scenario - if the South African border is closed, it is estimated that Malawi would run out of fuel in two weeks and out of bread within three. The economy would come to a virtual standstill. This situation would not be in South Africa's interest, much less Malawi's.

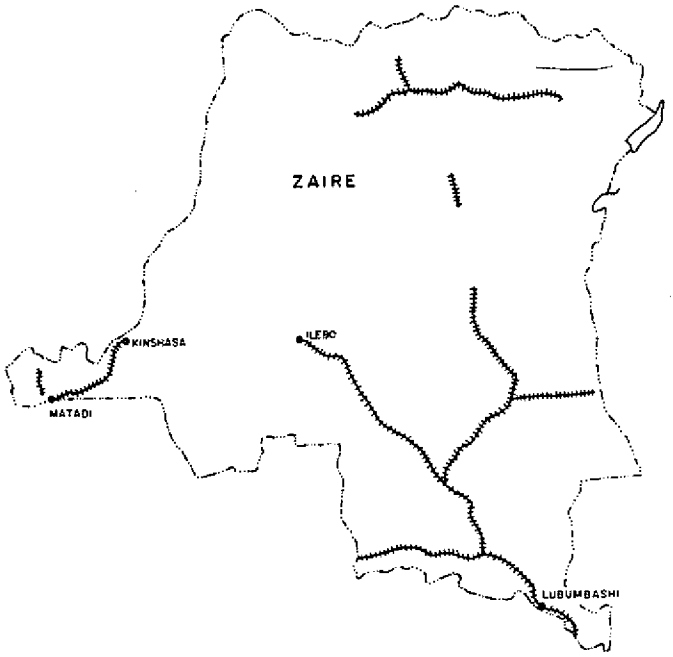
Solutions

South Africa should assist in smoothing the way by easing existing transport regulations in favour of Malawian road hauliers. While this would benefit the Malawian road haulage industry, it is unlikely to reduce the high cost of transport significantly.

Additional technical assistance for both road and rail, possibly from South African transport experts, would be an important step. Malawi itself must develop an action plan to address its transport problems before the financial burden becomes too onerous.

In the long-term, however, the Nacala rail line and port must be made operational and accessible to Malawi. Whether it involves technical assistance to develop coordinated operations, maintenance and rehabilitation, or to assist with policing the lines against terrorist activity, it is in the region's interest to see Malawi resolve its current transport dilemma - a real threat to the nation's well-being.

Zaire



Do you have any items in your luggage which should be declared at Kinshasa customs?

No, just my personal belongings.

It would be better if you would give me fifteen US dollars for the customs man to make sure he does not find anything.

Fifteen dollars is too much. I have twenty French francs instead.

You have French francs? Yes, that would be much better.

Transport infrastructure

Although not a formal member of SADCC, Zaire is very dependent on the region's transport network, in particular, on South Africa.

Zaire's transport is characterised by riverine traffic which necessitates the costly and time-consuming trans-shipment of goods between rail and river transport.
Zaire has 58 129 kms of roads, 23 000 kms of rivers - 14 500 kms are navigable, and 5 471 kms of railways. Air transport is also important, and a major competitor to the railways. There are four international airports and forty-four other airfields of all categories.

Matadi is the principal port - it handled 1 368 million tons in 1984 - and lies on the left bank 139 kms up the Zaire River, just below the cataracts that render further navigation impossible. Vessels are limited to no greater than 22 000 tons capacity, and even these cannot be loaded to capacity.

There is a secondary port at Boma (75 000 tons in 1984), which lies on the estuary of the Zaire River, but serves only the Mayumbe region of western Zaire. There is a deep water port at Banana, directly on the Atlantic Ocean, where the larger vessels call, but land transport routes into the interior are poor. Numerous studies about improving the routes from Banana inland have been made, so that it can be Zaire's principal port, but the estimated cost is prohibitive.

Petroleum products are transported between Matadi and Kinshasa through two pipelines - one is a six-inch pipeline with an annual capacity of 590 000 m^3, the other is four-inch, with an annual capacity of 100 000 m^3. The smaller pipeline is being enlarged to six-inch, and will have an annual capacity of 350 000 m^3.

National public transport

Zaire has four public transport organisations: ONATRA, SNCZ, CMZ and Air Zaire.

ONATRA: The Office de Transport operates the railway between Matadi and Kinshasa - the CFMK (Chemin de fer Matadi-Kinshasa); 12 000 kms of river navigation; river ports on the Zaire and Kasai Rivers (primarily between Kinshasa, Ilebo and Kisangani); and the sea ports of Matadi, Boma and Banana.

The railway between Kinshasa and Matadi extends for 365 kms, has a gauge of 1 067 mm, and rails are generally at 33-50 kg/metre. Most of the rail is more than fifty years old, necessitating frequent reductions of speed over the line. An estimated 70% of goods moved between Matadi and Kinshasa go by rail, and the balance by private road transport. Although no government regulations restrict modal choice, the high cost of road transport is often the deciding factor.

SNCZ: The Societe Nationale des Chemins de Fer Zairois is the major railway organisation in Zaire, with 4 752 kms of line, mostly in the eastern half of the country. SNCZ also operates water transport on Lake Tanganyika and Lake Kivu, as well as two reaches of the Lualaba River.

There are four regions of the railway, some with varying track gauges:

Region	Length (kms)	Gauge (mm)
South (Likasi)	1 377	1 067
Central (Kanaga)	978	1 067
West (Kinshasa)	366	1 067
	136	615
East (Kalamie)	1 163	1 067
	126	1 000
North (Isiro)	1 023	600

The SNCZ plays an important role in moving Zaire's export minerals over two major routes - by rail to the river port of Ilebo for further transport to Kinshasa and the port of Matadi, or by rail to link up with the Zambian rail system and beyond through Zimbabwe to South African ports.

CMZ: The Compagnie Maritime Zaïroise operates six ocean ships over world-wide routes.

Air Zaire: The national air carrier operates a comprehensive domestic service, as well as to European destinations, primarily Brussels and Paris. The company was recently restructured in an attempt to resolve severe financial problems caused by a highly erratic service subject to frequent delays and cancellations. UTA (a private French airline) now supplies management and technical assistance, and operations have improved dramatically. Sciebe Airlift, a private airline, competes with Air Zaire over many domestic routes, and recent reports confirm a similar improvement of service. As with road and rail transport, Air Zaire receives no specific government protection.

Private sector

In addition to Sciebe Airlift, forty-six private air carriers provide services for third parties, and approximately 200 organisations provide services for their own account.

There are a large number of road haulage services, but the total number is not known.

Urban transport

Until recently, SOTRAZ (Societe de Transport Zaïroise) was the only company offering urban bus services in Kinshasa. ONATRA offers limited rail commuter service in the capital. With the creation of CITYCARS, SITAR and SOZAMACO in 1985, SOTRAZ's monopoly was ended.

The various urban services carried 8 500 passengers per day by rail in 1985, while the some 300 busses carried about 350 000 passengers per day. The informal transport sector (the fula-fula, Kimalu-malu, taxis) carried approximately 570 000 daily passengers - about 60% of the total urban market.

Choice of transport routes

Long transit times, frequent delays and losses due to pilferage are commonplace during the many transshipments of goods in Zaire.

The heart of the economy is the movement of copper and other minerals out of the Shaba Province in the south-east corner of Zaire to ports for export. The choice of routes is basically between the voie nationale - rail transport to Ilebo, river portage to Kinshasa, then by rail again to the port at Matadi - and the all-rail route to South African ports, either East London or Durban. Some shipments go via Dar es Salaam, but as some transit times have been reported to be as long as one year, this route is not used much. When Dar es Salaam is used, goods are routed to Kalamie by rail, lake steamer across Lake Tanganyika to the Tanzanian Rail Corporation railhead at Kigoma, and from there to Dar es Salaam. Transit times to Matadi range between forty-five and sixty days, with some shipments taking up to eighty days. Transit times by rail between Lubumbashi and South African ports range between two and three weeks.

The distribution of Shaba Province traffic by route is as follows (1986):

Matadi	340 000 tons	49%
South Africa	300 000 tons	43%
Dar es Salaam	60 000 tons	8%
TOTAL	700 000 tons	100%

Source: SNCZ

Even with the longer transit times via Matadi, this has been the preferred route recently because tariffs are paid in local currency, while South Africa and Dar es Salaam require a considerable amount to be paid in foreign currency. Nonetheless, Gecamine (the largest mining interest in Zaire) transport officials confirmed that at present the preferred southern routes are Durban and East London for exports, and Durban and Port Elizabeth for imports. The Maputo route is being investigated and Dar es Salaam is used to a limited extent, via Lake Tanganyika and the Tanzanian Rail Corporation.

Transport difficulties

While SNCZ's service in eastern Zaire is generally satisfactory, several problems have been identified by users. Firms making shipments between multiple origins and destinations in Zaire have described the SNCZ as difficult to deal with, as negotiations about rates and conditions of carriage must be undertaken with each station master. For example, if an arrangement has been made at the head office in Lubumbashi, those same terms and conditions (for similar shipments) may not necessarily apply at any other station. Several customers have found this an onerous and time-consuming procedure. In addition, although the tariff may have been agreed, when the invoice arrives for payment, many 'extra' charges have been added. These 'extras' are said to be quite substantial, and frequently 'under the table' payments to the railways will waive these charges.

Other problems include filthy wagons, which must be cleaned by the customer, as well as the risk of pilferage, so that doors must be welded shut by the exporter. Most of the SNCZ system is electrified, but because of frequent disruptions of the power supply, diesel traction is often used. During a recent visit to Lubumbashi, no electric locomotives were in operation. Wagons are occasionally in short supply, particularly during times of peak demand. For traffic destined for South African ports, however, SATS wagons are usually supplied, and this is reported to be a satisfactory service.

Another limitation is the poor condition of the cranes at the rail/river transshipment points of Ilebo and Kinshasa. Two new container cranes have recently been installed at Kinshasa, funded by the World Bank, with a capacity of up to forty containers per hour; however, the maximum number handled in any one day is ten, so the wisdom of this investment is questionable, as there is a real need for cranes suitable for handling copper. Kinshasa handles between 25 000 and 30 000 tons of copper per month.

One transport user summarised the main problems as follows:

- shortage of rail wagons;
- inadequate loading/unloading facilities at Matadi, Kinshasa and Ilebo. Most cranes are of turn-of-the-century vintage and spare parts are difficult to obtain; and
- administrative barriers. There is an inordinate amount of paperwork required for transfers from rail to river and to rail again. Proposals for a single bill of lading for the entire journey from Lubumbashi to Matadi are now being investigated - if implemented, this would simplify matters greatly.

The only problem raised regarding the rail route via South Africa was the difficulty of tracing wagons through Zambia because of the wagon information system used by Zambia Railways. There is also some fear that Zambia, at some future point, may block the movement of goods to and from South Africa.

Despite these problems, one importer of machinery now uses the South African route for all their imports from Europe. Previously, this firm imported by air directly from Europe. They have tried Dar es Salaam, but with disastrous results - goods a year in transit, then arriving in pieces.

One of the primary reasons why rail is preferred for freight movements is the poor state of the road system. Much of the road network is unpaved, and movement during the rainy season is impossible. Many wide rivers with no bridges form a natural barrier to any form of land transport.

Selected statistics

A comprehensive report of transport statistics is available - a 239 page annual statistics bulletin entitled Annuaire Statistique des Transports du Zaire 1980-1984, published by the Transport Studies Groups of the Department of Transport and Communication. An updated edition may be available. The relevant statistics extracted from this publication, as well as from discussions held in Zaire, are reproduced in the following pages.

Table 14 shows the consistent dependence on the South African routes for 50% of Zairean minerals. Resistance to utilising Dar es Salaam is also clear.

TABLE 14 Shaba Minerals - Transport Routes

	1980		1981		1982		1983		1984	
	tons	%	tons	%	tons	%	tons	%	tons	%
Matadi	200 865	34,48	276 711	42,93	252,229	41,40	273 307	42,19	242 166	40,14
South Africa	337 930	57,93	328 431	50,95	314 475	51,62	311 402	48,07	308 343	51,09
Dar es Salaam	35 507	6,09	26 745	4,15	37 546	6,15	63 078	9,74	52 859	8,76
Lobito	9 089	1,56	12 718	1,97	5 048	1,00	-	-	-	-
	583 391	100,00	644 665	100,00	609 208	100,00	647 787	100,00	603 368	100,00

Source: G.E.T.

TABLE 15 S.N.C.Z. Traffic - Tons
(thousands of tons)

	1979	1980	1981	1982	1983	1984	1985	1986
Freight								
1. Minerals								
Exports	506	589	648	613	633	607	636	628
Local	1 483	1 825	1 786	1 699	1 921	1 854	1 916	2 003
Sub-total	1 989	2 414	2 434	2 312	2 554	2 461	2 552	2 631
2. General Merchandise								
Imports (coke and coal)	623	692	552	528	570	610	556	496
Exports	7	20	9	18	8	11	8	8
Local	1 268	1 240	1 241	1 124	1 103	1 096	1 143	1 085
Sub-total	1 898	1 952	1 802	1 670	1 681	17 717	1 707	1 589
3. Railway Material	181	157	26	9	39	96	144	34
4. Baggage	1	1	-	-	-	-	-	1
TOTAL	4 069	4 524	4 262	3 991	4 274	4 274	4 404	4 255
5. Passengers (millions)	1 348	963	1 372	965	857	790	792	927

Source: SNCZ

TABLE 16 S.N.C.Z. Traffic - Ton kilometre
(millions of tons)

	1979	1980	1981	1982	1983	1984	1985	1986
Freight								
1. Minerals								
Exports	391	462	566	531	576	541	592	597
Local	265	339	335	331	375	362	378	389
Sub-total	656	801	901	862	951	903	970	986
2. General Merchandise								
Imports (coke and coal)	376	430	366	281	404	439	398	300
Exports	3	8	5	7	4	4	3	4
Local	486	487	538	481	502	489	539	495
Sub-total	865	925	909	775	910	932	940	799
3. Railway Material	70	69	9	3	6	28	45	6
4. Baggage	1	-	-	-	-	-	-	-
TOTAL	1 592	1 795	1 819	1 640	1 867	1 863	1 955	1 791
5. Passengers (millions)	1 869	2 010	2 125	1 843	2 054	2 036	2 101	1 956

Source: SNCZ

TABLE 17 SNCZ ROLLING STOCK (1984) (Eastern Zaire network)

Locomotives - main line		Locomotives - shunting	
Electric	55	Electric	55
Steam	1	Steam	1
Diesel	85	Diesel	85
Sub-total	141	Sub-total	141
Freight wagons	4 877	Rail cars	35
Service wagons	506	Trailing coaches	26
Passenger coaches	360	Privately owned wagons	726
Service coaches	98		
Sub-total	5 841	Sub-total	787

Source: GET

TABLE 18 CFMK ROLLING STOCK (1984)

Shunting locomotives	45	Passenger coaches	63
Freight wagons	2 578	Restaurant coaches	4
Service wagons	246	Commuter coaches	44
Privately owned wagons	242	Rail cars	1
Locomotives - main line		Boma-Tshela Line	
Unserviceable	30	Main line locomotives	4
Serviceable	15	Shunting locomotives	7
		Freight wagons	321

Source: GET

TABLE 19 S.N.C.Z. - Cost/Revenue in Current Prices

Year	Costs	Revenue	Cost Index	Revenue Index	Costs (current prices)	Revenue (current prices)
1975	67 246	52 607	188 055	183 734	35 759	28 632
1976	92 881	66 209	299 178	278 762	31 041	23 751
1977	104 527	86 783	424 213	439 404	24 640	19 750
1978	122 199	93 022	552 726	606 896	22 108	15 328
1979	211 695	192 736	1 071 346	1 048 671	19 760	18 379
1980	1524 401	521 016	1 948 346	1 980 710	26 915	26 305
1981	745 562	691 583	2 837 011	3 041 603	26 280	22 745
1982	1 046 396	1 048 366	3 711 667	4 278 915	28 192	24 501
1983	6 231 578	3 265 950	6 704 896	6 735 741	92 941	48 487
1984	6 791 219	5 938 863	13 977 589	12 256 238	48 586	48 456
1985	12 803 191	7 919 295	19 692 200	15 005 318	65 016	52 784
1986	15 068 641	9 509 456	26 386 100	18 658 130	57 108	50 967

