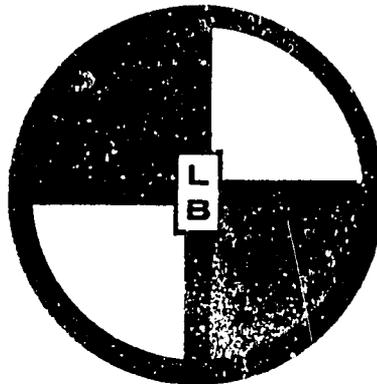


- PN-AAQ-431 -

UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
REPUBLIC OF MALAWI

TRANSPORT SECTOR ASSESSMENT



LOUIS BERGER INTERNATIONAL, INC.
100 HANCOCK STREET, EAST ORANGE, N.J. 07019

SEPTEMBER 1983

LOUIS BERGER INTERNATIONAL, INC.



1730 Rhode Island Ave., NW • Washington, D. C. 20036
Telephone: (202) 466-4000

15 October, 1983.

United States Agency
for International Development,
MALAWI.

IQC. PDC-0000-I-3082-00

Malawian Transport Sector Assessment.

Dear Sir,

We are pleased to enclose herewith six copies of our final report on the assessment of the Malawi Transport Sector.

We believe that this responds fully to the scope of the work and outlines viable options for assistance to the Government of Malawi which will help to lessen the impact of the transportation problems.

We remain at your disposal to discuss any items arising from this.

Yours sincerely,

A handwritten signature in dark ink, appearing to read 'N. C. Lewis', with a horizontal line underneath.

N. C. Lewis.

INDEX

I.	<u>Macro-economic trends and implications for the transport system</u>	<u>Page</u>
A.	Summary of structure and performance of Malawian economy	1
	1. Trends in GDP	1
	2. Balance of Payments	4
	3. Exports and Imports	4
	4. Factors in Poor Performance	7
	5. Food self-sufficiency	12
	6. Transport costs	13
B.	Description of transport links and facilities	17
	1. Road, rail and lake links	17
	2. Road, rail and port facilities	19
C.	Description of international transport flows by commodity	23
	1. Fertilizer	23
	2. Petroleum products	25
	3. Coal	26
	4. Other industrial products	27
	5. Tea	27
	6. Tobacco	28
	7. Sugar	29
	8. Maize	30
	9. Other export commodities	31
	10. Projections	31
D.	Analysis of current transportation bottlenecks and macro-economic impacts	35
	1. Recent performance on Nacala line	36
	2. Estimated capacity on the Nacala line	37
	3. Zambia route - fuel delivery requirements	40
	4. Present traffic levels on Mchinji-Lusaka road	41
	5. Road link to Zimbabwe through Mozambique via Mwanza	46
	6. Summary	48

II.	<u>Government's Role in Transport</u>	
A.	Description of Government Policies in the Transport Sector	51
	1. Rail transport	51
	2. Road transport	52
	3. Lake transport	53
B.	Description of current government activities in response to the present transport crisis	54
	1. Establishment of National Transportation Committee	55
	2. Establishment of Malawi International Transport Company - MITCO	56
	3. Negotiation of bi-lateral agreements with neighbouring countries	58
	4. Promotion of Malawi road haulage capacity	59
	5. Development of North/South corridor via Tanzania	62
III.	<u>Organization of Transport Sector Services</u>	
A.	Description of major transportation users	65
	1. ADMARC	65
	2. OPTICHEM	65
	3. Tea estates	66
	4. Tobacco	67
	5. Sugar estates	68
	6. Cement	70
	7. Coal users	70
	8. Oil companies	71
	9. Lever Brothers	72
B.	Description of Malawi's road transport services	73
	1. Factors contributing to the weakness of Malawi's trucking industry	73
	2. Rail protection	73
	3. Malawi's truck fleet and domestic road haulage	74
	4. International road haulage	81

	iii
	<u>Page</u>
C. Global analysis of industry impact and response to current problem	85
1. Exporters of high value produce	85
2. Exporters of low value produce	86
3. Importers of essential supplies	86
4. Summary	88
D. Comparative costs of alternative routings	89
1. Typical rail charges	89
2. Typical road haulage charges	89
3. Total costs of alternative routings	94
IV. <u>Options for USAID Assistance</u>	
A. Introduction	100
B. Strengthening of the Malawian international road haulage industry	102
1. Sizing of fleet	102
2. Pro-forma cash flow and profitability	103
3. Analysis of cases	105
4. Cost constraints	110
C. Provision of Technical Assistance	111
D. Development of North/South corridor	113
E. Strengthening of Zambian road link	114
V. <u>Foreign exchange impacts</u>	
A. Foreign exchange savings potential	116
1. Malawi owned trucks	116
2. Better organization of transport through MITCO	117
3. Foreign transportation partially paid in local currency	118
4. Transfer of cargo from road to rail	118
5. Summary	119
B. Financial and economic costs of Transport crisis	120
1. Historical costs	120
2. Costs in 1983.	123

SUMMARY1. The Economy and Transport Requirements

The Republic of Malawi is a landlocked country and has suffered significantly as a result of this in recent years. Since independence the country has attained self sufficiency in food and produces valuable agricultural commodities for export, principally tobacco, tea and sugar, and recently maize. All vital inputs, for example, fuel, fertilizer, coal and manufactured goods have to be imported. Table 1 summarizes the total tonnages of goods estimated to be imported/exported to/from the country in 1983.

Table 1 Projected imports and exports (tonnes) 1983

<u>Imports</u>		<u>Exports</u>	
Petrol	50,000	Tobacco	40,000
Diesel	60,000	Tea	50,000
Fertilizer	120,000	Sugar	100,000
Coal	70,000	Maize	100,000
Manufactured goods	100,000	Groundnuts	5,000
Others	100,000	Others	5,000
Total	500,000 t.	Total	300,000 t.

Hence in terms of transport requirements, links and facilities must be able to handle this annual volume of goods moving in each direction. Tea and tobacco alone are estimated to contribute K. 188 million to foreign exchange earnings in 1983, whilst maize, and sugar and groundnuts will contribute approximately K. 50 million.

2. Transport Constraints

Historically Malawi has depended on the railway line through Mozambique to Beira, as the shortest distance to a seaport, for most of its imports and exports. Due to insurgents' activity this line is now virtually closed. Where possible goods are being diverted to the other rail line through Mozambique to Nacala but due to track failures, poor maintenance and management, capacity for Malawi traffic is only about 300,000 tonnes annually.

In addition to the two rail lines there are only two alternative road routes which can be used in and out of Malawi. One which passes through Tete province in Mozambique to Harare is subject to insurgents action and cannot be relied upon. The other route runs west from Lilongwe through Zambia to Lusaka. This road is currently carrying approximately 270,000 tonnes of goods annually whilst the road via Tete is averaging approximately 75,000 tonnes. It is then necessary to transport goods via road or rail from Harare or Lusaka to a seaport. Whilst Dar-es-Salaam is nearest, Durban (in R.S.A.) is most often used.

These constraints lead to the following impacts:

1. Due to the virtual closure of the Beira rail line, the Nacala line is over committed with low volume, high bulk commodities competing for available capacity.
2. All commodities that are unable to be transported on the Nacala line suffer extremely high transport costs (and transit times) by being routed long distances via the R.S.A., transiting several countries.
3. Additional handling is incurred at modal interchanges.
4. Capacity constraints and delays can occur on railways (e.g. Z.R., N.R.Z. and Tazara) due to unavailability of rolling stock.
5. Capacity constraints can occur on road transit routes due to limitations on route/trip permits in neighbouring countries.
6. Road transport costs increase due to using badly deteriorated roads or from the need to divert to avoid these roads.

3. Transport Routes

There are six principal transport routes which are presently used for the movement of commodities to a seaport. These are as shown in Table 2. Distances are from Blantyre (rounded):

Table 2 Transport Routes and Distances

1. Rail to Beira	Distance:	650 km
2. Rail to Nacala	Distance:	810 km
3. Road to Harare (via Tete), road/rail to Durban	Distance:	2,660 km
4. Road to Lusaka, road /rail to Dar-es-Salaam	Distance:	3,150 km
5. Road to Lusaka, rail via Zimbabwe to Durban	Distance:	3,600 km
6. Road to Lusaka, rail via Botswana to Durban	Distance:	3,920 km

The two rail routes via Mozambique are the shortest whilst the routes via Botswana are the longest. The route to Dar-es-Salaam via Lusaka is not used significantly. Recent statistics indicate that the following tonnages are being transported annually as shown in Table 3.

Table 3 Annual tonnages transported by route (1983)

1. Rail to Beira :	insignificant
2. Rail to Nacala:	315,000 tonnes
3. Rail to Harare:	75,000 tonnes
4. Road to Lusaka:	<u>270,000</u> tonnes
Total	660,000 tonnes

On the Nacala rail line the principal imports are fuel and fertilizer and the main exports are containerised tea and tobacco. On the Harare road route the main movement is coal imports about 60% of which is moved by Zimbabwe transporters and 40% by Malawian haulers. All remaining commodities are moved by road via Lusaka. This includes significant fuel imports.

On the Lusaka road the origin/destination of commodities is as follows:

Table 4 Origin/destination of commodities transported via Lusaka

<u>Origin</u>	<u>Imports</u>	<u>Destination</u>	<u>Exports</u>
Zambia	56%	Zambia	42%
Zimbabwe	30%	Zimbabwe	40%
R. S. A.	13%	R. S. A.	16%
Tanzania	-	Tanzania	1%
Other	<u>1%</u>	Other	<u>1%</u>
Total	100%		100%

Currently, of this approximately 20% is being moved by Malawi transporters, 35% by Zambian transporters, 35% by Zimbabwean transporters and 10% by haulers from the R. S. A.

4. Transport Costs

For the transport of goods by rail, tariffs are fixed by Malawi Railways and charged per tonne according to the commodity. Typical rates are: 0.09, 0.06 and 0.04 Kwacha per tonne-km. for petrol, sugar and fertilizer respectively. Rates charged by the Mozambique railways are broadly similar.

For the transport of goods by road, road charges are variable but are essentially dependent on the length of the haul. Generally trips are priced by transporters on the front haul with much lower rates quoted for the back haul which can be regarded as extra revenue to the transporter. Typical rates quoted are K. 1,500 one way to Lusaka or K. 5,000 one way to Durban. Back haul rates may represent approximately one half of this cost. In terms of commodities, given different densities, loading capacity of vehicles varies per commodity. Transport rates for different commodities therefore vary. Typical rates quoted on different routes currently are as shown in Table 5.

Table 5 Typical road transport rates

Imports: Lusaka-Lilongwe	: fuel	: K. 90/tonne	
	or approx.:	K.011/tonne	km
Harare-(Lusaka)-Lilongwe:	fertilizer:	K.110/tonne	
	or approx.:	K.0.07/tonne	km
Durban-Lilongwe	: fertilizer:	K.180/tonne	
	or approx.:	K.0.05/tonne	km
Exports: Lilongwe-Lusaka	: maize	: K. 70/tonne	
	or approx.:	K.0.09/tonne	km
Lilongwe-(Lusaka)-Harare:	tea	: K. 90/tonne	
	or approx.:	K.0.06/tonne	km
Lilongwe-Durban	: tobacco	: K.300/tonne	
	or approx.:	K.0.09/tonne	km

As noted earlier Malawi transporters presently have a small share of the international trucking traffic of its own imports and exports. This is partly accounted for by having to compete on rates which for a Malawian export commodity is a front haul for a Malawian transporter (high rate) but a backhaul for a South African haulier (lowrate). In turn for a Malawian operator, due to the lack of well established contacts in regional countries it is difficult to pick up a backhaul and negotiate an appropriate rate.