Source: SNCZ

TABLE 20 S.N.C.Z. operating costs (thousands of Zaires)

Year	Materials	Labour	Charges	Depreciation	Other changes	Total
1976	12 429	35 737	527	23 163	21 025	92 881
1977	15 607	40 967	585	26 577	20 791	104 527
1978	18 118	46 821	791	28 232	28 237	122 199
1978	36 935	82 059	1 670	31 969	59 062	211 695
1980	99 137	153 034	111 387	78 464	82 379	524 401
1981	176 392	247 440	143 593	53 8701	124 509	745 635
1982	247 803	309 772	61 136	283 685	144 000	1 046 396
1983	720 330	632 514	2 872 458	1 733 368	272 908	6 231 578
1984	1 176 802	1 467 017	1 169 932	2 176 764	800 704	6 791 219
1985	1 895 714	2 053 874	3 040 715	4 505 692	1 307 196	12 803 191
1986	2 717 426	2 470 512	3 421 280	4 973 711	1 485 712	15 068 641

Source: SNCZ

TABLE 21 S.N.C.Z. Traffic Distribution

Year	Mineral products GCM+(export)			Other mineral products (local)			Agricultural products			General merchandise		
	Ton kms	Revenue	Rev/ Ton km	Ton km	Revenue	Rev/ Ton km	Ton km	Revenue	Rev./ Ton km	Ton km	Revenue	Rev./ Ton km
1975	551 651 835	15 391 837	2,79	344 318 531	5 116 849	1,48	225 086 793	1 167 882	0,52	596 080 727	12 478 017	2,09
1976	552 728 963	20 843 748	3,77	331 445 085	7 897 955	2,38	231 647 187	3 459 196	1,49	552 230 068	15 941 003	2,89
1977	557 501 993	26 924 639	4,82	314 674 999	7 884 474	2,51	225 357 850	5 498 732	2,44	590 517 305	23 578 375	3,99
1978	454 408 839	22 878 140	5,03	261 067 970	6 556 527	2,51	240 393 739	7 123 376	2,96	587 815 132	29 249 800	4,98
1979	373 163 432	35 243 754	9,44	265 204 259	13 958 758	5,26	216 444 064	14 306 205	6,61	588 609 974	59 346 845	10,08
1980	442 695 913	76 625 159	17,31	338 735 350	89 988 469	26,57	223 002 197	34 604 568	15,52	636 955 001	176 937 143	27,78
1981	548 381 053	110 264 797	20,11	334 552 998	114 894 925	34,34	237 708 761	44 669 219	18,79	607 669 940	167 463 402	27,56
1982	514 145 340	129 105 017	25,11	330 631 174	163 397 496	49,42	202 569 799	79 070 816	39,03	506 052 997	312 688 743	61,83
1983	561 853 607	481 356 335	85,67	375 130 506	384 600 372]	102,52	226 756 765	131 440 416	57,97	614 357 511	536 409 410	87,31
1984	529 068 691	1 059 396 899	200,24	362 286 704	752 652 471	207,75	229 847 286	285 231 332	124,1	624 991 274	1 526 073 057	244,18
1985	579 138 776	1 373 796 131	237,21	377 654 546	1 098 887 234	290,98	252 373 305	295 709 124	117,17	628 582 568	2 132 805 509	339,30
1986	585 079 026	1 902 648 261	325,20	389 306 555	1 229 966 245	315,94	213 797 421	722 926 703	104,27	798 770 498	2 289 894 582	286,70

Source: SNCZ + Refers to Gecamine, the major mining interest in Zaire

TABLE 22 S.N.C.Z. Importance of mineral traffic

Year	Mineral traffic				Total			
	Ton kms	%	Revenue	%	Ton km	%	Revenue	%
1969	761 150 050	33,61	19 672 519,91	60,23	2 264 377 439	100	32 661 195,00	100
1970	810 721 735	30,93	19 609 275,87	56,44	2 621 438 246	100	34 742 159,99	100
1971	960 689 111	31,82	10 879 456,88	52,09	2 704 922 963	100	36 244 351,97	100
1972	859 463 623	40,05	19 282 204,51	49,74	2 146 225 920	100	38 762 648,99	100
1973	956 393 783	34,16	20 855 989,17	40,96	2 799 784 577	100	50,921 721,20	100
1974	987 172 020	33,06	21 469 657,73	39,79	2 985 716 605	100	53 957 194,09	100
1975	982 654 348	35,40	21 628 705,00	41,11	2 775 931 000	100	52 507 397,00	100
1976	907 234 127	43,29	29 780 560,00	44,98	2 095 826 000	100	66 209 000,00	100
1977	892 341 109	43,79	36 169 680,00	41,68	2 037 656 000	100	86 783 000,00	100
1978	734 146 654	38,21	31 231 779,00	33,57	1 921 487 000	100	93 022 000,00	100
1979	656 043 712	35,12	51 169 563,00	26,55	1 868 081 000	100	192 736 000,00	100
1980	810 152 435	39,85	170 437 598,00	32,71	2 010 212 000	100	521 016 000,00	100
1981	964 524 000	45,36	245 384 355,00	35,48	2 126 162 000	100	691 583 000,00	100
1982	861 780 831	46,76	296 749 314,00	28,31	1 842 927 000	100	1 048 366 000,00	100
1983	951 049 852	46,33	870 851 732,00	26,66	2 052 830 000	100	3 265 950 000,00	100
1984	903 078 681	44,36	1 831 537 598,00	30,84	2 035 645 000	100	5 938 863 000,00	100
1985	969 610 858	46,16	2 498 434 172,00	31,55	2 100 744 000	100	7 919 291 000,00	100
1986	985 891 985	50,39	3 172 209 361,00	33,36	1 956 331 000	100	9 509 456 136,00	100

Source: SNCZ

Table 24 shows the tariff structure for goods movements between Lubumbashi and the port of Matadi from May 1987. This is the Voie Nationale or national route for imports and exports. As shown in previous tables, approximately 40% of Zaire's mineral exports use the Voie Nationale, 9% is routed via Lake Tanganyika and Dar es Salaam, and the remaining 15% is moved through South Africa. The mineral export traffic, however, moves a substantially smaller proportion through South Africa (see Table 26).

TABLE 23 SNCZ Cost/Revenue Productivity

Year	Ton Kms Thousands	Revenue Thousands	Expenses Thousands	Cost/ton km	Rev./Ton km
1975	2 724 614	52 607	64 246	1,93	1,94
1976	2 095 826	66 207	92 881	4,43	3,16
1977	2 037 656	87 783	104 527	5,13	4 26
1978	1 921 487	93 022	122 199	6,36	4,84
1979	1 868 081	192 736	211 695	11,00	10,32
1980	2 010 242	521 016	524 401	26,09	25,92
1981	2 126 162	691 583	745 562	35,07	32,53
1982	1 842 927	1 048 366	1 046 396	56,78	56,89
1983	2 052 831	3 265 950	6 231 578	303,56	159,10
1984	2 035 645	5 938 863	6 791 219	333,62	291,74
1985	2 100 744	7 919 295	12 803 191	609,39	376,98
1986	1 956 331	9 509 456	15 068 641	770,38	486,09

Source: SNCZ

TABLE 24 Transport Tariffs in Zaire (in Zaires)
(as at May, 1987)

Operation	Tariff classes 1-3	4	5	6	7	8	9	10	11-13
Transit Matadi	460,70	460,70	460,70	460,70	460,70	230,40	230,40	230,40	230,40
Railage - Kinshasa to Matadi	5 094,90	5 094,90	4 258,80	3 422,70	2 903,40	2 529,00	2 187,00	1 877,40	1 622,70
"2 x tractions"	60,00	60,00	60,00	60,00	60,00	60,00	60,00	60,00	60,00
Transit - Kinshasa	460,70	460,70	460,70	460,70	460,70	230,40	230,40	230,40	230,40
River - Kinshasa to Ilebo	5 827,40	5 228,40	4 721,70	3 999,20	3 399,50	2 719,50	2 042,00	1 655,10	1 316,30
Transit Ilebo	687,40	687,40	687,40	687,40	687,40	343,70	343,70	343,70	343,70
Rail - Ilebo to Lubumbashi	14 157,40	14 157,40	11 641,00	9 077,70	7 716,50	6 727,20	5 764,30	4 919,30	4 257,80
TOTAL	26 748,50	26 149,50	22 290,30	18 168,40	15 688,20	12 840,20	10 857,80	9 316,30	8 061,30

Source: Agetraf

TABLE 25 Port of Matadi - tons handled

	1986		1987	
	Imports	Exports	Imports	Exports
January	74 410	49 014	62 170	47 343
February	84 911	48 897	45 539	46 611
March	84 711	68 879	102 249	56 486
April	81 152	81 152	68 533	48 907

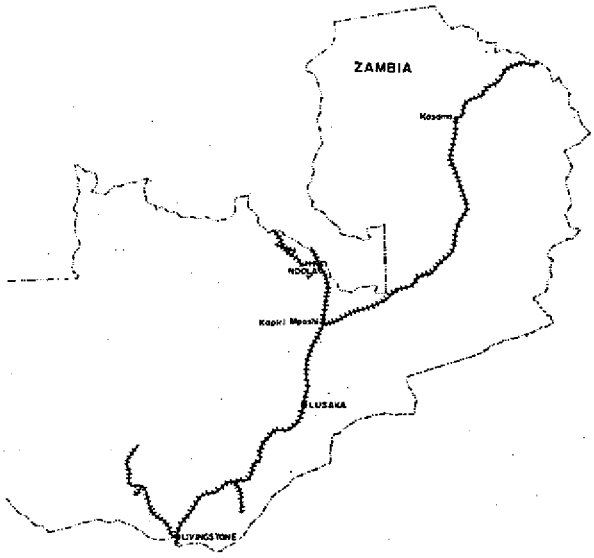
Source: Agetraf

TABLE 26 Routing of Mineral products

Route	1982		1983		1984		1985		1986	
	Tons	%	Tons	%	Tons	%	Tons	%	Tons	%
Matadi	252 304	48,2	257 558	45,9	242 553	45,1	274 260	48,5	307 434	54,5
Dar es Salaam	43 100	8,2	64 738	11,5	59 076	11,0	66 683	11,8	46 513	8,2
South Africa	227 723	56,4	238 579	42,6	236 210	43,9	224 099	39,7	210 017	37,36
TOTAL	523 127	100,0	560 870	100,0	537 879	100,0	565 042	100,0	563 964	100,0

In Table 26, one can see that the shift away from South African routes is dramatic.

Zambia



As originally planned, the 'Cape to Cairo' railway was to go directly north from Gwelo (now Gweru), cross the Zambezi at what used to be called Mfungabusi, then continue as far as Lake Tanganyika, but the diversion of the line to the Wankie coal fields and later to the mining centre at Broken Hill, then continued north to the Congo border and beyond, changed the original conception completely. Nevertheless, this diversion created the basic structure of the present-day Zambian railway system. The first section was completed in July 1905 and the extension to the Congo border opened in 1909.

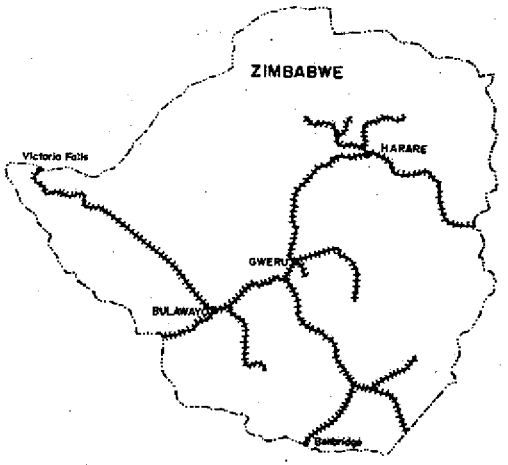
The railways of what was then the Federation of Northern and Southern Rhodesia - today Zambia and Zimbabwe respectively - were interconnected and administered from Bulawayo by the Rhodesian Railways, owned by the Southern Rhodesian Government but run on a fifty-fifty basis. When Zambia achieved independence in 1964, this arrangement was deemed unsatisfactory and a separate Zambian Railways came into being on 1 July 1967, taking over all the lines north of the Victoria Falls bridge.

As a landlocked country like Malawi and Botswana, Zambia's transport and economic situation is dictated by conditions along the routes to the sea through various neighbouring countries. Zambia's most important routes are the Tazara line to Dar es Salaam, to Beira via Zimbabwe and, to a lesser extent, the South African routes.
The Zambian economy is in a precarious state, primarily because of a severe foreign exchange shortage. Lack of foreign currency has had a crippling effect on the country's transport infrastructure. A bus company in Ndola has its entire fleet of thirteen busses out of service because it cannot obtain spare parts. The price of spares - when available - is astronomical. Mini-busses which cost about 50 000 Zambian Kwacha in 1985 now sell for ZK250 000.

The Zambian Railway, desperate for new locomotives, spares and urgent track repairs, was described by The Times of Zambia in a recent article as 'a suicide track'. Since independence in 1964, no major capital has been invested in tracks, locomotives, rolling stock, or other equipment. The original wood or steel sleepers have never been replaced and are in an extremely deteriorated state. The General Manager of the Railways, Emmanuel Hachipuka, has stated that the track is literally sitting on sand. Because of this, speeds have had to be reduced to a maximum of fifty kilometres per hour; passengers have to wait 'for hours on end for the train to arrive to take them to their destinations at a snail's pace'. Theft and vandalism have become everyday occurrences. Signal circuits are constantly broken because wires are cut for use by small-scale industries to make hangers and bracelets. Some goods trains are even being robbed in transit, as the extremely slow speeds make them easy targets for thieves.

According to reports, ZK486 million is needed to rehabilitate the railway line. The United States has given US$10 million for locomotive repairs and spare partsts. Recently, twenty-four locomotives were hired from SATS to alleviate the shortage.

Zimbabwe



Zimbabwe's transport dilemma is primarily aesociated with transport routes within neighbouring countries - the Beira Corridor and the South African routes. It tries to protect the former and to avoid the latter. With a deteriorating economy, linked to a loss of confidence within the local and foreign business communities, Zimbabwe's preoccupation with transport routes through hostile territories is literally costing the country millions.

The internal transport network is in good condition structurally - the real obstacle is a lack of sufficient foreign exchange for spare parts for locomotives, rolling stock and road vehicles. As a result, over half of the National Railways of Zimbabwe's (NRZ) locomotives and rolling stock are unserviceable. The road fleet is aging rapidly and many vehicles are cannibalised for scarce spare parts. Although all vehicles are assembled locally, the rapid price increases in the last few years have led to a decline in production.

Despite these handicaps, Zimbabwe appears to be prospering, often touted as an example of a 'successful' independent African nation. Nevertheless, in the opinion of some, this apparent prosperity is merely the result of 'momentum' gained during the

pre-independence period, and that the realities of President Mugabe's policies are only now beginning to show their negative economic impact.

The NRZ is the largest parastatal, employing nearly 20 000 people, and carries over 90% of the country's external trade in terms of tonnage. Its operating deficit was reported as Z$120 million in 1986/87. Recently, the section between Dabuka and Harare was electrified, justified on the basis of strategic considerations and the advantages of electric power over diesel fuel in terms of balance of payments, yet the line operates at barely 50% of capacity and it is doubtful whether the investment will ever be adequately returned. The Zimbabwe National Transport Study, undertaken in 1984/85 by SWECO, a Swedish consultancy, found that the oversupply of electric locomotives was already apparent. The report recommended, with somewhat dubious logic, that '[B]etter utilisation of the existing electric locomotive fleet would be an advantage of extending electrification'.