In terms of foreign exchange expended, in 1980 (when both Mozambique rail lines were operating effectively) foreign exchange payments to C.F.M. were K. 15 million (plus K. 2.5 million for M.R.) and K. 10 million for road transport totalling K. 27.5 million. In 1983 estimates are K. 15 million to C.F.M. and K. 60 million for road transport totalling K. 75 million or approximately three times that incurred several years earlier. Since total foreign exchange earnings from export products are anticipated as being approximately K. 275 million in 1983, almost one third of this will be consumed in foreign exchange costs for transport sources alone.

5. Transport Options

The Government of Malawi has reacted well to the transport crisis and has initiated a series of actions aimed at alleviating the problem. These consist of:

- a) The establishment of a National Transportation Committee with representatives of Government, private sector producers and road hauliers aimed at prioritizing movement of commodities by different transport modes (particularly fuel and fertilizer imports).
- b) The formation of a "booking agency" for road transport, the Malawi International Transport Company (M.I.T.C.O.) whose purpose is to assign contracts to Malawian hauliers in such a way as to better utilize capacity and ensure coordination of front and back hauls.
- c) Drafting a bi-lateral agreement with Zambia so as to coordinate policies with regard to road transport regulations. If this is successful a similar agreement is to be proposed with Zimbabwe.
- d) Investigating means to open a new access corridor to the north into Tanzania so as to provide an alternative routing to a sea port (Dar es Salaam).

Within this context therefore the following options should be given serious consideration.

- i) First priority should be given to improving the capacity of the Nacala rail line in Mozambique. Several donors are already committed to this. As and when the situation allows, the same should be done for the Beira rail line.
- ii) Equal priority should be given to developing a north/south access corridor into Tanzania so as to connect with Dar es Salaam. This will involve constructing a remaining link of the main MI road costing possibly K20 million and constructing a 50 km. link in the north of the country and across the border into Tanzania (estimated cost K.20 million)
- iii) Simultaneously promotion of the Malawian road haulage fleet is required so as to improve its capabilities and enable Malawian hauliers to compete and participate in international operations (estimated cost K.5 million for 30 tractor/trailer units).
- iv) Rehabilitation of the Lusaka - Chipata road in Zambia is required and adequate preventative maintenance should be introduced so as to prevent failure of this critical road link. (estimated cost K.60 million).

6. Potential Impacts

In terms of focusing on any of these transport options, the two rail lines via Mozambique are the least cost routes hence the greatest impact of foreign exchange savings results, from using these routes. Failing this opening a corridor directly into Tanzania in the north will provide the second shortest distance and least cost route to a seaport for international traffic by road or rail. This may also encourage development of the use of Lake Malawi for moving high bulk products.

For road transport it has been shown that if loads are guaranteed in both directions and a minimum number of trips is guaranteed per month, with the assistance of MITCO, international trucking operations can be profitable. In addition if certain institutional aspects can be improved (e.g. terms of financing, insurance, etc.) and umbrella organizations are established to assist in providing improved technical and financial management, Malawian transporters can compete and participate in international road haulage operations. The potential impact from foreign exchange savings for each Malawian unit replacing a foreign registered operator, (operating 130,000 Km per year) is a saving of approximately \$50,000 per annum (or \$1.5 million p.a for 30 trucks). In addition improved management of transport services will reduce the overall cost of transport, so saving additional foreign exchange.

In concert with other actions therefore, promotion of the Malawian transporters capabilities in the field of international transport, whilst not involving significant capital investments can be seen as a positive contribution to the improvement of transport services, adaptable to any route, minimizing dependence on foreign operators and providing a benefit to the economy as a whole in the form of foreign exchange savings.

I. . MACRO ECONOMIC TRENDS AND IMPLICATIONS CONCERNING
THE TRANSPORT SYSTEM

A. Overview of the Structure and Performance of
the Malawi Economy

Malawi is a landlocked country with a population in 1982 of 6.3 million people, having a land area of approximately 45,000 square miles, about one fifth of which consists of Lake Malawi. GDP per capita was \$192 in 1982. The economy is based on agriculture with a small industrial sector based on agro-industries. There are few exploitable resources and emphasis has been on obtaining self-sufficiency in food, clothing and housing. The export trade fulfills the vital need of providing the foreign exchange necessary for essential resource inputs of petroleum fuels, coal, fertilizer, machinery etc. Principal exports are tea, tobacco, sugar and recently maize. Since independence Government strategy has focussed on economic growth through increasing agricultural production of cash crops for export whilst simultaneously striving for and maintaining food self-sufficiency and undertaking import substitution.

1. Trends in GDP

Table 1.1 shows the evolution of GDP over the last ten years. From 1973 to 1979, before the onset of economic difficulties, real Gross Domestic Product grew at 6.1 percent per annum, a rate well in excess of population growth which has been estimated at 2.9 percent per annum. More importantly these gains have been distributed in such a way that all income groups, including the poorest, have benefited absolutely if not relatively.