Dependence on South African routes

Despite efforts to the contrary, Zimbabwe is still very much dependent on South African routes and port systems. Between July 1986 and June 1987, 77% of Zimbabwe's railed imports and 64% of its railed exports were routed via South Africa. Table 27 shows the complete distribution of NRZ traffic for this period.

TABLE 27 NRZ ROUTING OF IMPORTS & EXPORTS (tons)

	Imports	Exports	Total
South Africa			
transit	267 171	1 434 935	1 702 106
orig/term	711 756	269 554	981 310
Mozambique			
centro	204 866	279 098	483 964
sul (Chicualacuala)	-----	12 857	12 857
Maputo (RSA)	25 505	523 982	549 487
Zambia	-----	48 538	48 538
Zaire	55 404	95 202	150 606
Swaziland	74	18 280	18 354
TOTAL	1 264 776	2 682 446	3 947 222

Source: NRZ statistics

Several changes in Zimbabwe's choice of transport routes between 1985/86 and 1986/87 are shown graphically in Exhibit 6.

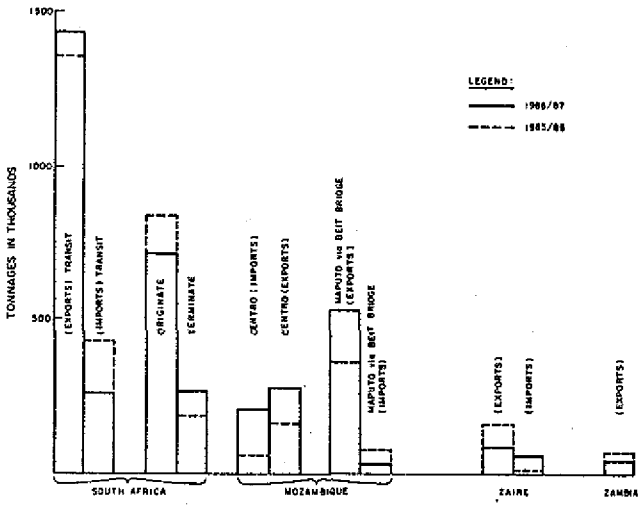
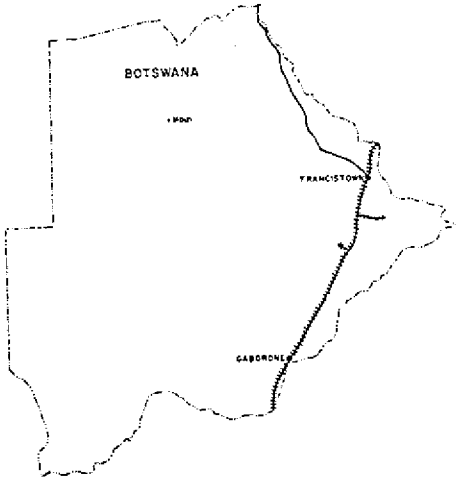


EXHIBIT 6 *NATIONAL RAILWAYS OF ZIMBABWE ROUTING OF IMPORT/EXPORT*

Zimbabwe has significantly decreased its use of South African routes for imports, but there has been a smaller increase for exports. More Zimbabwean goods were destined for South Africa, but fewer imports originated in the Republic. Overall, dependence on South Africa has decreased by 155 932 tons but this is less than four percent of the current total levels of NRZ's international goods traffic.

Traffic to Maputo has increased to 112 983 tons, going via the South African route over Beit Bridge. This traffic could move over the Limpopo Valley line through Chicualacuala if it were in working order. Goods moving through the Beira Corridor have increased substantially by 253 989 tons in 1986/87 - an increase of 110% from 1985/86. Traffic through Beira in 1986/87 made up just over 12% of NRZ's total international freight.

Botswana



Historically, Botswana's rail line has been a bridge route between Zimbabwe and South Africa. If SADCC achieves its goal of drastically reducing the flow of goods to and from South African ports, Botswana's transit link would rapidly become redundant.

Between 1966 and 1986, the 800 km railway between Bulawayo and Mafeking was run by the NRZ. On 29 December 1986, Botswana Railways issued their first timetable and officially took over operations. Some doubt has been cast on the railway's legal status, as there had been no act passed by the Botswana government to establish the company. Most rolling stock is leased from the NRZ, although locomotives belong to Botswana. Besides some ballast wagons used for track rehabilitation, Botswana Railways owns no freight wagons, and the daily passenger train between Lobatse and Bulawayo is on lease from South Africa. The NRZ handles all accounting, for a fee. Freight traffic is interchanged with the NRZ at the border town of Plumtree.

Operating difficulties

In November 1986, the government of Bophuthatswana decreed that Botswana rail crews would need visas to take trains through to Mafeking for handover to SATS. As the Botswana government do not recognise Bophuthatswana's legitimacy as a sovereign state, it

rejected the decree and constructed an exchange yard on its own border. Passenger trains from Bulawayo now terminates at Lobatse, and traders in Mafekeng are reported to have lost considerable business. Views aired in Botswana express the perception that the Bophuthatswana administration was encouraged by Pretoria to insist on visas, as part of South Africa's alleged destabilisation policy. At the beginning of August 1987, however, the visa requirement was waived. Nonetheless, Botswana Railways continues to interchange traffic with SATS at Rakhuna, and the daily passenger train still terminates at Lobatse. The weekly direct passenger express to Johannesburg continues to operate via Mafekeng.

Unfortunately for Botswana Railways, turning its locomotives before Mafekeng has led to an increase in costs. Mafekeng used to be the refuelling point for NRZ locomotives from Bulawayo, but turning at Rakhuna siding means that refuelling must be done at Gaborone. Gaborone has only a small emergency fuel storage tank, and fuel in Botswana is much more expensive than in South Africa. Refilling this small tank more frequently has also increased expenses.

Financial situation

It was predicted that Botswana Railways would end its first year (1987) with a deficit of between seven and eight million Pula, but that profitable operations would be achieved in 1988 - this is by no means a certainty. The Botswana Railways traffic manager has admitted that the existing rate structure is not based on costs but follows the NRZ system, and it is believed that many goods are conveyed at less than cost. The accounting firm Coopers & Lybrand are to undertake a cost and traffic study, with British funding. Management is of the opinion that future traffic is in a precarious position - if Botswana Railways introduces a cost-based tariff structure, which would increase rates, much of the through traffic would probably be lost to the Beit Bridge route. NRZ already has incentives to divert traffic to this route so that their rate division will be maximised.

Most of Botswana Railways' top management (forty persons) are on contract from British Rail, and about 150 in lower management and technical staff are seconded from NRZ, although Botswana citizens are gradually being phased into management. It is expected that within three or four years, all positions will be held by Botswana nationals.

The railway's future is uncertain. The number of trains has declined from twelve per day in each direction in 1980/81, to approximately six per day at present. As shown in Table 28, transit traffic accounts for over half the total, but this may decline if SADCC ports and railways were more efficiently run. If the line were to be used only for local traffic and Botswana's traffic with South Africa, it would operate at a significant deficit.

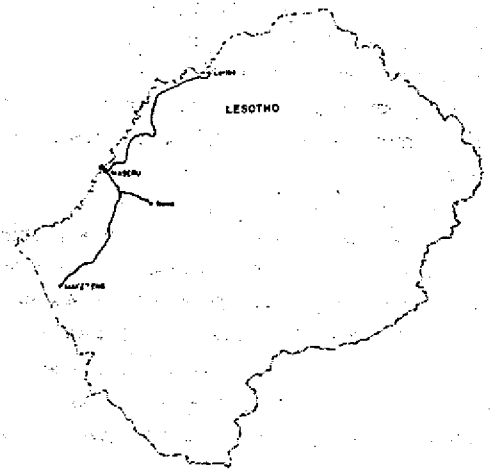
TABLE 28 FREIGHT TRAFFIC ON BOTSWANA RAILWAYS (tons/thousands)

	1981/82	1982/83	1983/84	1984/85	1985/86
Imports					
southbound	33,0	36,5	39,6	37,1	31,9
northbound	91,0	104,2	104,0	99,9	94,3
subtotal	124,0	140,7	143,6	137,0	126,2
Exports					
southbound	3,8	6,0	4,1	3,7	9,2
northbound	25,5	25,7	27,3	33,0	24,7
subtotal	29,3	31,7	31,4	36,7	33,9
Local	105,9	114,4	90,0	93,4	93,6
Transit	954,0	1 091,9	1 071,6	1 029,7	1 074,4
Total	1 213,2	1 378,7	1 336,6	1 296,8	1 328,1

Source: Central Statistical Office, Gaborone, 1986

A new project that could increase traffic considerably is the extraction of soda ash at Sua Pan, which could add some 300 000 tons to Botswana's exports. A 180 km railway to the source of these deposits would be a boon to the railway's declining traffic base. The proposed Trans-Kalahari Railway to Namibia has been evaluated by consultants, but because of the high costs and the uncertainty of Namibian independence, the project has been shelved.

Lesotho



Rail transport is limited by Lesotho's extremely mountainous terrain. SATS operates approximately two kilometres of track within the Lesotho border. A further twelve kilometres within the Maseru industrial area are operated by the Lesotho Rail Services (LRS). The LRS performs shunting within the industrial area at R70 per shunt. SATS operates two freight trains per day between Maseru and Marseilles, the junction point on the Bloemfontein-Bethlehem line. Rail passenger services have recently been withdrawn, although SATS runs a substitute road bus service.

Tonnages moved to and from Lesotho by rail during 1986 amounted to 249 944 tons arriving at Maseru and 11 240 tons dispatched. From information obtained in Maseru regarding imports and exports, it was estimated that the rail share was 21% on the basis of value. Applying this to rail tonnages, total tonnage was estimated at 1,2 million tons of imports and 53 524 tons of exports during 1986. Seventy-eight percent of imports arrive by road (25% via the Ficksburg Bridge), and one percent by air.

Durban is the primary port of entry for imports. Food aid, fuel and general merchandise comprise the bulk of import commodities. Most goods arriving at Durban are either railed directly to

Maseru or off-loaded at Ficksburg and trucked across the border. A large number of illegal road hauliers are reported to be operating from Durban and Jan Smuts Airport.

Several silos for maize and wheat processing have recently been opened in Maseru. It is planned to process nearly 40 000 tons of grain products annually.

Transport problems

The large imbalance of imports over exports is a constant dilemma for both road and rail transport. Lesotho's difficult topography has a negative impact on the cost of operating road vehicles. In the following table, selected operating costs are shown.

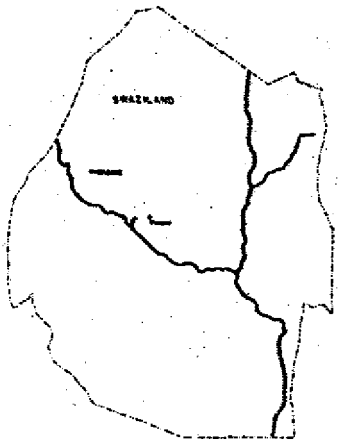
TABLE 29 VEHICLE OPERATING COSTS IN LESOTHO (1986 price levels)

Vehicle type	Payload	Terrain	Cost per vehicle km
Mercedes 4X2	8 tons	lowland/tar/gravel	R 0,7962
Mercedes 4X2	8 tons	lowland only	R 1,5872
Mercedes 4X4	6 tons	steep grade	R 1,6890
Mercedes 4X4	6 tons	mountain	R 1,8774
Isuzu 4X2	7,2 tons	steady grade, rough road	R 1,1213
Mercedes 6X4	14 tons	lowland/tar/gravel	R 1,1489

Source: Sample of vehicle operators in Lesotho

There are numerous complaints about the difficulties Lesotho hauliers have in obtaining transport permits to operate within South Africa. Although South Africa's permit system is changing and a decrease in protectionism is likely, many hauliers in neighbouring countries feel threatened by the unjust imbalance caused by South African operators who hold valid permits for those countries.

Swaziland



Swaziland's major transport obstacle is the continual disruption of railway services (by either sabotage or derailments) to its natural port, Maputo. Whenever this occurs, Swazi traffic must be moved via South Africa through Komatipoort. This direct link, a joint Swazi-South African project, was opened in 1986, justified by the two million tons of rock phosphate that would be moved from Phalaborwa to Richards Bay.

Theoretically, low operating costs over the flat lowveld topography would provide profitable much-needed revenue for Swaziland Railways. When the only user of this through traffic closed its plant at Richard Bay, however, the loss of revenue exceeded R7 million, and Swaziland Railways' deficits continued to climb. With the help of SATS, additional through traffic was generated to compensate for the loss of revenue from rock phosphate traffic. All freight between Durban and the Eastern and Northern Transvaal is rerouted through Swaziland, mostly copper, citrus and other general traffic. SATS also agreed to reroute traffic between the Natal ports and countries north of the Limpopo through Swaziland. This rerouting saves some 200 km and as much as 12 000 tons per day were carried during 1987. For 1987/88, total revenue is projected at R21,2 million - 76% of which is attributed to transit traffic. Nonetheless, this route is inferior to Swaziland's 'natural routes' to Mozambican ports, if normal conditions permitted.

Several coal and iron ore mines have been closed and the line north of Manzini is no longer used. The possibility of reopening these mines is being discussed with various mining companies in South Africa and in Europe. If they are reopened, the additional revenue would give both the railway and the economy a healthy boost, by compensating for the decrease in income from sugar sales in 1987. The declining world price of sugar and the reduction of Swaziland's share of the lucrative American market will cause a 20% cut in Swazi sugar production.

Although Swaziland uses Durban for much of her export traffic, for certain destinations, Maputo must be used - for example, coal for Kenya, and certain countries will not accept Swazi sugar if routed through South African ports. Therefore, Swaziland is probably the country which is most dependent on the efficient operation of the port of Maputo and the connecting rail lines.

EVALUATION OF TRANSPORT EFFICIENCY

It has been argued that, for most of the SADCC countries, the routes to the sea via South Africa are the longest, and that compared to their 'natural' outlets, using South African routes incurs unnecessarily high transport costs. Distance, however, is not the only factor to be considered when determining costs. Any importer, exporter or freight forwarder will identify reliability, safety and security as the primary considerations in the choice of route. If these conditions were identical for all Southern African routes, distance would indeed be the deciding factor, but given the realities of the Southern African situation, the shortest routes are neither the most cost effective nor the most efficient.

Transport efficiency also depends on tariff structures, which are often bolstered by subsidies from government. A country that heavily subsidises its national railway so that, for example, utilisation is increased, or traffic is diverted from a competitor, will not help to create an economically viable transport system. The consequent imbalance acts as a drag on

regional efficiency. For example, if freight rates to SADCC ports are kept at relatively low levels but do not cover the costs of providing services or for maintenance and rehabilitation, to direct more traffic over a particular route would add to that country's subsidy burden, and further decrease regional efficiency.

Political pressure adds to the predicament. SADCC's stated policy is to redirect traffic away from South African routes to the 'natural' routes. Part of the argument is that, because these routes are shorter, they should be more cost effective. As discussed at length throughout this paper, the reality of the situation is that the SADCC routes and ports are subject to transit delays and even total blockages because of insurgency, dilapidated facilities, inept management and rampant pilferage. Clients themselves add to delays, especially parastatals, by not finalising the necessary paperwork to clear goods on time.
Because of these other 'costs', one cannot compare routes by distance alone, but must consider the total distribution of costs that transport users need to determine when choosing the most economic route. One method is to contrast unit costs and revenues. The statistics for five railways are shown in Exhibit 7. It is difficult to make direct comparisons, as accounting policies differ with regard to the recording of expenses, especially regarding the cost of assets, but some conclusions can be drawn. It is clear that all the countries shown in Exhibit 7 require varying degrees of subsidy to keep their railways in operation.