The data in Table 1.1 which deals with the relative share of GDP originating from various sectors of the Malawian economy does not reveal, except for the growing role of estate agriculture, any significant change in the structure of the Malawian economy between 1973 and 1982. It is interesting to note that the share accounted for by government services has remained fairly constant over time - an indicator that this sector is not expanding relative to the economy as a whole. The structure of the economy in 1983 however has changed significantly from that which prevailed in 1964. Then agriculture accounted for 58 percent of GDP (with the bulk of this being non-monetized production) as opposed to 40 percent of GDP accounted for by this sector today.

Table 1.2 provides additional insight into the transformation of the Malawian economy over the period 1964 to 1980. It reveals considerable improvements in investment/savings performance, in the levels of the available infrastructure and in the stock of human resources, and indicates that Malawi is better off today than at the time of independence.

Table 1.1

Real Gross Domestic Product by Economic Activity 1973 - 1982
(Millions of Kwacha) 1978 Prices

	1973	1979	1980	1981	1982 Estimate	Compound Growth 1973-1979	Growth Rate 1979-1980	Growth Rate 1980-1981	Growth Rate 1981-1982	Relative Share 1972	Relative Share 1983
Agriculture, Forestry & Fishing	223.6	308.3	291.5	302.1	313.8	5.5	-5.4	3.6	3.9	41.0	40.1
(Estimates)	(26.6)	(56.2)	(57.7)	(55.1)	(65.4)	(11.3)	(2.7)	(-4.5)	(18.7)	(5.4)	(8.4)
(Smallholders)	(194.0)	(252.1)	(233.8)	(247.0)	(248.4)	(4.5)	(-7.3)	(5.6)	(0.6)	(35.6)	(31.7)
Manufacturing	61.9	90.3	93.6	95.3	91.1	6.5	3.7	1.8	- 4.4	11.3	11.6
Electricity & Water	8.4	13.7	14.8	14.9	15.3	8.5	8.0	.7	2.7	1.5	2.0
Building and Construction	28.9	48.8	45.3	36.2	33.9	9.1	-7.2	-20.1	- 6.4	5.3	4.3
Distribution (Trade)	74.1	109.7	118.0	108.9	106.8	6.8	7.6	- 7.7	- 1.9	13.6	13.6
Transport & Communi- cation	37.2	48.7	50.7	47.3	43.2	4.6	4.1	- 6.9	- 8.5	6.8	5.5
Financial Services	14.5	26.1	28.3	26.3	29.0	10.3	8.4	- 7.1	10.3	2.7	3.7
Ownership of Dwellings	20.4	30.9	31.7	32.3	33.1	7.2	2.6	1.9	2.5	3.7	4.2
(Sub-total - Private Sector)	(463.0)	(676.5)	(673.9)	(663.3)	(666.2)	6.3	(- .4)	(- 1.6)	(.4)	(86.0)	(85.1)
Government Services	76.5	100.7	106.1	110.8	116.9	4.7	5.4	4.4	5.5	14.0	14.9
GDP at Factor Cost	545.5	777.2	780.0	774.1	783.1	6.1	.4	- .8	1.2	100.0	100.0

Source: "Malawi National Accounts Report 1973-1978" and
"Malawi - Recent Economic Developments" IMF, February 1983.

Table 1.2 Malawi Indicators of Economic Transformation,
1964-1980

<u>Economic Indicator</u>	<u>1964</u>	<u>1980</u>
GDP per Capita (1980 Kwacha)	122.8	207.9
Investment/GDP (percentage) ^{1/}	13.6 ^{2/}	25.5 ^{1/}
Savings/GDP (percentage)	-12.1	12.6 ^{1/}
Government Savings/GDP (percentage)	-12.5	1.8
Employment in Wage Sector (000s)	135.0 ^{3/}	348.0 ^{4/}
Manufacturing Output (million 1980 Kwacha)	36.0	71.0
Paved Roads (km)	200.0	1,899.0
Secondary School Enrollments	5,951.0	15,140.0 ^{4/}
University Graduates	33.0	2,656.0
Electricity (mnkwh)	43.0	365.5
Rail Traffic (million tonne-kilometers)	85.1	228.3

Source: "The Private Sector and the
Economic Development of Malawi"
A.I.D. Evaluation Special Study
No. 11, March, 1983.

1/ 1978 - 1980

2/ 1964 - 1966

3/ 1968

4/ 1978

2. Balance of Payments

Table 1.3 provides an overview of Malawi's balance of payments performance over the period 1964 to 1980. It reveals that while exports expanded quite rapidly (at an annual rate of 15.1 percent over the period 1964-1980) imports expanded at a slightly higher rate (15.3 percent per annum) such that Malawi experienced a growing deficit on non-factor services (which includes payment for transport costs) which along with other factors, led to a growing deficit on current account. ^{1/}

As can also be seen, Malawi received net capital inflows that were large in relation to export earnings over the same period. In the initial years following independence these were generally made available on concessional terms. From 1978 however, Malawi began to borrow extensively on commercial terms (at variable interest rates) for urban and infrastructure projects as well as for agricultural projects. The urban and infrastructure projects have low financial returns, whilst the agricultural projects, particularly in the case of sugar, were adversely affected by low international commodity prices. The result was a growing debt service problem such that Malawi was forced to reschedule its debt. As a result of subsequent negotiations, the debt service ratio (debt service as a percentage of export earnings) was reduced from 50% to 43% in 1982 and from 40% to 23% in 1983.

Malawi's growing balance of payments problems are also reflected in declining gross official reserves. By late 1982, these had declined to the value of only 60% of one month's imports. Malawi has recently negotiated an IMF Extended Facility loan of K.120 million for disbursement over the next five years within the structural adjustment program.

3. Exports and Imports

Table 1.4 provides an overview of Malawi's export performance since independence. It indicates that while total exports have expanded considerably, Malawi has achieved only

^{1/} The dramatic growth of transport costs 1980-83 are discussed in Section IV, C.

Table 1.3Balance of Payments Summary
1970 - 1983 (Millions of Kwacha)

	<u>1970</u>	<u>1975</u>	<u>1980</u>	<u>1983</u> *
1. Exports (f.o.b.)	49.7	118.0	231.0	292.7
2. Imports (f.o.b.)	68.4	187.0	278.6	265.3
3. Balance of Trade (1-2)	-18.7	-69.0	- 47.6	+ 27.4
4. Balance on non-Factor services.	-15.4	-35.0	- 96.9	-122.1
5. Balance on Factor services.	- 6.1	+ 8.0	- 42.3	- 38.1
6. Balance on Transfers	+12.9	+21.0	- 5.2	- 9.1
7. Balance on Capital Account (3 + 4 + 5 + 6)	-27.3	-75.0	-192.0	-141.9
8. Balance on Capital Account	+34.1	+61.6	+185.4	+166.9
9. Errors and omissions	- 0.1	<u>1/</u>	<u>1/</u>	<u>1/</u>
10. Net Movement in Official Reserves (- = increase) (7 + 8 + 9)	- 6.7	+13.4	+ 6.6	- 25.0

Source: "Malawi; Growth and Structural Change - Statistical Appendix", IBRD February 1982 and "Malawi Economic Report" (various years)

* Estimate

1/ Included in Balance on Capital Account

Table 1.4Historical Overview of Export PerformanceExport Indexes: 1965 - 1980 (1979 = 100)

	<u>Major Estate Crops</u>			<u>Major Smallholder Crops</u>				<u>Other Exports</u>	<u>Total Exports</u>
	<u>Tobacco</u>	<u>Tea</u>	<u>Sugar</u>	<u>Tobacco</u>	<u>Groundnuts</u>	<u>Cotton</u>	<u>Rice</u>		
1965	11.4	42.4	--	53.6	138.0	328.6	15.7	90.1	40.0
1966	11.4	48.9	--	47.2	108.0	342.9	20.0	199.1	51.7
1967	11.0	54.0	--	43.4	372.3	221.4	21.4	235.4	67.4
1968	14.9	50.8	--	43.7	219.0	178.6	12.9	204.9	57.0
1969	16.6	55.6	3.2	36.1	250.4	271.4	24.3	206.3	60.1
1970	21.8	56.9	2.1	40.3	164.2	421.4	40.0	193.7	59.0
1971	28.9	58.5	4.3	45.3	213.1	342.9	74.3	191.5	64.7
1972	36.0	61.7	5.0	51.3	260.6	342.9	102.9	188.3	71.2
1973	37.0	89.1	24.9	60.8	200.0	178.6	204.3	210.8	79.4
1974	38.6	76.5	32.0	58.6	151.1	178.6	158.6	185.2	72.7
1975	50.7	80.1	43.4	40.7	181.8	157.1	72.9	171.3	74.7
1976	56.2	94.5	58.4	62.4	189.8	142.9	62.9	130.5	79.8
1977	59.4	95.8	79.7	73.8	118.3	142.9	171.4	138.1	84.4
1978	65.3	98.1	66.3	77.6	49.6	42.9	110.0	104.0	76.3
1979	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1980	121.8	97.1	141.5	52.3	165.0	171.4	185.7	155.2	115.1

Source: "Malawi; Growth and Structural Change -
Statistical Appendix", IBRD, February 1982.

modest success in diversifying its export base. 1/ In the case of sugar, which emerged as a new export in 1969, difficulties have been encountered since 1980 due to the imposition of US sugar quotas, downward trends in prices and rising transport costs. Other exports, however, expanded modestly over the period 1964-1980, largely in the form of textile exports to neighbouring countries. With the near doubling of maize prices during the 1980/81 crop year, Malawi's farmers have significantly expanded their production and as a result, Malawi now has a maize surplus to export to neighbouring African countries.

Table 1.5 examines the structure of Malawi's imports between 1964 and 1980. It reveals that since independence Malawi has devoted an increasingly larger share of its total import bill to capital goods and intermediate materials, though petroleum costs have continued to consume an ever larger share. 2/ Reflecting Malawi's successful import substitution strategy, consumer goods have accounted for a declining share of consumer non-durable goods. Malawi is, in fact, one of the few countries in Africa in which food production is rising more rapidly than population growth. Table 1.6 shows Malawi's principal trading partners.

Table 1.7 summarizes the tonnage of the principal import and export commodities and Table 1.8 summarizes the mode of transport used for these imports and exports over the last three years.

4. Factors in Poor Performance (1979 - Present)

Since 1979 a combination of events has caused a marked deterioration in Malawi's economic situation. Drought in two successive years led to the temporary importation of maize in 1981. Periodic interruptions,

1/ Most of this export growth was fueled by the commercial estates. From 1967 to 1978 (in current prices) estate exports grew by 20 percent each year while smallholder exports grew by 8 percent per annum. In the future, shortages of land, fuelwood and credit are likely to retard the expansion of the estates sector. Accordingly, Malawi will have to rely increasingly on smallholders to expand and diversify its export base.

2/ Actual consumption of petroleum has grown very slowly (1.4% per annum from 1975-1980) as the GOM has taxed fuel heavily and allowed consumer prices to rise.