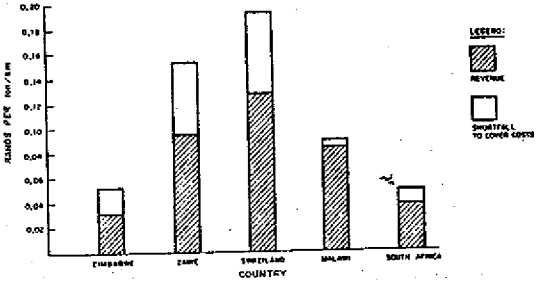


EXHIBIT 7
REVENUE AND COST COVERAGE FOR SOUTHERN AFRICAN RAILWAYS 1985/86

The historic relationship between SATS and the South African government, however, is changing. The old system of cross-subsidisation is being phased out by allowing more open competition from road haulage. In the past, high-rated commodities, often priced as much as 400% above cost, were shielded from competition by the road permit system, which protected most of the railway's high-rated traffic base. With deregulation, rail rates will have to approximate costs. In future, the 'band' of SATS rail rates will be between 80% and 135% of costs. Theoretically, the system will become self-supporting.

Most of the traffic between the countries north of the Limpopo and South Africa, however, is moved under contract rates, therefore the ordinary tariff structure is irrelevant. Because of the competitive nature of this traffic, it is doubtful that the contract rates are below cost. During this period of deregulation, SATS will have to ensure that all its business transactions are economically viable. There is also no evidence to support the allegation that the South African government is subsidising SATS to 'attract' this traffic to South African ports. The South African government is itself under tremendous financial pressure to reduce the total level of transport subsidies, particularly to SATS.

FUTURE PROSPECTS - A BLUEPRINT FOR SURVIVAL

The question at hand is, given the massive rehabilitation efforts being undertaken by the SADCC countries with the assistance of countries around the world, can the transport network of the Southern African region be transformed into a viable, reliable, working system, capable of moving the region's goods? Given that this improved transport system exists, would it be capable of achieving SADCC's stated goal of displacing the current dependency on South African routes?

To the first question the answer is: 'probably yes', and to the second: 'no'. In this final section, the most significant issues regarding transport in the region will be discussed, followed by specific policies or actions which should be taken to improve the transport network and related services. These issues will be addressed under three headings: SADCC - recommended action; South Africa - recommended action; and Outlook for the region - moderate optimism.

SADCC - recommended action

Criticism has been directed at the implementation of SADCC's programme of projects, even from within the organisation. The following is excerpted from the SADCC Macroeconomic Survey, tabled at the 1986 SADCC meeting:

> As the SADCC programmes have grown in size, variety and complexity, concern is growing about some features of this expansion, namely that:
>
> a) In the appraisal of projects, the objective of reducing economic dependence does not appear always to have been observed;
>
> b) Data gathering and preparatory studies have tended to dominate some of the sectorial programmes at the expense of concrete project implementation;
>
> c) Insufficient attention has been paid to the role of directly productive and commercial enterprises and institutions;
>
> d) There has been inadequate emphasis on the mobilisation of SADCC's own resources - financial and human - and an excessive emphasis on attracting external funding and personnel;
>
> e) Though the approved list of SADCC projects is already lengthy, and the implementation rate is still under half, new projects continue to be added at a rate which, if unchecked, could eventually undermine the credibility of the whole programme;
>
> f) Planning and programming of activities have tended to lack a long term perspective.

In addition to these somewhat general observations about SADCC's performance, there are several specific actions that SADCC could take to develop a more effective regional transport system:

- capital vs maintenance - ensuring the correct balance;
- improvement of management;
- coordination of projects and between countries; and
- influencing transport policies.

Each of these will now be described in more detail.

Capital vs maintenance - ensuring the correct balance

The World Bank stated its view regarding capital and maintenance in its document 'Accelerated Development in Sub-Saharan Africa - An Agenda for Action':

> Tendencies in African countries to prefer capital-intensive solutions and, in donor countries, to seek projects offering markets for their manufacturers, have sometimes greatly reduced the real contribution of foreign assistance to development, and even imposed serious long-term burdens.
>
> Aid suppliers, in addition to financing projects oriented to maintenance as such - construction of regional offices and workshops, procurement of equipment, periodic maintenance, and training - should include components contributing to the development of maintenance capacity, even in projects mainly concerned with new construction.

There are numerous examples among African railways where 'easy' capital funds have resulted in a myriad locomotive manufacturers being represented in the engine-houses, making the standardisation of spare parts impossible. Ongoing maintenance programmes are often seen as unnecessary because it is easier to buy new units. One specific example concerns a manufacturer's technical representative who had to be in residence at the railway's locomotive workshop for virtually the entire two-year guarantee period to ensure that even a minimum of required servicing took place.

In its lending programme, the World Bank has recognised this situation and insists that a properly designed and implemented maintenance programme exists before it will grant additional funds for capital equipment.

SADCC's investment programme, however, has no such central body to ensure that projects are indeed in the region's best interests. The Beira Corridor is the closest that a SADCC project has come to being coordinated. Through the mediation of the Beira Corridor Group (private sector, based in Zimbabwe) and the Beira Corridor Authority (government, based in Mozambique), a cohesive group of projects have been defined and are being implemented. Many of the other regional projects, however, are not as coherent, so that duplication of effort occurs in several areas. As the main objective of SADCC meetings seems to be to get the most in the way of commitments for funding of identified projects, this is not surprising.

SATCC staff in Maputo consists predominantly in overseas consultants, usually contracted for a period of three years, from Canada, France, Italy and the Nordic countries. Their primary objective should be the critical analysis of SATCC's portfolio of projects, to ensure that each group of projects is appropriate and necessary and that there is no wasteful duplication of effort. They should also be able to influence the various aid agencies for foreign donor governments about the proper nature and scope of projects. SATCC's statistical data base at Maputo should also be made as reliable and consistent as possible.

Improvement of management

In nearly every aspect of transport in the region, the need for proper management is blatantly evident. To get the most out of the existing infrastructure, strong lower and middle management is urgently required, yet not a single SADCC project is specifically directed towards the training of management staff.

A familiar criticism levelled at the colonial powers when they pulled out of Africa, was that local populations were never brought into the mainstream of the transport business at a decision-making level. While this accusation is true to varying degrees depending on the country in question, there can be no doubt that management training has been the most sadly lacking element in subsequent transport improvement programmes.

A characteristic typical of organisations in developing countries is the extreme centralisation of power and authority, and the absence of delegation frequently leads to a failure to progress or even complete breakdown. For example, turnaround time for wagons between Komatipoort and Maputo is thirty days of more because there is no-one to make the decision for returning an empty wagon. It is clear that any future aid programmes must include management training as a top priority.

Training is also necessary in terms of providing maintenance capability. Only nineteen of the 192 transport projects tabled at Arusha in January are for training, for which US$59,6 million has been scheduled - 1,4% of funds for all transport projects. Funds for training should be at at least 10% of the value of all projects.

Coordination of projects and between countries

With so many donor countries participating in the funding of SADCC projects, tight coordination is required to prevent duplication of effort. Although the Beira Corridor project has a form of centralised authority, this is more to promote use of the route and not for overall coordination. Other projects have been defined geographically in terms of 'port/transport systems' for Maputo, Beira, Nacala, Dar es Salaam, and Lobito, grouping all transport projects related to movements to and from each port, but this is simply for convenience and does not imply coordination of effort. If a coordinating body exists, it is supposed to be the SATCC technical unit in Maputo.

To give an example of the lack of coordination: both Swedish and American consultants have done studies to define regional freight flows. Statistics regarding such flows are scarce and often unreliable, so it is not surprising that different flow patterns have emerged. Such a variety in basic statistical information will have serious effects on the evaluation of projects, because results will depend on which set of figures is used.

Therefore, it is crucial that coordination in identifying projects, their planning and implementation is given much more emphasis, and much less effort spent on obtaining capital funds.

One of SADCC's stated objectives is cooperation between the countries of the region - one that is very difficult to achieve. Nonetheless, some successes should be cited.

- In the Beira Corridor, rail operations between Mutare in Zimbabwe and Gondola in Mozambique are a good example of cooperation between the NRZ and CFM. NRZ crews and locomotives work across the border into Mozambique, and the NRZ station master at Mutare provides efficient control over CFM operations.

- The Tazara line is run as a bi-national organisation between Zambia and Tanzania, although a long-standing wrangle over respective wagon hire charges muddies the waters somewhat.

- A single tariff book system is being prepared for all the railways in the SADCC region. Although there is a case for differential rates in the various countries, standardisation of tariff regulations will be a great boon for rail users.

An area that needs much greater cooperation concerns road transport legislation - in particular, there should be more reciprocity in the granting of permits. Zambia, for example, discriminates against Tanzanian road hauliers in its territory, yet Zambian hauliers dominate the road haulage market between the two countries. Botswana has recently introduced legislation that

restricts road haulage to vehicles registered in Botswana, Batswana drivers, and firms with depots in the country. In terms of discrimination, South Africa is probably the region's biggest offender. Statistics cited earlier in this paper show clearly the imbalance between permits granted to South African and foreign hauliers.

If true cooperation is ever to be achieved, governments must look beyond their own self-interest. The region's resources are limited - if each country jealously guards 'its own', no development or prosperity will be possible.

Influencing transport policies

This is probably the most important yet most neglected area in need of change. In most Southern African countries, including South Africa until very recently, transport policy is generally formulated to protect the national railway through restrictive road permit legislation. Road tariff structures are usually on an ad valorem basis, with a high degree of cross-subsidisation. Railways are typically overstaffed, inefficient, and a drain on the national treasury.

The World Bank has done much to persuade many governments of developing countries that a railway run on sound business principles without protective legislation would become a national asset, rather than be an economic liability. Preconditions for further World Bank loans include the establishment of a cost-based tariff, management restructuring with a market orientation, free competition between road and rail traffic, and the eventual removal of all general subsidies.

In the World Bank document 'The Railways Problem', the fallaciousness of continued subsidisation is clearly identified:

> The basic objective in establishing financial and pricing policies for railways should be to help them carry through as quickly and efficiently as possible the structural change that is essential to their future. Targets and policies thus need to be conceived

> in such a way as to exert continuing pressure on management, staff and customers towards increased efficiency. They should encourage and facilitate the closure of services, stations and lines that are no longer economically competitive with other forms of transport .... They should serve to attract traffic in which the railway can have continuing comparative advantage, to discourage other traffics, and to encourage management and marketing efforts in these directions.
>
> ... properly discriminatory tariffs, reflecting marginal costs at different points and times on the network and including higher markups over marginal cost the less price-elastic the traffic, can yield higher revenues sufficient to provide adequate service and cover overheads.
>
> Even more important, the principle of overall "budgetary equilibrium" for an enterprise - in the sense of requiring it to earn at least sufficient revenues to pay all working costs, and the interest and principal due on debt - has now been widely recognised as an invaluable, if not irreplaceable, tool for ensuring disciplined management .... nothing binds as effectively as the budget constraint.

Regarding subsidies, the World Bank's position is as follows:

> Subsidies which, in effect, simply cover whatever deficit emerges at the end of an accounting period are most destructive of financial discipline .... subsidies which sustain low tariffs as an anti-inflation measure may merely delay the emergence of other more efficient transport solutions .... most of the parties involved [with subsidies] often have no direct interest in their reduction.

This can be related to SADCC's claim that the shorter distances to seaports via SADCC routes should be used in preference to the South African routes. If the shorter routes require heavy subsidisation to be able to operate, any 'saving' in terms of total cost would be false. The only solution would be a cost-based tariff structure for the entire region and free competition between different modes of transport, and any subsidies should be strictly specific, not general.

South Africa - recommended action

South Africa has been widely criticised for its supposed involvement in regional destabilisation. Nevertheless, South Africa could take several positive steps that would enhance transport efficiency over the entire region.

Technical assistance

A certain amount of cooperation already exists between the Southern African states and South Africa because of their historically interconnected railway systems. SATS has several coordination meetings each year with representatives from the railways of Zambia, Zaire, Zimbabwe, Mozambique and Swaziland. These are technical meetings to discuss practices of wagon interchange, revenue division, and rating policy.

During 1984/85, total tonnage of traffic to and from neighbouring states amounted to 5,6 million. The railways in SADCC countries regularly hire SATS locomotives and wagons, often because they lack the foreign currency to buy much-needed spares. During 1987, fifty locomotives and more than 7 000 wagons were on hire to railways outside South Africa. Equipment hire revenues amounted to R180 million for SATS in 1985. SATS staff are also seconded to the railways of Malawi and Swaziland, and give technical assistance to Mozambique on specific projects.

These are good beginnings, but more needs to be done. In the opinion of many SADCC railway officials, South Africans are the most knowledgeable about regional conditions and, in many cases, most suited to provide assistance to SADCC railway projects. South African technical assistance is certainly less costly than bringing in experts from overseas, yet the nature of foreign aid procedures often precludes this. For example, German grants usually stipulate the purchase of German hardware, the use of German consultants and technical experts; grants from the United States stipulate giving priority to local or American firms to undertake the work; and other countries have similar strings attached to their grants.

South African consultants and technicians should be more fully involved, not only in transport matters but also in other areas, such as contracting. Before this can be achieved, however, the issues of 'tied aid' and the political barriers to the involvement of South Africans will have to be resolved.

An 'open route' policy

Statements issued by SADCC as well as by the South African government, deal with the possible closure of the routes to the north, should sanctions threats become a reality. Studies undertaken by several Frontline states have shown that border closures would result in near-collapse of the economies of many SADCC states.

South Africa certainly benefits from the flow of goods to and from the north. Estimates of the revenue accruing to SATS annually range between R180-300 million. Obviously SATS would like to protect this source of revenue, as most of the traffic moves at lucrative contract rates, but it accounts for less than 3% of SATS' total revenue, so the impact of its removal would have minimal 'bottom line' impact.

After the signing of the Nkomati Accord, South Africa became increasingly involved in expediting traffic over the traditional rail link between the eastern Transvaal and Maputo. Substantial South African investment flowed into improving the facilities at the port, prompted by a South African Foreign Trade Association (SAFTO) drive to encourage more South African shippers to use the Mozambican port. For shippers in the eastern Transvaal, Maputo is closer than any of the South African ports and if the rail route and port system operated efficiently, considerable cost savings would result.

Various obstacles must be overcome before this route becomes a viable choice, however. These include a better system for train interchange procedures at Komatipoort, such as train length and blocking specifications, and improved communication between SATS

and the CFM. The most serious problem to be resolved is the security situation between Ressano Garcia and Maputo. The line has been quiet recently, but during December 1987, it was open for only a few days.
Specific actions that should be taken include:

- SATS locomotives should run between Komatipoort and Maputo. The CFM is desperately short of serviceable locomotives. If security conditions were improved, the risk to SATS crews and equipment would be minimal.

- Meetings between CFM staff at Ressano Garcia and their SATS counterparts at Komatipoort should take place regularly. This would require the coordination of security personnel at the respective border posts.

- SATS maintenance crews should assist with the renewal of Maputo terminal tracks.

- SATS should appoint an operations coordinator to work closely with CFM personnel to direct and coordinate train movements and clearance of traffic to and from South Africa. This person would be located in Maputo and be in constant radio contact with Komatipoort and CFM stations en route.

- South Africa should finance and install the radio communication system that would link Maputo and Komatipoort.

The Beira Corridor project is an example of what can be done with initiative and determination. The NRZ operate across the Mozambican border for 120 km with their own locomotives and crews. They have undertaken to upgrade the standard of track and to provide security. Restorations of the line after incidents of sabotage have been dealt with efficiently and traffic continues to move. Maputo is only eighty-eight kilometres from Komatipoort - given the incentive and authority to do so, SATS could operate an excellent run-through service. The Maputo gateway is a viable route not only for increased South African traffic, but will

benefit the SADCC countries greatly as well, if South Africa took the initiative to ensure smooth operations and safe conditions. The SADCC countries with the most to gain from increased South African involvement are Zimbabwe, Swaziland and Botswana, but such a step would greatly enhance the overall effectiveness of regional transport.

Expedite cross-border road transport

The governments of neighbouring countries have long contended that the number of permits they issue to South African hauliers far outnumber the permits issued by the South African Road Transport Board to hauliers from these countries.