Table 1.5.Imports by end-use 1970-1980
(Relative shares - Percent)

	<u>1970</u>	<u>1975</u>	<u>1978</u>	<u>1980</u>
<u>Consumer Goods</u>	17.6	13.9	12.6	11.6
Non-Durable	14.7	11.2	10.7	9.8
Durable	2.9	2.8	2.0	1.8
(Food)	(11.0)	(6.1)	(3.7)	(6.4)
<u>Plant, Machinery & Equipment</u>	11.9	12.5	20.5	14.0
<u>Transport Equipment</u>	14.6	16.0	13.6	17.1
<u>Materials for Building and Construction</u>	7.4	7.8	8.4	8.7
<u>Basic and Auxiliary Material for Industry</u>	30.7	33.2	26.0	29.6
<u>Parts, Tools and Miscellaneous Appliances</u>	4.1	3.3	5.0	2.9
<u>Commodities for Intermediate and Final Consumption</u>	12.0	12.9	13.5	15.8
(POL)	(7.8)	(9.1)	(10.8)	(14.1)
<u>Miscellaneous Imports</u>	1.8	0.5	0.4	0.3
<u>TOTAL</u>	100.0%	100.0%	100.0%	100.0%

Source: Malawi Statistical Yearbook
(Various Years)

Table 1.6

Malawi's Principal Trading Partners

3
(Value)

	(K. 000,000)				
<u>EXPORTS</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>
<u>Overseas</u>					
United Kingdom	77.0	70.7	74.0	63.9	55.5
West Germany	8.4	9.4	16.7	17.1	18.2
Netherlands	15.1	13.6	18.1	20.6	15.7
U. S. A.	16.5	8.3	12.3	39.1	68.5
Other Western Europe	-	10.6	19.6	23.0	17.4
Eastern Europe	-	0.3	0.4	0.6	0.6
Pakistan & Tunisia	-	0.9	3.0	3.0	2.8
Australia & New Zealand	-	4.3	3.6	5.3	6.8
Japan	-	2.3	2.0	4.4	5.3
Other Overseas	-	8.2	4.8	7.2	7.2
TOTAL		<u>128.6</u>	<u>154.5</u>	<u>184.2</u>	<u>198.0</u>
<u>Regional</u>					
Tanzania	(a)	(a)	(a)	(a)	(a)
Zambia	4.5	4.4	4.8	3.5	3.8
Zaire	-	0.3	0.2	0.3	0.9
Zimbabwe	2.1	1.3	1.3	12.3	20.2
Mozambique	-	0.5	0.4	2.6	1.5
South Africa	12.4	6.7	8.6	7.5	12.3
TOTAL		<u>13.2</u>	<u>15.3</u>	<u>26.2</u>	<u>38.7</u>
<u>Other African Countries</u>	-	7.0	6.5	7.9	9.3
TOTAL EXPORTS	172.0	148.8	176.3	218.3	246.0
<u>IMPORTS</u>					
<u>Overseas</u>					
United Kingdom	39.4	56.8	60.5	67.3	44.1
West Germany	8.1	9.1	17.1	18.1	25.8
Netherlands	-	5.6	4.3	14.9	9.4
France	-	4.9	5.0	8.3	9.0
Other Western Europe	-	15.7	15.7	23.4	30.9
Eastern Europe	-	0.6	1.9	1.6	1.6
U. S. A.	10.5	13.2	10.5	12.1	13.5
Canada	-	7.8	2.1	4.9	1.3
Pakistan & India	-	4.5	5.6	4.3	5.2
Singapore & Hong Kong	-	4.0	5.7	2.6	6.3
Australia & New Zealand	-	1.8	3.1	3.1	3.8
Japan	18.4	28.8	30.8	25.0	19.6
Other Overseas	-	11.9	13.4	16.7	19.9
TOTAL		<u>164.7</u>	<u>175.7</u>	<u>202.3</u>	<u>190.4</u>
<u>Regional</u>					
Tanzania	-	0.1	0.2	0.3	0.2
Zambia	2.4	2.1	6.8	7.7	4.5
Zaire	(a)	(a)	(a)	(a)	(a)
Zimbabwe	5.7	6.0	4.8	12.7	18.9
Mozambique	-	1.8	1.8	1.8	2.3
South Africa	77.8	109.0	134.5	131.5	103.9
TOTAL		<u>119.0</u>	<u>148.1</u>	<u>154.0</u>	<u>129.8</u>
<u>Other African Countries</u>	-	1.0	1.0	0.9	1.7
TOTAL IMPORTS	209.8	284.7	324.2	357.2	321.9

(a) Less than K. 50,000

Sources: 1981 Reserve Bank of Malawi
Report, Monthly Statistics,
September, 1982

Table 1.7 Principal Malawi Imports and Exports (by weight)1977 - 1981 ('000 tonnes)

<u>IMPORTS</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982*</u>
Diesel	64.1	71.0	75.2	78.8	66.7	60.2
Petrol	35.8	40.4	41.9	39.4	39.7	35.6
Paraffin, Jet A-1, Avigas	21.6	22.9	24.0	17.1	15.2	13.7
Residual Fuels	3.3	4.0	3.3	2.3	2.1	2.6
Lubrication Oils & Grease	14.0	19.1	14.5	9.1	9.4	10.0
Coal, Coke & Derivatives	56.6	55.9	34.3	67.4	47.8	70.4
Fertilizers	83.6	99.2	104.9	99.5	127.3	117.5
Iron & Steel Products	29.8	55.5	46.2	37.7	16.4	
Paper & Paperboard	8.4	10.3	9.9	16.0	9.3	
Cereals & Flour	29.6	9.6	16.6	36.4	69.1	90.0
Common Salt	11.9	3.5	15.9	13.0	10.5	
Other	<u>112.5</u>	<u>111.4</u>	<u>161.5</u>	<u>76.3</u>	<u>118.3</u>	<u>90.0</u>
TOTAL IMPORTS	<u>471.2</u>	<u>502.8</u>	<u>548.2</u>	<u>493.0</u>	<u>531.8</u>	<u>500.0</u>
<u>EXPORTS</u>						
Sugar	68.4	62.3	78.9	97.6	124.4	101.1
Tobacco	46.1	49.7	60.4	63.0	44.0	44.8
Tea	35.8	36.6	35.4	32.0	31.5	37.2
Groundnuts	18.7	8.7	15.1	25.9	11.3	7.3
Molasses	32.6	30.0	27.9	49.1	26.9	-
Rice	12.0	7.7	7.0	9.8	8.1	2.6
Dried Peas, Beans & Cassava	19.1	18.5	15.9	10.6	15.2	10.0
Animal Feed	8.8	10.2	8.4	6.3	7.9	3.0
Maize	13.1	7.0	3.1	1.8	0.3	74.0
Other	<u>13.9</u>	<u>15.1</u>	<u>15.8</u>	<u>8.9</u>	<u>23.4</u>	<u>20.0</u>
	<u>268.5</u>	<u>245.8</u>	<u>267.9</u>	<u>305.0</u>	<u>293.0</u>	<u>300.0</u>