As suggested above for railways, if South African technical assistance was promoted and included road transport, the standard of road haulage throughout the region would be raised. Apparently, the Public Carriers Association is already undertaking such assistance and training - a scheme that should be actively encouraged.

The implications inherent in all these recommendations for assistance from South Africa is that a good, viable regional transport system would benefit all the region's states, not only South Africa. Any activity towards this end should be strongly supported.

Outlook for the region - moderate optimism

Despite the dire straits in which many of the region's economies find themselves, exacerbated by the persistent drought over the past seven years, despite ongoing incidents of terrorism in Mozambique and allegations of South Africa's regional destabilisation, I believe there is still hope for the transport situation to achieve stability and that there will be an improvement in the economically efficient flow of goods throughout the region.

There are signs of progress in rehabilitating the infrastructure, but this will not, of course, happen overnight and unless a concerted effort is made to improve the training of the local workforce, especially management, it will not function over the long-term. Training warrants immediate attention from SATCC's technical unit and from donor countries.

Although allegations of South Africa's involvement in regional destabilisation persist and incidents of SADF raids into neighbouring countries continue, there are some indications that South Africa is prepared to take positive action - for instance, restoration work at Maputo port and efforts to streamline operations along the Komatipoort-Maputo line. It seems, too, that the security situation along this line is being brought under control. Such efforts should be continued and reinforced.

While it would be impracticable for the SADCC countries to reroute traffic to avoid South African routes completely, there has been a definite shift towards greater use of SADCC ports, a trend that is likely to continue. Nonetheless, no great shift away from South African routes will be possible until the Limpopo line to Maputo begins to operate regularly and the Nacala line becomes secure. These two routes are potentially the most strategic in the region, but the issue of security remains the critical factor. Once the Nacala line is fully operational, Malawi will be independent of expensive road haulage through South Africa, and the Limpopo line will allow Zimbabwe to utilise Maputo to a greater extent, avoiding the longer rail route through South Africa via Beit Bridge. In many respects, Maputo is a more suitable port for Zimbabwe than Beira, therefore the Beira Corridor will probably lose some of its lustre once Maputo is available.

Security remains the region's most critical issue. Efforts to resolve the situation have been successful in some areas (the Beira Corridor), and unsuccessful in others (the Nacala line, the Limpopo line, the Komatipoort-Maputo corridor). It must be assumed that this problem will remain over the short- to

medium-term future, possibly even in the long-term, and operations will have to be adapted accordingly. Although strong efforts should be made to address the problem by increasing the presence of security personnel - either bi-national or private forces - the problem cannot simply be wished away. Statements have been made that the Beira Corridor could handle five million tons of traffic if the security situation were resolved. This type of reasoning is unrealistic - security along the line is still precarious and the port itself has a limited capacity far below such rash estimates.

The regional situation should be viewed optimistically, but with the realities firmly in mind. There will be improvement but not total 'independence' of South African routes - if for not other reason, most shippers need to have more than one transport route available in case of emergencies or to use as a marketing lever to keep operators balanced against each other.

It is likely that dependence on South African routes will be reduced but not eliminated. South African technical expertise will gradually spread throughout the region, with benefit to all parties. As I pointed out at the beginning of this paper, 'the flow of goods, via the most cost effective route, on the basis of free economic choice, with a minimum of political distortion' can be compatible and consistent with most government policy in the region, and it is attainable.

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Swaziland Railways Financial Performance of the New Northern Rail Link with South Africa - 1985/86 - 1988/89, Mbabane.

Table 1: Summary of Costs and Funding (All amounts in USD Million)

Project Type	Number of Projects	Project Costs			Secured Funding		Funding Under Negotiation		Funding Gap	
		Total	Foreign	Local	Total	%	Total	%	Total	%
Regional Operational Coordination Projects	23	51.4	51.1	0.3	21.3	41	8.0	16	22.1	43
Training Projects	19	59.6	55.6	3.9	29.7	50	0.3	1	29.6	50
Maputo Port Transport System Projects	19	718.9	604.7	114.2	226.1	31	16.5	2	476.3	66
Beira Port Transport System Projects	5	590.0	520.5	69.5	232.4	39	68.3	12	289.3	49
Nacala Port Transport System Projects	5	277.9	234.2	43.7	261.1	94	0.0	0	16.8	6
Dar es Salaam Port Transport System Projects	9	609.9	519.1	90.8	354.1	58	79.8	13	176.0	29
Lobito Port Transport System Projects	4	340.2	332.1	8.1	37.3	11	0.0	0	302.9	89
Intra-Regional Surface Transport Projects	33	692.6	586.1	106.5	190.9	28	0.5	0	501.2	72
Civil Aviation Projects	18	250.5	232.3	18.2	45.9	18	0.0	0	204.6	82
Telecommunications Projects	37	664.6	594.4	70.3	273.3	41	8.6	1	382.7	58
Meteorology Projects	10	19.8	19.6	0.2	2.7	14	2.5	13	14.6	74
Postal Service Projects	10	30.2	18.5	11.7	11.7	39	0.0	0	18.5	61
TOTAL	192	4305.6	3768.2	537.4	1686.5	39	184.5	4	2434.6	57

Table 2(A): Regional Operational Coordination Projects (All Amounts in USD Million)

Project No.	Project Title	Estimated Cost Total	Foreign	Local	Secured Funding Amount/Source	Funding Under Negotiation Amount/Source	Funding Gap	Implementation Start	Duration	Comments/Status
0.0.1	Technical Assistance to the SATCC	10.0	9.7	0.3	8.5 (Nordics) 1.0 (Italy) 0.1 (Canada) 0.1 (France) 0.3	0.0	0.0	1981	9 Years	Covers the period 1981-89. Additional tech assistance being negotiated with Norway and the IMO.
0.0.2	# Operational Coordination Development Programme	3.2	3.2	0.0	2.8 (Unspec'd)	0.4	0.0	1983	To 1990	
(01)	Road Infrastructure	0.5	0.5	0.0	0.5 (Denmark)	0.0	0.0	1985	4 Years	Covers the period 1985-88.
(02)	Road Traffic and Transport	1.1	1.1	0.0	0.7 (Norway)	0.4 (Norway)	0.0	1984		Covers the period 1984-90.
(03)	Railway Administrations	0.8	0.8	0.0	0.8 (Denmark)	0.0	0.0	1985		Covers the period 1985-88.
(04)	# Civil Aviation Administrations Spare Parts Task Group	0.0	0.0	0.0	0.0	0.0	0.0			Financed under P 0.0.1 from July 1987.
(05)	# National Airlines	0.0	0.0	0.0	0.0	0.0	0.0			Financed under P 0.0.1 from July 1985.
(06)	Port Administration	0.6	0.6	0.0	0.6 (Norway)	0.0	0.0	1985		Covers the period 1985-88.
(07)	# Shipping, Clearing and Forwarding	0.0	0.0	0.0	0.0	0.0	0.0			Financed under P 0.0.1.
(08)	# Telecommunications (SATA)	0.2	0.2	0.0	0.2 (Canada)	0.0	0.0	1986		Financed under P 0.0.5.
(09)	# Meteorology	0.0	0.0	0.0	0.0	0.0	0.0			Financed under P 0.0.1.
(10)	# Postal Services	0.0	0.0	0.0	0.0	0.0	0.0			Financed under P 0.0.1.
0.0.4	Transit Transport Project	4.8	4.8	0.0	1.3 (UNDP) 1.5 (USA)	2.0 (UNDP)	0.0	1984	Until '90	Covers the period 1984-89.

Table 2(A): Regional Operational Coordination Projects (continued)

0.0.5	SATCC Technical Services Fund	9.9	9.9	0.0	4.5 (Canada) 0.5 (Norway)	4.5 (Canada) 0.4 (Norway)	0.0	1985	5 Years	
0.0.6	SATCC Statistics Data System	0.1	0.1	0.0	0.1 (Canada)	0.0	0.0	1987	1 Year	Financed under P 0.0.5.
0.0.7	SATCC Housing in Maputo	2.2	2.2	0.0	0.0	0.0	2.2	1988	18 months	Nordic countries and Canada to be approached.
1.0.1	Package of Road Safety Programmes	12.0	12.0	0.0	0.0	0.0	12.0	1987	3 Years	Preparation of country programmes is ongoing.
(06)	# Road Safety Programme-Swaziland	1.7	1.7	0.0	0.0	0.0	1.7			Programme prepared. Nordic countries have been approached.
(07)	# Road Safety Programme-Tanzania	1.6	1.6	0.0	0.0	0.0	1.6			Programme prepared. Nordic countries have been approached.
(08)	# Road Safety Programme-Zambia	1.8	1.8	0.0	0.0	0.0	1.8			Programme prepared. Nordic countries have been approached.
2.0.4	# Study on Railway Telecoms and Signalling	0.2	0.2	0.0	0.2 (Canada)	0.0	0.0	1986	1 year	Financed under P 0.0.5. Study is ongoing.
2.0.5	# Study on Railway Wagon Manufacture	0.2	0.2	0.0	0.2 (Canada)	0.0	0.0	1986	1 year	Financed under P 0.0.5. Study is ongoing.
3.0.1	Regional Cooperation in Shipping	0.6	0.6	0.0	0.2 (Italy)	0.4 (Italy)	0.0	1988	1 year	Phase I completed. Italy has been approached for Phase II. Duration: 1 year from agreement.
3.0.3	Marine Safety Development Programme for SADCC Coastal States	0.3	0.3	0.0	0.0	0.0	0.3	1988	1.5 years	TOR revised to cover all SADCC coastal countries. Financing being sought.
4.0.1 (2)	Expansion of DCA Flight Calibration Unit, Tanzania	3.9	3.9	0.0	0.0	0.0	3.9	1988	2 Years	Financing is being sought from UNDP. Background document prepared by ICAO.
4.0.2	Feasibility Study on Regional Cooperation on Civil Aviation	0.0	0.0	0.0	0.0	0.0	0.0			Completed.

Table 2(A): Regional Operational Coordination Projects (continued)

4.0.3	Study on Coordinated Use of Aircraft Maintenance Facilities	0.3	0.3	0.0	0.0	0.0	0.3	1988	8 Months	Partly covered by an ADB study. TOR revised accordingly. ADB has been approached (Swedish funds).
4.0.5	Study on General Aviation Activities	0.4	0.4	0.0	0.0	0.0	0.4	1988	9 Months	Financing is being sought from UNDP.
4.0.7	Updating the Aeronautical Information Services	1.7	1.7	0.0	0.0	0.0	1.7	1988	2 Years	Short term experts with SATCC/TU have made a preliminary study.
4.0.10	Study on the Joint Use of Wide Body Aircraft and Sub-Regional Cooperation	1.0	1.0	0.0	0.0	0.0	1.0	1988	9 Months	Canada to be approached to include under Project 0.0.5.
5.0.1	African Domestic Satelite System	0.1	0.1	0.0	0.1 (Canada)	0.0	0.0	1987	1 year	Financed under Project 0.0.5. The study is required for the coordination of the ITU RASCOM Project.
5.0.3	Study on AXE 10 Repair Centre	0.1	0.1	0.0	0.0	0.1 (Sweden)	0.0	1987	I Year	Sweden has been approached.
5.0.4	Implementation Study for Regional Earth Station Connectivity Project (1989-93)	0.5	0.5	0.0	0.5 (Canada)	0.0	0.0	1987	1 Year	Financed under Project 0.0.5.
5.0.5	Study on the Harmonization of Telephone and Telex Tariffs for the Sub-Region.	0.2	0.2	0.0	0.0	0.2 (Canada)	0.0	1987	1 Year	Proposed for inclusion under Project 0.0.5.
5.0.6	Study on the Development of a Regional Manufacturing Strategy	0.2	0.2	0.0	0.0	0.0	0.2	1987	1 Year	Sweden has been approached.
5.0.7	Model Study on Maint Procedure and Scheds for PANAFTEL Terrestrial Microwave Radio Systems	0.1	0.1	0.0	0.0	0.0	0.1	1987	1 Year	ITU is interested in carrying out the study.
	TOTAL	51.4	51.1	0.3	21.3	8.0	22.1			

* The costs associated with this entry are not directly included in the Totals. They apear either under another Project or as costs for sub-Projects.
( ) Brackets around a country or financing agency indicates a foreign exchange contribution.

Table 2(B): Training Projects (All Amounts in USD Million)

Project No.	Project Title	Estimated Cost Total	Foreign	Local	Secured Funding Amount/Source	Funding Under Negotiation Amount/Source	Funding Gap	Implementation Start	Duration	Comments/Status
0.0.3	Training Development Programme	0.0	0.0	0.0	0.0	0.0	0.0	1987		
(01)	# Road Traffic and Transport Training Study	0.2	0.2	0.0	0.2 (Canada)	0.0	0.0	1987	1 Year	In progress: to be completed in early 1988. Financed under Project 0.0.5.
(02)	Preparation of Telecoms Training Project for Mozambique	0.0	0.0	0.0	0.0	0.0	0.0			Completed.
(04)	Training Course in National Telecommunications Network Planning	0.5	0.5	0.0	0.5 (Sweden)	0.0	0.0	1987	2 Years	A SIDA mission is preparing the courses.
(05)	# Satellite Communications Technology Course	0.5	0.5	0.0	0.3 (Canada)	0.0	0.2	1986	2 Years	First course completed August 87, financed under P. 0.0.5. Financing sought to second course in 1988.
(07)	Workshop/Seminar on Telecoms Switching Signalling Systems in the Sub-Region	0.2	0.2	0.0	0.0	0.0	0.2	1987	1 Week	SIDA has been approached.
(08)	Local Network (External Plant) Planning Course	0.5	0.5	0.0	0.0	0.3 (Italy)	0.2	1988	8 weeks	Italy is interested in financing the first course.
0.5.1	# Multimodal Projects in Beira Port Transport System Development Plan	22.2	22.2	0.0	15.5 (Unspec'd)	2.7 (Unspec'd)	4.0	1986	5 years	Refer to Beira Port Transport System projects.
2.0.2	Study on Railway Training Programmes	1.6	1.6	0.0	1.6 (FRG)	0.0	0.0	1985	2 years	Ongoing project to be completed in 1987.
2.0.6	Development of Railway Training, Regional	2.0	2.0	0.0	0.0	0.0	2.0	1988	3 years	F.R. Germany has been approached.

Table 2(B): Training Projects (continued)

2.5.13	Development of Railway Training in Mozambique	25.3	24.2	1.1	14.3 (France) 2.5 (Portugal)	0.0	8.5	1984	6 Years	EEC has been approached to finance the remainder.
3.1.3	Port School, Lobito, Angola	5.3	4.8	0.5	0.5 Angola	0.0	4.8	1988	3 Years	UNDP has been approached.
3.5.5	Port Staff Training Institute, Mozambique	6.8	5.8	1.0	5.8 (Norway) 1.0 Mozambique	0.0	0.0	1987	3 Years	Agreement with NORAD signed. Management agreement with ILO to be signed.
3.7.2 (10) &	Dar es Salaam Port: Technical Assistance to THA and Imprvt of Bandari College	3.2	2.8	0.4	2.8 (Norway) 0.4 Tanzania	0.0	0.0			Included under the Dar es Salaam Port Transport System.
4.0.06	Civil Aviation Manpower and Training Requirements Survey	0.3	0.3	0.0	0.3 (ICAO)	0.0	0.0	1986	1 Month	Completed except for Angola.
4.5.4	SADCC Boeing 737 Flight Training Centre	3.6	3.6	0.0	0.0	0.0	3.6	1988	1 year	EEC to be approached.
4.8.5	Improvement of Zambia Air Services Training Institute (ZASTI)	1.7	1.7	0.0	0.0	0.0	1.7	1988	2 years	Updated project description to be prepared.
5.1.6	Expansion of Telecommunication Training Centre, Angola	1.5	1.0	0.5	0.5 Angola	0.0	1.0	1988	2 Years	Ministry of Transport and Communications Angola
6.0.1	Meteorological Expert Services and Fellowships	4.5	4.5	0.0	0.6 (Finland)	0.0	3.9	1986	5 years	
7.0.1	Postal Training Development Programme	1.1	1.1	0.1	0.1 Regional 0.2 (Finland) 0.0 (Norway)	0.0	0.9	1987	3 years	Two management courses financed by Finland. Instructors course financed by Norway.
7.1.2	Development of Postal Training in Angola	2.7	2.2	0.5	0.5 Angola	0.0	2.2	1988	3 years	
7.3.1	Postal Training School, Lesotho	0.2	0.2	0.0	0.0	0.0	0.2	1988	1 year	Costs to cover equipment and transport facilities.

Table 2(B): Training Projects (continued)

7.4.2	Upgrading of Postal Wing of the MCTC in Blantyre, Malawi	0.2	0.2	0.0	0.0	Malawi	0.0	0.2	1988 1 year
7.5.2	Development of Postal Training in Mozambique	1.0	1.0	0.0	0.0		0.0	1.0	1988 1,5 years
7.9.2	Establishment of a Postal Training Centre in Harare, Zimbabwe	0.5	0.3	- 0.2	0.2	Zimbabwe	0.0	0.3	1988 2 years
	TOTAL	59.6	55.6	3.9	29.7		0.3	29.6	

* The costs associated with this entry are not directly included in the Totals. They appear either under another Project or as costs for sub
( ) Brackets around a country or financing agency indicates a foreign exchange contribution.

Table 2(C): Maputo Port Transport System Projects (All Amounts in USD Million)

Project No.	Project Title	Estimated Cost Total	Foreign	Local	Secured Funding Amount/Source	Funding Under Negotiation Amount/Source	Funding Gap	Implementation Start	Duration	Comments/Status
1.3.1	Upgrading of the Road Mohales Hoek-Quthing-Qachas Nek, Lesotho	89.0	81.0	8.0	8.0 Lesotho 15.0 (EEC) 34.0 (USA)	0.0	32.0	1985	4 years	Ongoing. The EEC and USA have been approached for finacing the shortfall.
1.3.2	Upgrading and Reconstruction of the Road Taung-Mokhotlong-Sani Top, Lesotho	35.7	28.5	7.2	7.2 Lesotho	0.0	28.5	1988	3 years	Feasibility study and enginnering design are completed (financed by UK). EEC has been approached for implementation.
1.3.3	Upgrading of the Road Thaba Tseka-Taung-Mpiti, Lesotho	35.7	28.5	7.2	7.2 Lesotho	0.0	28.5	1988	4 years	Feasibility study financed by Canada has been completed.
1.3.4	Construction of a New Road Ramabanta-Semonkong-Sekake, Lesotho	36.8	29.4	7.4	7.4 Lesotho	0.0	29.4	1990	3 years	Engineering design of the Ramabanta-Semonkong section completed financed by F.R.Germany which has been approached for financing of works.
1.3.5	Upgrading of the Road Mokhotlong-Oxbow, Lesotho	26.5	21.2	5.3	5.3 Lesotho	0.0	21.2	1989	3 years	Design has been completed.
1.5.4	Rehabilitation of the Road Maputo - Swaziland Border, Mozambique	21.0	17.0	4.0	0.5 (Sweden) 4.0 Mozambique	16.5	0.0	1987	4 years	Works on the Matola Bridge about to start. Engineering design for the road yet to be carried out.
1.5.6	Study of a New Road Linking Southern Zimbabwe with the Maputo Area	0.4	0.4	0.0	0.0	0.0	0.4	1988	8 months	
1.6.1	Rehabilitation/Upgrading of the Road Mozambique Border at Lomahasha-Siteki-Big Bend	22.0	18.7	3.3	5.7 (ADB) 3.2 (Sweden) 3.3 Swaziland	0.0	9.8	1992	2 years	Work completed on the Lomahasha-Siteki section. Financing is being sought for Siteki-Big Bend section.
1.6.2	Improvement of the Mbabane-Manzini Road, Swaziland	28.9	23.1	5.8	5.8 Swaziland	0.0	23.1	1989	2 years	

Table 2(C): Maputo Port Transport System Projects (continued)

2.2.1	* Rehabilitation of the Main Railway Line, Botswana	114.0	91.0	23.0	18.0 (PR China) 23.0 Botswana	0.0	73.0	1984	9 years	See phasing of project.
(01)	Section 1: Gaborone to the Southern Border	19.0	15.0	4.0	15.0 (PR China) 4.0 Botswana	0.0	0.0			
(02)	Section 2: Francistown to the Northern Border	15.0	12.0	3.0	3.0 (PR China) 3.0 Botswana	0.0	9.0			Canada financing study on Sect 2 and 3 under Project 0.0.5, USD 0.15 mn, and was approached for funding implementation.
(03)	Section 3: Gaborone to Francistown	80.0	64.0	16.0	16.0 Botswana	0.0	64.0			See note for Section 2 above.
2.2.2	Rehabilitation of Railway Telecoms Facilities, Botswana	4.1	4.1	0.0	4.1 (Sweden)	0.0	0.0	1986	2,5 years	Work commenced in 1986.
2.2.4	Renewal of the Train Working System, Botswana	5.0	4.7	0.3	4.7 (Sweden) 0.3 Botswana	0.0	0.0	1987	2 years	Work commenced in 1986.
2.2.6	Procurement of Railway Rolling Stock, Botswana Railways	30.0	30.0	0.0	0.0	0.0	30.0	1988	2 years	DANIDA has been approached.
2.2.8	Exchange Yard for Botswana Railways at Rakhuna	0.9	0.5	0.4	0.4 Botswana	0.0	0.5	1987	1 year	Contingency plan.
2.3.2	Expansion of Oil Storage Facilities, Lesotho	5.8	5.8	0.0	0.0	0.0	5.8	1988	2 years	
2.5.1	* Rehabilitation of the Mozambique-Swaziland Railway	20.9	14.9	6.0	6.9	0.0	14.0			See phasing of project.
(01)	Feasibility Study of the Machava - Swaziland Railway	0.9	0.9	0.0	0.9 (Italy)	0.0	0.0	1985	2 years	Study ongoing. Draft Final Report completed.
(02)	Rehabilitation of the Machava - Swaziland Railway	20.0	14.0	6.0	6.0 Mozambique	0.0	14.0	1988	3 years	Italy has expressed interest in implementation. Cost estimates cover only the Mozambique part.

Table 2(C): Maputo Port Transport System Projects (continued)

2.5.6	Railways in Southern Mozambique	0.0	0.0	0.0	0.0	0.0	0.0		See phasing of project.
(02)	# Study on Engineering for Bridges on Railways in Southern Mozambique	0.4	0.4	0.0	0.4 (Canada)	0.0	0.0	1988 9 months	Financed under Project 0.0.5.
(03)	# Rehabilitation of Maputo - Chicualacuala Railway	120.0	89.8	30.2	30.2 Mozambique 15.0 (UK)	0.0	74.8		
(031)	Phase I: Track Renewal for 80 Km, Resleepering, Communications, etc.	24.2	15.0	9.2	15.0 (UK) 9.2 Mozambique	0.0	0.0	1986 10 years	Work has commenced. A project description has been prepared for all 3 phases.
(032)	Phase 2: Reballasting/ Resleepering (400 km), rescue cranes,train control, water	53.8	36.8	17.0	17.0 Mozambique	0.0	36.8		Discussions with several potential financers in progress.
(033)	Phase 3: Completion of Rehabilitation	42.0	38.0	4.0	4.0 Mozambique	0.0	38.0		
(04)	# Motive Power, Rolling Stock and Operations Plan for CFM(S)	0.3	0.3	0.0	0.3 (Canada)	0.0	0.0	1987 4 months	To be financed under Project 0.0.5.
2.6.1	Modifications of Wagons and Wagon Maintenance, Swaziland Railway	1.2	0.9	0.3	0.3 Swaziland	0.0	0.9	1988 3 years	Denmark has been approached.
3.5.1	# Maputo Port, Mozambique	121.0	115.2	5.8	9.0 (Italy) 1.8 (UK) 5.8 Mozambique	0.0	104.4	1984 7 years	Estimates of costs and funding represent the total of the sub-projects listed below
(01)	Feasibility Study on Improvement of the Entrance Channel to Maputo Port	1.7	1.4	0.3	0.3 Mozambique	0.0	1.4	1988 2 years	Dredging of existing channel to 9.4 m started July 87, completion June 88.
(02)1	Matola Coal Terminal-Phase I	1.3	0.0	1.3	1.3 Mozambique	0.0	0.0		Rehabilitation work completed March 87. Further investment depending on increase in traffic.

Table 2(C): Maputo Port Transport System Projects (continued)

(022)	Matola Coal Terminal-Phase 2	9.0	9.0	0.0	0.0	0.0	9.0	Depending on increase in traffic.
(023)	Matola Coal Terminal-Phase 3	80.0	80.0	0.0	0.0	0.0	80.0	Depending on increase in traffic.
(03)	Container Terminal Equipment and Management Assistance	29.0	24.8	4.2	9.0 (Italy) 1.8 (UK) 4.2 Mozambique	0.0	14.0	A USD 9 mn Italian credit for cranes and other equip. UK financing the management assist.scheme over 3 yrs,to Sept 87, to be extended for another 2 years.
	TOTAL	718.9	604.7	114.2	226.1	16.5	476.3	

The costs associated with this entry are not directly included in the Totals. They appear either under another Project or as costs for sub-Projects.
( ) Brackets around a country or financing agency indicates a foreign exchange contribution.

Table 2(D): Beira Port Transport System Projects (All Amounts in USD Million)

Project No.	Project Title	Estimated Cost Total	Foreign	Local	Secured Funding Amount/Source	Funding Under Negotiation Amount/Source	Funding Gap	Implementation Start	Duration	Comments/Status
0.5.1	# Multimodal Projects in the Beira Port Transport System Development Plan	22.2	22.2	0.0	15.5	2.7	4.0			Included under Beira Transport System projects.
(PR-M-01)	Organization and Manpower Development Plan	1.2	1.2	0.0	0.0	1.2 (EEC)	0.0			Prestudy completed by NORAD. Main study by EEC - Lome III regional funds to manpower sector, request by TRC.
(PR-M-02)	Support to Workers and Their Families	5.0	5.0	0.0	1.3 (Denmark) 1.1 (Sweden)	0.0	2.6			
(PR-M-03)	Study of the Development of the Town of Beira	0.8	0.8	0.0	0.8 (Finland)	0.0	0.0			Study ongoing, completion by late 1987.
(PR-M-04)	Project Coordination	5.0	5.0	0.0	5.0 (Nordics)	0.0	0.0			Agreement signed. Project coordination team to start work in Sept 1987.
(PR-M-05)	Basic Services for the Town of Beira	10.2	10.2	0.0	7.3 (Sweden)	0.5 (Portugal) 1.0 (Greece)	1.4			Sweden to finance electricity supply and telecoms, Portugal water and sewerage engineering, Greece building industry.
1.5.1	# Road Projects in Beira Port Transport System Development Plan	34.5	28.0	6.5	6.5 Mozambique 3.0 (Sweden) 1.5 (Neth'lds)	10.0	13.5	1988	3 years	
(RD-CE-1)	Beira - Machipanda.	25.0	20.0	5.0	5.0 Mozambique 1.5 (Neth'lds) 3.0 (Sweden)	10.0 (ADB)	5.5			Emergency repairs estimated at USD 5.4 million to start early 1988. Design for reconstruction to be made.
(RD-CE-2)	# Lusaka - Kafue Junction	0.0	0.0	0.0	0.0	0.0	0.0			Included in Project 1.8.3.
(RD-CE-3)	Chimoio - Changara	3.0	3.0	0.0	0.0	0.0	3.0			
(RD-CE-4)	Matunda - Chiuta	6.5	5.0	1.5	1.5 Mozambique	0.0	5.0			

Table 2(D): Beira Port Transport System Projects (continued)

1.9.1	Rehabilitation of Harare - Chirundu Road, Zimbabwe	1.8	1.3	0.5	0.5 Zimbabwe	0.0	1.3	1989	2 years	
2.5.3	Railway Projects in Beira Port Transport System Development Plan	173.9	151.4	22.5	51.4 (Unspec'd) 22.5 Moz/Zim	35.4	64.6	1986	10 years	Project derived from Beira Port Rehabilitation Study of 1981.
(R-CE-01)	Track Upgrading, Rehabilitation Beira-Machipanda	36.0	28.8	7.2	4.7 (Austria) 1.0 (Sweden) 0.8 (USA) 7.2 Moz/Zim	8.0 (ADB)	14.3			Technical Assistance from Zimbabwe. First phase completed.
(R-CE-02)	Emergency Repairs Dondo-Vila Nova	15.0	12.0	3.0	8.5 (OPEC) 3.0 Mozambique	0.0	3.5			
(R-CE-03)	Track Rehabilitation Blantyre-Border	15.5	12.4	3.1	3.1 Malawi	12.4 (UK)	0.0			Ongoing.
(R-CE-04)	Track Upgrading Dondo - Vila Nova	25.0	20.0	5.0	18.5 (Italy). 5.0 Mozambique	0.0	1.5			Concrete sleeper factory and quarries.
(R-CE-05)	Study, Rail Link Kafue - Lions Den	0.8	0.8	0.0	0.0	0.0	0.8			
(R-CE-06)	Line Doubling Beira to Dondo	8.0	6.4	1.6	1.6 Mozambique	0.0	6.4			
(R-CE-07)	Track Maintenance CFM (C)	4.5	3.6	0.9	0.9 Mozambique 2.5 (Austria)	0.0	1.1			
(R-ME-01)	Scrapping, Salvaging of Wagons and Locos, Rehab.of Wagons, Conversion to R.B'rings CFM(S)	10.0	10.0	0.0	3.3 (Denmark)	0.0	6.7			Discussions on implementation between Denmark and Cometal/Mometal.
(R-ME-02)	Rehabilitation of Locomotives CFM (C)	4.6	4.6	0.0	4.6 (USA)	0.0	0.0			Rehabilitation of 8 locos (Acquisition of new locomotives under P. 2.5.12).
(R-ME-03)	Replacement of Malawi Railway Wagons	2.0	2.0	0.0	0.0	0.0	2.0			ADB considering.