Source: National Statistics Office

estimate

Table 1.8

Distribution of Malawi's External Trade by
Route: 1979 - 1981

('000 tonnes)

		<u>Rail Via Beira</u>	<u>Rail Via Nacala</u>	<u>Road Via Tete</u>	<u>Road Via Lusaka</u>	<u>Total</u>
1979	Exports	183.8	75.1	6.9	2.1	267.9
	Imports	<u>381.6</u>	<u>150.7</u>	<u>9.0</u>	<u>6.9</u>	<u>548.2</u>
	TOTAL	565.4	225.8	15.9	9.0	816.1
1980	Exports	197.6	87.4	12.3	7.7	305.0
	Imports	<u>313.1</u>	<u>147.4</u>	<u>20.2</u>	<u>12.3</u>	<u>493.0</u>
	TOTAL	510.7	234.8	32.5	20.0	798.0
1981	Exports	194.7	73.9	12.4	10.9	293.0
	Imports	<u>267.2</u>	<u>125.4</u>	<u>81.0</u>	<u>53.9</u>	<u>531.8</u>
	TOTAL	461.9	199.3	93.4	64.8	824.8

Source: Malawi Railways

resulting from insurgent activity and poor maintenance of the rail routes through Mozambique, have impeded the movement of imports and exports, raised their transport costs and led to shortages of fuel, fertilizer and other critical imports. Increased petroleum costs in 1979 coupled with declining international prices for Malawi's major exports resulted in a substantial decline in the terms of trade, in the face of a growing debt service problem. Government and domestic bank borrowing also rose significantly over the period 1979 to 1982 as the government accelerated its recurrent and development expenditures. As a result, inflation accelerated to 16 percent per annum and real growth in Gross Domestic Product declined significantly.

Through the auspices of the IMF however, the Government of Malawi has attempted to tackle its problems. Under the terms of a one year stand-by arrangement (April 1982 - March 1983) it devalued its currency by 15 percent, increased several product prices for the 1982/83 growing season and accepted ceilings on non-concessional foreign borrowing and net (domestic) bank credit to the Government. An IMF team visited Malawi this year and pronounced itself pleased with Malawi's performance. As a consequence Malawi and the IMF have agreed to a K. 120 million, five year extended fund facility loan.

Because of its resource endowments and the small size of its domestic market, Malawi has opted for an outward-looking, export orientated strategy based on small farmer and estate agriculture. While import substitution has formed a part of the overall strategy it has been based upon considerations of economic efficiency as opposed to political and ideological considerations. Whilst the government has maintained a large measure of control, either directly or through statutory bodies, the economy has been largely allowed to respond to market forces.

5. Food Self-Sufficiency

As noted, Malawi is one of the few countries in which food production has historically expanded more rapidly than population. This has had a considerable impact upon Malawi's development success to date, using resources that have been available in Malawi to finance the importation of capital and intermediate goods in support of economic development.

In its agricultural sector assessment undertaken in 1981, the IBRD was not optimistic that this favourable situation could be continued into the future as the performance of the food producing smallholder sector was already weakening. Also, Malawi's population has been growing at 2.9 percent per annum, a rate which will double population every 24 years, and this growth rate is likely to accelerate unless fertility can be reduced. In the past, Malawi has fed its growing population by expanding the area under cultivation and increasing yields through the use of fertilizers, but given its resource base, it is rapidly reaching the limits of such a strategy. The IBRD has estimated that the availability of new arable land will be

exhausted by the mid-1980's and at this point, Malawi will be forced to expand increasingly marginal areas and to reduce fallow periods and the area of land devoted to export crops, consequently increasing the need to import food.

These options are not favourable from the point of view of Malawi's long term economic development. Expansion into marginal areas and reduced fallow periods will entail high costs in terms of fertilizer imports and long term degradation of the resource base. Reduction in the amount of land devoted to export crops and increased food imports will be very costly in terms of foreign exchange which could otherwise be devoted to increasing the economy's capital stock. Consequently the development of agricultural research and extension services directed toward the small farmers is required which can facilitate and support higher yields of food crops, particularly maize, and higher value low bulk export crops.

6. Transport Costs

Malawi's development since independence has been complicated by its landlocked status. While its location benefited the country's import substitution/agricultural processing efforts (with high transport costs from outside providing protection against higher production costs) this was offset by the higher costs of essential imports and reduced foreign exchange available from exports. As the growth record from 1964 to 1979 demonstrates however, these costs did not constitute an insuperable barrier to development - although the increasing deficit on non-factor services (see Table 1.3) indicates that they have constituted a growing problem over time.