Table 2(D): Beira Port Transport System Projects (continued)

(R-ME-04)	Rehabilitation of Locomotive Workshops CFM (C)	2.0	2.0	0.0	0.0	0.0	2.0	
(R-ME-05)	Extension of Limbe Workshop	0.6	0.6	0.0	0.6 (UK)	0.0	0.0	
(R-ME-06)	Facilities, Spares, Equipment for CFM (C) Workshops	6.2	5.0	1.2	1.2 Mozambique	0.0	5.0	
(R-ME-07)	Rescue Cranes and Rerailing Equipment	4.0	4.0	0.0	4.0 (Finland)	0.0	0.0	
(R-OP-01)	# Motive Power, Rolling Stock Operation Plan	0.2	0.2	0.0	0.2 (Canada)	0.0	0.0	Financed under P. 0.0.5. Completed.
(R-OP-02)	Electrification Study	0.7	0.7	0.0	0.0	0.0	0.7	
(R-ST-01)	Emergency Repairs to Telecommunications Beira to Machipanda and Vila Nova	2.1	2.0	0.1	0.1 Mozambique	0.0	2.0	
(R-ST-02)	Radio Telecommunication CFM(C)	2.9	2.9	0.0	0.7 (Italy)	0.0	2.2	1st phase Beira-Machipanda line.
(R-ST-03)	Train Control System CFM (C)	3.7	3.5	0.2	0.2 Mozambique 1.8 (Italy)	0.0	1.7	1st phase Beira-Machipanda line.
(R-ST-04)	Wagon Control System CFM (C)	0.7	0.7	0.0	0.0	0.0	0.7	
(R-ST-05)	Replacement of Railway Telephone Exchanges CFM (C)	0.8	0.6	0.2	0.2 Mozambique	0.0	0.6	Denmark has been approached.
(R-ST-06)	Solar Power Panels, Blantyre to Border	0.1	0.1	0.0	0.0	0.0	0.1	Denmark has been approached.
(R-TA-01)	Technical Assistance to CFM	26.5	26.5	0.0	0.2 (USA)	15.0 (Unspec'd)	11.3	Under discussion with ADB, World Bank, Belgium and Spain.
(R-TA-02)	Technical Assistance to Malawi Railways	2.0	2.0	0.0	0.0	0.0	2.0	

Table 2(0): Beira Port Transport System Projects (continued)

3.5.2	# Port Projects in the Beira Port Transport Development Plan	357.8	317.8	40.0	91.7 (Unspec'd) 40.0 Mozambique	20.2	205.9	1986 15 years	Estimates of costs and funding represent the total of the sub-projects listed below.
(P-A-01)	Channel Dredging to 10 Metres	31.0	27.9	3.1	3.1 Mozambique	8.0 (Neth'lds)	19.9		Dredging to 8 metres in the first phase. Tender documents under preparation.
(P-A-02)	# Navigational Aids	1.0	1.0	0.0	1.0 (Sweden)	0.0	0.0		Included in first phase of Project 3.5.4
(P-CE-01)	Multipurpose & Container Handling Terminal (Berths 2-5)	66.0	60.0	6.0	6.0 Mozambique 40.0 (EEC) 11.7 (ADB)	0.0	8.3		Tender evaluation being made.
(P-CE-02)	New Oil Terminal	9.0	8.1	0.9	0.9 Mozambique 8.1 (Norway)	0.0	0.0		Consultant's proposals being revised.
(P-CE-03)	Port Railways	18.0	9.7	8.3	8.3 Mozambique	9.0 (Italy)	0.7		TOR prepared. Consultant selected.
(P-CE-04)	Sugar & Cereal Terminal	7.0	6.3	0.7	0.0	0.0	7.0		Study on Cereal Terminal financed by Netherlands. Users of the facilities are espected to be involved in funding.
(P-CE-05)	Cold Storage Facilities	8.0	7.2	0.8	7.2 (Den/Fin) 0.8 Mozambique	0.0	0.0		Feasibility study being carried out (Denmark).
(P-CE-06)	Tobacco Terminal	3.0	2.7	0.3	0.0	0.0	3.0		Users of the facilities are expected to finance the project.
(P-CE-07)	Cotton Terminal	3.0	2.7	0.3	0.0	0.0	3.0		Users of the facilities are expected to finance the project.
(P-CE-08)	# Grain Silos (combined with P-CE-4)	0.0	0.0	0.0	0.0	0.0	0.0		Waiting for the findings of study P-CE-4.
(P-CE-09)	Coastal Protection Scheme	10.0	9.0	1.0	1.0 Mozambique	0.0	9.0		
(P-CE-10)	Service Port Facilities	3.6	3.2	0.4	0.4 Mozambique	3.2 (Den/Nor)	0.0		

Table 2(D): Beira Port Transport System Projects (continued)

(P-CE-11)	Port Roads	3.7	3.3	0.4	1.0 (Neth'lds) 0.4 Mozambique	0.0	2.3	1st phase secured.
(P-CE-12)	High Capacity Coal Terminal	160.0	144.0	16.0	16.0 Mozambique	0.0	144.0	
(P-CE-13)	Port Construction Supervision	2.0	2.0	0.0	2.0 (Neth'lds)	0.0	0.0	
(P-ME-01)	Equipment for Multipurpose and Container Handling Terminal	18.0	16.2	1.8	5.5 (Finland) 5.5 (Sweden) 1.8 Mozambique	0.0	5.2	1st phase 1987-88 secured. Agreement on grant part signed June-87. Implementation started.
(P-ME-02)	Tug Boats	8.0	8.0	0.0	8.0 (Denmark)	0.0	0.0	Preappraisal report prepared. Tenders Aug/Sept 1987.
(P-TA-01)	Technical Assistance to the Port	7.5	7.5	0.0	4.0 (Neth'lds)	0.0	3.5	Funding secured for 3 years. Assistance team to arrive in June 1987.
	TOTAL	590.0	520.5	69.5	232.4	68.3	289.3	

\# The costs associated with this entry are not directly included in the Totals. They appear either under another Project or as costs for sub-Projects.
( ) Brackets around a country or financing agency indicates a foreign exchange contribution.

Table 2(C): Nacala Port Transport System Projects (All Amounts in USD Million)

Project No.	Project Title	Estimated Cost Total	Foreign	Local	Secured Funding Amount/Source	Funding Under Negotiation Amount/Source	Funding Gap	Implementation Start	Duration	Comments/Status
1.4.1	Study on Upgrading of the Road Mangochi-Mandimba-Mitande, Mozambique	0.2	0.2	0.0	0.0	0.0	0.2	1989	6 months	
1.8.6	Rehabilitation of the Road Lusaka - Chipata, Zambia	26.3	16.6	9.7	9.7 Zambia	0.0	16.6	1988	3 years	Engineering study completed. ADB has shown interest.
2.5.5	Rehabilitation of the Nacala-Cuamba Railway (538 km) Mozambique	223.4	193.4	30.0	87.7 (France) 40.0 (Portugal) 32.5 (Canada) 28.0 (EEC) 2.2 (Italy) 2.1 (UK) 0.9 (Finland) 30.0 Mozambique	0.0	0.0	1983	7 years	125 Kms of track have been renewed. Track laying of 2nd phase started in July 1987.
3.5.3	Design, Const & Operational Assist of Container Terminal for the Port of Nacala	28.0	24.0	4.0	24.0 (Finland) 4.0 Mozambique	0.0	0.0	1984	5 years	Ongoing project, progressing on schedule
	TOTAL	277.9	234.2	43.7	261.1	0.0	16.8			

The costs associated with this entry are not directly included in the Totals. They appear either under another Project or as costs for sub-Projects.
( ) Brackets around a country or financing agency indicates a foreign exchange contribution.

Table 2(F): Dar es Salaam Port Transport System Projects (All Amounts in USD Million)

Project No.	Project Title	Estimated Cost Total	Foreign	Local	Secured Funding Amount/Source	Funding Under Negotiation Amount/Source	Funding Gap	Implementation Start	Duration	Comments/Status
1.4.3	# #Road Link Karonga-Mbeya, Malawi/Tanzania	37.4	35.9	1.5	1.5 Tanzania 6.4 (EEC)	20.0 (EEC)	9.5	1987	3 years	Award of contract mid-1987 for the Karonga-Ipanda section.
1.7.3	Rehabilitation/Strengthening of the TANZAM Highway, Tanzania	62.0	41.5	20.5	13.2 (IDA) 19.4 (ADB) 6.9 (Norway) 20.5 Tanzania	0.0	2.0			
1.8.8	Rehabilitation of the TANZAM Highway, Zambia	9.3	5.9	3.4	3.4 Zambia	0.0	5.9	1988	2 years	Study completed.
2.7.1	# TAZARA 10 Year Development Plan Projects	230.7	195.9	31.1	145.5	0.0	85.2	1985	10 years	An updated 10-Year Plan will be presented in 1988.
2.7.1	TAZARA 10 Year Development Plan Projects. Project Coordination Unit	2.0	2.0	0.0	2.0 (Nordics)	0.0	0.0			Extension of the project is being discussed with the Nordics.
(CE:01)	Rehabilitation of Quarries	17.3	16.8	0.5	13.0 (Sweden) 3.8 (EEC) 0.5 TAZARA	0.0	0.0			The implementation has started.
(CE:02)	Permanent Rectification of Landslides	45.0	40.0	5.0	5.0 TAZARA	0.0	40.0			Study made earlier, to be completed under P. 0.0.5. Tender documents to be prepared. ADB has shown interest.
(CE:03)	Mechanized Track Maintenance	15.1	14.7	0.4	2.2 (Switz'ld) 3.9 (EEC) 3.9 (Austria) 0.4 TAZARA	0.0	4.7			
(CE:04)	Rail Welding	16.4	6.7	9.7	9.7 TAZARA	0.0	6.7			The project should be advanced. Austria has been approach.

Table 2(F): Dar es Salaam Port Transport System Projects (continued)

(CE:05)	Rail Burn Repairs	6.7	6.2	0.5	4.0 (Sweden) 2.2 (Switz'ld) 0.5 TAZARA	0.0	0.0	Project Management is contracted. Start 1987.
(CE:06)	Terminal Facilities at New Kapiri Mposhi	0.3	0.0	0.3	0.3 TAZARA	0.0	0.0	
(CE:07)	Railway Link TAZARA-Mpulungu Port, Zambia	0.4	0.4	0.0	0.0	0.0	0.4	
(CE:08)	# ##Malawi Cargo Centre, Moeya	7.4	7.3	0.1				
(CE:09)	# ##Malawi Fuel Tank Farm, Moeya	2.5	2.5	0.0				UK and Netherlands have been approached.
(CE:10)	# ##Malawi Cargo Centre, Dar es Salaam	12.4	12.2	0.2				
(GM:01)	Technical Assistance to the Head Office	2.7	2.2	0.5	0.5 TAZARA	0.0	2.2	
(GM:02)	Manpower Development Plan and Training Facilities	1.3	0.7	0.6	0.7 (Norway) 0.6 TAZARA	0.0	0.0	
(ME:01)	Locomotives	49.7	46.0	3.7	3.7 TAZARA 46.0 (USA)	0.0	0.0	
(ME:02)	Goods Wagons	48.3	38.0	10.3	17.2 (Sweden) 10.3 TAZARA	0.0	20.8	Implementation started September 87.
(ME:03)	Trolleys and Trailers	1.6	1.6	0.0	0.0	0.0	1.6	Project is reappraised.
(ME:04)	Handling Equipment for Goods Depots	2.0	2.0	0.0	0.0	0.0	2.0	Project is reappraised.
(ME:05)	Rescue Crane and Rerailing Equipment	6.8	6.6	0.2	6.6 (Finland) 0.2 TAZARA	0.0	0.0	Implementation has started.
(ME:06)	Wheel Lathes	3.0	3.0	0.0	3.0 (EEC)	0.0	0.0	Implementation has started.

Table 2(F): Dar es Salaam Port Transport System Projects (continued)

(ME:07)	Mechanical Equipment for Work Shops	2.0	2.0	0.0	1.5 (EEC)	0.0	0.5			
(ME:09)	# ##Malawian Tank Wagons and Tank Containers	1.6	1.6	0.0	0.0	0.0	1.6			
(ST:01)	Solar Power Panels	3.2	2.3	0.9	0.8 (Denmark) 0.9 TAZARA	0.0	1.5			Implementation 1987-88.
(ST:02)	Back-up HF Radio Link	0.5	0.5	0.0	0.5 (Denmark)	0.0	0.0			Implementation 1987-88.
(ST:03)	Teleprinters	0.1	0.1	0.0	0.1 (Denmark)	0.0	0.0			Implementation 1987-88.
(ST:04)	Feasibility Study of Future Telecommunications System	0.2	0.2	0.0	0.0	0.0	0.2			The project will be reappraised.
(ST:05)	Automatic Train Stops	4.5	3.5	1.0	1.0 TAZARA	0.0	3.5			The project will be reappraised.
(ST:06)	Track Circuiting	1.6	1.1	0.5	0.5 TAZARA	0.0	1.1			The project will be reappraised.
3.7.1	# Development of Navigation on Lake Niassa/Nyasa/Malawi, Malawi, Mozambique, Tanzania	19.0	18.2	0.2	0.4 (Denmark) 0.2 Malawi	0.0	18.4	1986		Estimates of costs and fundings represent the total of the sub-projects listed below
(01)	Lake Navigation Study	0.4	0.4	0.0	0.4 (Denmark)	0.0	0.0	1988	1 year	Revised TOR completed. Steering Committee being established.
(02)	# ##Lake Ports, Chilumba Chipoka and Monkey Bay	7.9	7.9	0.0	0.0	0.0	7.9			Ready for tendering during the second half of 1987.
(03)	# ##Vessel	5.2	5.2	0.0	0.0	0.0	5.2			Specifications and contract documents to be ready in June 1987.
(04)	# ##Monkey Bay Shipyard	3.1	3.1	0.0	0.0	0.0	3.1			Ready for tendering in July 1987.
(05)	# ##Lake Technical Assistance	1.1	0.9	0.2	0.2 Malawi	0.0	0.9			
(06)	# ##Engineering Design and Supervision	1.3	1.3	0.0	0.0	0.0	1.3			

Table 2(F): Dar es Salaam Port Transport System Projects (continued)

3.7.2	# Development of the Port of Dar es Salaam, Tanzania	203.8	173.9	29.9	96.2 (Unspec'd) 29.9 Tanzania	5.3	72.4	1985	7 years	Estimates of costs and fundings represent the total of the sub-projects listed below
(01)	Kurasini Oil Terminal Rehabilitation (Phase 2)	3.7	3.3	0.4	3.3 (Norway) 0.4 Tanzania	0.0	0.0	1987	1 year	Start January 1987. Completed April 1988.
(02)	Improvement of Harbour Entrance Channel	45.4	41.0	4.4	4.4 Tanzania	0.0	41.0			Tender documents ready. Financing being sought.
(03)	Construction of Container Terminal	34.0	25.5	8.5	25.5 (IDA) 8.5 Tanzania	0.0	0.0	1985		Including (5) Ubungo Container Depot. Execution started September 1985. Completion February 1988.
(04)	Construction of Grain Facility	12.8	9.5	3.3	9.5 (Neth'lds) 3.3 Tanzania	0.0	0.0	1987		Implementation started June 1987. Completion February 1989.
(05)	# Ubungo Container Depot	0.0	0.0	0.0	0.0	0.0	0.0	1985		Included under (03).
(06.1)	Belgian Wharf Reconstruction	2.4	1.7	0.7	0.7 Tanzania	0.0	1.7			Tender documents ready. Financing being sought.
(06.2)	Modernization of Lighter Wharf, Phase 2: Paving and Service Part	3.5	0.5	3.0	3.0 Tanzania 0.5 (IDA)	0.0	0.0			
(06.3)	Modernization of Lighter Wharf, Phase 2: Transit Shed Part	0.3	0.0	0.3	0.3 Tanzania	0.0	0.0			Financed by THA in local currency. Completion October 1986.
(07)	Construction of Tug Berth	5.2	5.2	0.0	0.0	0.0	5.2			Financing being sought. Tender documents ready.
(08.1)	Purchase of Container Handling Equipment	33.6	33.6	0.0	33.6 (Denmark)	0.0	0.0			Equipment started to arrive in June 1986 Complete late 1987.
(08.2)	Purchase of Copper Handling Equipment	2.1	2.1	0.0	2.1 (Sweden)	0.0	0.0			Equipment started to arrive in June 86. Complete late 1987.

Table 2(F): Dar es Salaam Port Transport System Projects (continued)

(08.3)	Purchase of General Cargo Handling Equipment	3.2	3.2	0.0	0.0	0.0	3.2		Financing being sought.
(09)	Purchase of Floating Craft	21.1	21.1	0.0	0.0	0.0	21.1		Financing being sought.
(10)	Technical Assistance to THA and Improvement of Bandari College	3.2	2.8	0.4	2.8 (Norway) 0.4 Tanzania	0.0	0.0		Project start October 1987.
(11)	Rehabilitation of Berths 1-8	32.6	23.7	8.9	23.7 (Nor/Swed) 8.9 Tanzania	0.0	0.0		Detailed design underway. Civil works to commence July 1987, complete 1991.
(12)	Study on New Oil Terminal	0.2	0.2	0.0	0.0	0.0	0.2		ADB has been approached for use of Danish fund.
(13)	# Study on Increasing Port Capacity for SADCC Transit Goods	0.2	0.2	0.0	0.2 (Canada)	0.0	0.0		Financing under P. 0.0.5. Schedule for 1987.
(14)	Study on Container Handling in Tanzania and on TAZARA	0.5	0.5	0.0	0.5 (Norway)	0.0	0.0	1987	
(15)	# ##Malawi Fuel Tank Farm	5.7	5.6	0.1					
	##Summary of Malawi - Dar es Salaam Corridor Projects	103.7	100.8	2.9	10.5 (USA) 2.9 Malawi	25.2 (EEC) 17.6 (FRG) 13.0 (UK) 14.0 (IDA) 10.0 (Neth'lds)	10.5		Allocation of funds to different Projects to be made. Total includes Salima-Balaka road and Project coord. See above.
	TOTAL	609.9	519.1	90.8	354.1	79.8	176.0		

The costs associated with this entry are not directly included in the Totals. They appear either under another Project or as costs for sub-Projects.
( ) Brackets around a country or financing agency indicates a foreign exchange contribution.
Indicates part of the Dar es Salaam - Malawi Corridor Programme.

Table 2(6): Lobito Port Transport System Projects (All Amounts in USD Million)

Project No.	Project Title	Estimated Cost Total	Foreign	Local	Secured Funding Amount/Source	Funding Under Negotiation Amount/Source	Funding Gap	Implementation Start	Duration	Comments/Status
1.8.1	Study on Angola-Zambia Road Link, Zambia	0.2	0.2	0.0	0.2 (EEC)	0.0	0.0			Study adjourned.
2.1.1	Rehabilitation of the Benguela Railway, Angola	182.0	182.0	0.0	18.0 (Angola)	0.0	164.0	1981	10 years	To be included in the 10 year Development Plan for the Lobito Corridor.
3.1.1	Development of the Port of Lobito	120.0	118.0	2.0	2.0 Angola 1.0 (Angola)	0.0	117.0	1986	20 years	Master Plan completed. Ten-Year Development Plan of Lobito Corridor being prepared.
3.1.2 #	Development of the Port of Luanda	38.0	31.9	6.1	10.0 (Angola) 6.1 Angola	0.0	21.9	1985	4 years	Estimates of costs and funding represent the totals for the sub-Projects listed below.
(01)	Container and Ro/Ro Terminal in the Port of Luanda	10.7	9.1	1.6	1.6 Angola	0.0	9.1	1988	2 years	TOR of a study have been prepared. Italy has expressed interest in financing.
(02)	Construction of a Grain Terminal and Silos	12.7	10.8	1.9	1.9 Angola 3.7 (Angola)	0.0	7.1			Financing being sought for civil works.
(03)	Modernisation and Enlargement of Electrical Systems	5.5	5.5	0.0	3.0 (Angola)	0.0	2.5			Financing being sought for remainder.
(04)	Earth Works	5.5	3.3	2.2	3.3 (Angola) 2.2 Angola	0.0	0.0			Under implementation.
(05)	Construction of Canteen Facilities	3.6	3.2	0.4	0.4 Angola	0.0	3.2			
	TOTAL	340.2	332.1	8.1	37.3	0.0	302.9			

The costs associated with this entry are not directly included in the Totals. They appear either under another Project or as costs for sub-Projects.
( ) Brackets around a country or financing agency indicates a foreign exchange contribution.

Table 2(H): Intra-Regional Surface Transport Projects (All Amounts in USD Million)

Project No.	Project Title	Estimated Cost Total	Foreign	Local	Secured Funding Amount/Source	Funding Under Negotiation Amount/Source	Funding Gap	Implementation Start	Duration	Comments/Status
1.1.1	Study of the Road N'Zeto-Soyo	1.1	1.1	0.0	0.0	0.0	1.1	1988	1.5 years	Terms of Reference for feasibility and engineering study have been drafted. ADB has been approached for financing.
1.1.2	Studies of Six Roads in Angola	2.0	2.0	0.0	0.0	0.0	2.0			
1.2.1	Partial Reconstruction of Nata - Kazungula Road	3.7	3.0	0.7	3.0 (Sweden) 0.7 Botswana	0.0	0.0	1988	2 years	
1.2.2	Study on Jwaneng - Mamuno Road Link, Botswana	0.8	0.8	0.0	0.0	0.0	0.8	1988	8 months	Terms of Reference have been prepared. ADB (Swedish Funds) has been approached. Shortlist of consultants prepared.
1.4.2	# Study on the Upgrading of the Road Blantyre-Milanje-Mocuba, Malawi/Mozambique	0.5	0.5	0.0	0.2 (Canada)	0.0	0.3		6 months	
(01)	# Study on the Upgrading of the Road Blantyre-Milanje-Mocuba (Feasibility Study)	0.2	0.2	0.0	0.2 #	0.0	0.0		8 months	Feasibility study to be funded under P 0.0.5.
(02)	Study on the Upgrading of the Road Blantyre-Milanje-Mocuba (Design)	0.3	0.3	0.0	0.0	0.0	0.3		12 months	Engineering design of the Malawi section completed. Financing being sought for design of Mozambique section.
1.5.2	Rehabilitation of the Zimbabwe -Tete-Malawi Road	18.6	12.6	6.0	12.6 (Kuwait) 6.0 Mozambique	0.0	0.0	1985	3,5 years	Work in progress.
1.5.5	Study on Unity Bridge and Access Roads	0.9	0.9	0.0	0.0	0.0	0.9	1989	10 months	TOR have been prepared. ADB has been approached for financing.
1.7.1	Rehabilitation and Upgrading of the Mtwara - Songea - Mbamba Bay Road	44.0	33.0	11.0	11.0 Tanzania	0.0	33.0	1988	3 years	Financing is being sought for review study on section Masasi-Songea and for works on section Songea-Mbamba Bay.

Table 2(H): Intra-Regional Surface Transport Projects (continued)

1.8.3	Rehabilitation of the Lusaka--Kafue-Livingstone-Kazungula Road	30.1	19.0	11.1	5.5 (Norway) 11.1 Zambia	0.0	13.5	1988	3 years	Work completed on Livingstone-Zimba section. Study on remaining sections completed.
1.8.4	Rehabilitation of the Road Kafue-Chirundu	16.0	13.0	3.0	13.0 (USA) 3.0 Zambia	0.0	0.0	1983	5 years	Ongoing project.
1.8.5	Rehabilitation of the Lusaka--Kapiri-Chingola-Zaire Border Road	45.7	28.8	16.9	16.9 Zambia	0.0	28.8	1988	4 years	Engineering study completed. ADB has been approached for financing rehabilitation work.
1.8.7	Improvement of the Road Lusaka -Mongu	25.0	15.8	9.2	9.2 Zambia	0.0	15.8	1990	3 years	ADB has been approached for financing rehabilitation work.
2.2.7	Establishment of Dry Ports/ ICD's in Botswana	2.5	2.0	0.5	0.5 Botswana	0.0	2.0	1988	1,5 years	Denmark has been approached.
2.3.1	Establishment of Dry Port/ICD in Lesotho	1.4	1.0	0.4	0.4 Lesotho	0.0	1.0	1988	2 years	Study concluded financed by EEC, which has been approached for financing of implementation
2.4.3	Establishment of Dry Ports/ ICD's in Malawi	4.0	3.2	0.8	0.8 Malawi	0.0	3.2	1988	1,5 years	Denmark has been approached.
2.4.4	Improvement of Communications Ssystems, Malawi Railways	0.8	0.8	0.0	0.0	0.0	0.8	1988	1,5 years	
2.5.8	Rehabilitation and Maintenance of Wagons - CFM, Mozambique	21.0	17.4	3.6	3.6 Mozambique 1.8 (Italy)	0.0	15.6	1987	4 years	
2.5.11	Computerized Wagon Control System for CFM, Mozambique	2.5	2.0	0.5	1.5 (Kuwait) 0.5 Mozambique	0.0	0.5	1988	1 year	
2.5.12	Rehabilitation and Acquisition of Locomotives for CFM	85.0	85.0	0.0	0.0	0.0	85.0	1988	5 years	
2.6.2	Establishment of Dry Port/ICD in Swaziland	0.7	0.5	0.2	0.2 Swaziland	0.0	0.5	1988	1,5 years	Denmark has been approached.

Table 2(H): Intra-Regional Surface Transport Projects (continued)

2.8.1	Feasibility Study for New Rail Links Connecting Zambia with Malawi and Mozambique	0.6	0.6	0.0	0.0	0.0	0.6	1988	8 months	
2.8.2	Acquisition and Refurbishment of Locomotives and Wagons, Zambia Railways	262.0	243.5	18.5	10.0 (Sweden) 1.2 (Belgium) 13.9 (USA) 18.5 Zambia	0.0	218.4	1988	5 years	
2.8.3	Railway Bridges, Zambia Railways	14.0	11.7	2.3	2.3 Zambia	0.0	11.7	1988	2,5 years	
2.8.4	Establishment of Dry Ports/ ICDs in Zambia	6.0	5.4	0.6	0.6 Zambia	0.0	5.4	1988	1,5 years	Denmark has been approached.
2.8.5	Track Rehabilitation and Maintenance, Zambia Railways	64.6	48.7	15.9	6.2 (ADB) 15.9 Zambia	0.0	42.5	1988	5 years	
2.8.6	Telecommunications and Data Base Management System, Zambia Railways	4.5	3.4	1.1	1.1 Zambia	0.0	3.4	1988	4 years	
2.8.7	# Motive Power, Rolling Stock and Operation Plan for Zambia Railways	0.2	0.2	0.0	0.0	0.2 (Canada)	0.0	1988	4 months	Included in proposed programme of P. 0.0.5.
2.9.1	Repair Tracks & Wagon Maintenance Equipment, National Railways of Zimbabwe	1.1	0.6	0.5	0.6 (Zimbabwe) 0.5 Zimbabwe	0.0	0.0	1986	3 years	
2.9.2	Equipment for Central Electrical Workshop, NRZ, Zimbabwe	0.4	0.4	0.0	0.0	0.0	0.4	1988	1 year	
2.9.3	Telecommunications and Signalling, NRZ, Zimbabwe	10.2	7.2	3.0	3.0 Zimbabwe	0.0	7.2	1988	4 years	
3.5.4	Navigational Aids, Mozambique	15.4	14.7	0.7	7.9 (Sweden) 0.7 Mozambique	0.0	6.8	1987	8 years	Financing of first phase secured, organization of project established. Detail design being prepared.

Table 2(H): Intra-Regional Surface Transport Projects (continued)

(01)	Buoy Handling and Maintenance Vessel, Mozambique	7.2	7.2	0.0	7.2 (Denmark)	0.0	0.0	1987	4 years	Agreement signed June 1987. Estimated time for delivery of vessel is Oct 1988.
3.7.3	Study of Coastal Navigational Aids, Tanzania	0.2	0.2	0.0	0.0	0.2 (Norway)	0.0	1988	1/2 year	TOR prepared. Preappraisal mission (Norway) August 1987.
3.8.1	Study of the Navigability of the Zambezi and Shire Rivers	0.3	0.3	0.0	0.0	0.3 (RWDP)	0.0	1988	1 year	Steering committee being established.
	TOTAL	692.6	586.1	106.5	190.9	0.5	501.2			

‡ The costs associated with this entry are not directly included in the totals. They appear either under another Project or as costs for sub-Projects.
( ) Brackets around a country or financing agency indicates a foreign exchange contribution.

Table 2(I): Civil Aviation Projects (All Amounts in USD Million)

Project No.	Project Title	Estimated Cost Total	Foreign	Local	Secured Funding Amount/Source	Funding Under Negotiation Amount/Source	Funding Gap	Implementation Start	Duration	Comments/Status
4.0.8(1)	Rehabilitation of Aeronautical Telecoms in the Region	30.0	30.0	0.0	0.0	0.0	30.0	1987	5 years	Each SADCC state should try to find a donor for its national part of the project.
4.2.1	Acquisition of new Aircraft for Air Botswana	9.0	9.0	0.0	0.0	0.0	9.0	1988	1 year	
4.2.2	Contingency Improvement to Gaborone Airport	8.0	5.0	3.0	3.0 Botswana 0.1 (N.Ze'lnd) 3.7 (Unspec'd)	0.0	1.2	1988	1,5 year	
4.2.3	Flight Information Region for Botswana	9.4	8.5	0.9	0.9 Botswana	0.0	8.5	1988	1 year	
4.3.3	Acquisition of New Aircraft for Air Lesotho	40.0	40.0	0.0	0.0	0.0	40.0	1988	3 years	
4.3.4	Rehabilitation of Aeronautical Telecommunications, Lesotho	0.3	0.3	0.0	0.0	0.0	0.3	1988	2 years	
4.4.1	New Airport at Mzuzu, Malawi	17.3	13.0	4.3	2.6 (France) 4.3 Malawi	0.0	10.4	1986	3 years	ADB has shown interest.
4.5.3	# Civil Aviation Projects in the Beira Port Transport System Development Plan	29.5	28.3	1.2	1.2 Mozambique	0.0	28.3	1986	5 years	
(C-CE:1)	Development of the Beira Airport Terminal	2.0	2.0	0.0	0.0	0.0	2.0			
(C-CE:2)	Strengthening of Runways in Beira and Tete	4.5	3.6	0.9	0.9 Mozambique	0.0	3.6			
(C-CE:3)	Airport Building, Chimoio	1.5	1.2	0.3	0.3 Mozambique	0.0	1.2			

Table 2(I): Civil Aviation Projects (continued)

(C-ME:1)	Acquisition of Two New Aircraft	7.0	7.0	0.0	0.0	0.0	7.0			
(C-ME:2)	Communication and Navigation at Beira, Chimoio and Tete	6.0	6.0	0.0	0.0	0.0	6.0			Denmark has been approached for radio navigation system for Chimoio. Est'd cost is USD 0.3 mn.
(C-ME:3)	Fire Fighting Equipment for Beira, Chimoio and Tete	2.5	2.5	0.0	0.0	0.0	2.5			
(C-ME:4)	Maintenance Equipment	0.5	0.5	0.0	0.0	0.0	0.5			
(C-ME:5)	Airport Lighting, Chimoio	0.5	0.5	0.0	0.0	0.0	0.5			Denmark has been approached.
(C-TA:1)	Technical Assistance	5.0	5.0	0.0	0.0	0.0	5.0			
4.5.5	Development of Maputo Airport	6.5	5.2	1.3	1.3 Mozambique	0.0	5.2	1988	3 years	
4.5.6	Development of Inhaebane Airport	6.0	5.0	1.0	1.0 Mozambique	0.0	5.0	1988	5 years	
4.5.7	Development of Vilanculos Airport	2.5	2.0	0.5	0.5 Mozambique	0.0	2.0	1988	3 years	
4.6.1	Development of Matsapha Airport	38.0	32.0	6.0	2.0 (EEC) 1.8 (France) 17.0 (Swazil'd) 6.0 Swaziland	0.0	11.2	1984		Contl tower, training & telecoms by EEC. France to fund training, tech assist,nav aids and landing equip. Runway by local funds. EEC approached for remainder.
4.8.1	Study on the Improvement of Livingstone,Ndola and Southdown Airports, Zambia	0.7	0.7	0.0	0.0	0.0	0.7	1988		TOR prepared. Financing for feasibility study being sought.
4.8.4	Study on New Hangar at Lusaka International Airport, Zambia	0.1	0.1	0.0	0.0	0.0	0.1	1988		TOR have been revised. ADB has been approached for financing of feasibility.
4.8.6	Lusaka International Airport Development, Zambia	44.1	44.1	0.0	0.0	0.0	44.1	1990	10 years	New project in SATCC programme.

Table 2(I): Civil Aviation Projects (continued)

4.9.2	Study on New Harare Airport Terminal, Zimbabwe	0.5	0.5	0.0	0.5 (Zimbabwe)	0.0	0.0	1987		Initiation of the project will await the results of an ongoing master plan study.
4.9.3	Modernisation of AFTN Message Switching Centre at Harare International Airport	0.6	0.6	0.0	0.0	0.0	0.6	1988	1 year	The EEC has been approached.
4.9.4	Improvement and Expansion of Radar Coverage, Zimbabwe	8.0	8.0	0.0	0.0	0.0	8.0	1988	2 years	New project in SATCC programme.
	TOTAL	250.5	232.3	18.2	45.9	0.0	204.6			

* The costs associated with this entry are not directly included in the Totals. They appear either under another Project or as costs for sub-Projects.
( ) Brackets around a country or financing agency indicates a foreign exchange contribution.