From Independence to 1979, Malawi relied upon rail linkages to the Mozambique ports of Beira and Nacala for shipments of its principal imports and exports. Collectively these two ports and their associated rail links handled 90-95 percent (by weight) of Malawi's external trade, with the Beira port alone accounting for 70 percent. In 1979 however, the capabilities of both links began to weaken as a result of management weaknesses, inadequate equipment maintenance, and deteriorating track conditions. More important, a growing insurgency problem hampered operations of the Beira route until it effectively ceased to operate in late 1982. As a result, Malawi has been forced to utilize alternative road and rail links through Zimbabwe and Zambia (to South African ports) for the bulk of its foreign trade.

Utilization of these alternative routes has come at a very high cost to Malawi. The UNDP* has estimated that utilization of these routes had an economic cost of \$12 million in 1982 alone and that in 1983 these costs may amount to between \$25-30 million, or 10-12% of projected export earnings.

* UNDP / UNCTAD RAF/77/017

These estimates are conservative, in that they take no account of extra transport costs for maize nor of output losses that will result from the transport crisis. The estimate includes procurement of replacement supplies, certain excess transport costs, port storage costs, interest on tied up capital and other costs due to delayed sugar sales, loss of revenue by Malawi Railways and general loss and deterioration. Further estimates indicate that a failure to obtain adequate supplies of fertilizer this year, would lead to loss revenue of \$11 million from tobacco, tea and maize sales. The following Table 1.9 shows the provisional estimates of foreign exchange earnings for 1983.

Table 1.9

Provisional Estimates of 1983 Foreign Exchange Earnings

<u>Commodity</u>	<u>Tonnage</u> (thousand tonnes)	<u>Value</u> (K. million)	<u>Kwacha per</u> tonne
Tea	39	51	1307
Tobacco	51	137	2686
Sugar	89	27	303
Maize	115	17	148 ^{1/}
Groundnuts	8	7	875
Others	N.A	34	
Re-Exports	<u>N.A</u>	<u>4</u>	
	302	277	

Source: Reserve Bank of Malawi

These additional costs have come at a time when Malawi is particularly vulnerable. As has already been noted, gross foreign exchange reserves are extremely low, thus allowing no flexibility to absorb these increased costs even for a short period. Malawi also has a serious debt service problem and, despite gaining relief in 1983 by re-scheduling, debt service will consume 30-40% of Malawi's export earnings in the years 1984-1987. A further element of instability is added by the fact that the prices Malawi receives for its exports are largely beyond its control. 2/

1/ Farmers were paid K.111/tonne in 1982/83

2/ In 1983, a 21 percent increase in the production of tobacco will result in earnings that are 14-17 percent less due to lower tobacco prices.

Coupled with high transport costs this can drastically reduce a crops profitability, as for example for sugar produced at the Dwangwa and Sucoma estates. Here, given low world sugar prices, the value of a tonne delivered to Durban just covers the transport costs. Clearly Malawi cannot continue to absorb such additional transport costs, on top of transport costs that are already high, and to continue to grow and develop as it did over the period 1964 - 1979. Without some reduction in these transport costs its outward looking export orientated development strategy has every chance of being overwhelmed.

Malawi's problems are compounded by the inter-relationships which exist between food self-sufficiency and the impact of transport costs on an export orientated development strategy. Here the linkage is provided by imports of fertilizer, an input essential to sustained and increasing crop yields. As Table 1.6 shows, Malawi has imported and sold to small farmers, increasing amounts of fertilizer in the years since 1970. These have been critical to the maintenance of food self-sufficiency and expanding agricultural exports. As a low value/high bulk import, fertilizers final price to the consumer is extremely sensitive to transport, fertilizer imports will become increasingly difficult for Malawi to afford. 1/ Yet the costs of failing to make such imports would be extremely high. Food production and agricultural exports would both suffer, further reducing the capacity of the country to afford such fertilizer imports. The result would be a cumulative downward spiral from which the country would find it increasingly difficult to recover. 2/

With regard to sugar, this has shown considerable expansion in volume in recent years. By 1980, it exceeded tea, traditionally the second largest export. With a decline in world market prices and the impositions of US sugar quotas, sugar has declined absolutely and in relative

1/ In 1981 fertilizer accounted for 11% of total imports. In 1983 fertilizer imports will account for approximately 12% by value of the project FOB exports. Had transport costs remained constant at 1980 levels, they would only have accounted for approximately 6% of projected exports. The rising cost of fertilizer also enhances the importance of agricultural research and extension in order to ensure that it is combined with the right varieties, techniques and complementary inputs such that its impact upon production is maximized (or alternatively such that fertilizer use is held at minimum levels).

2/ Such a downward spiral would have implications beyond food, fertilizer and agricultural exports. Once caught up in a foreign exchange shortage, Malawi would be unable to sustain the free remittance of profits and dividends, a considerable factor in its ability to attract the foreign investments which have contributed to much of its growth.

importance in FOB terms. Accordingly, while sugar exports (FOB) would have financed 21 percent of Malawi's imports C.I.F. in 1981, they would have financed only 12 percent of such imports in 1982. With rising transport costs and poor marketing prospects, it may no longer be viable to continue to export sugar. Accordingly sugar, in which Malawi has invested considerable capital, may be incapable of making any contribution to Malawi's development over the short to medium term. However other possibilities do exist - for example to place greater emphasis on ethanol production, which is playing a vital role in reducing the volume of petrol imports.

B. Description of Transportation Links and Facilities

1. Road, Rail and Lake Transportation Links

Transportation links within the Republic of Malawi are provided by a road network of approximately 10,000 kms. of which about one fifth is paved, a rail network of approximately 800 km. of single line track, one international airport at Lilongwe and Lake Malawi which provides a potential north/south lake corridor approximately 500 kms in length.

a. Roads

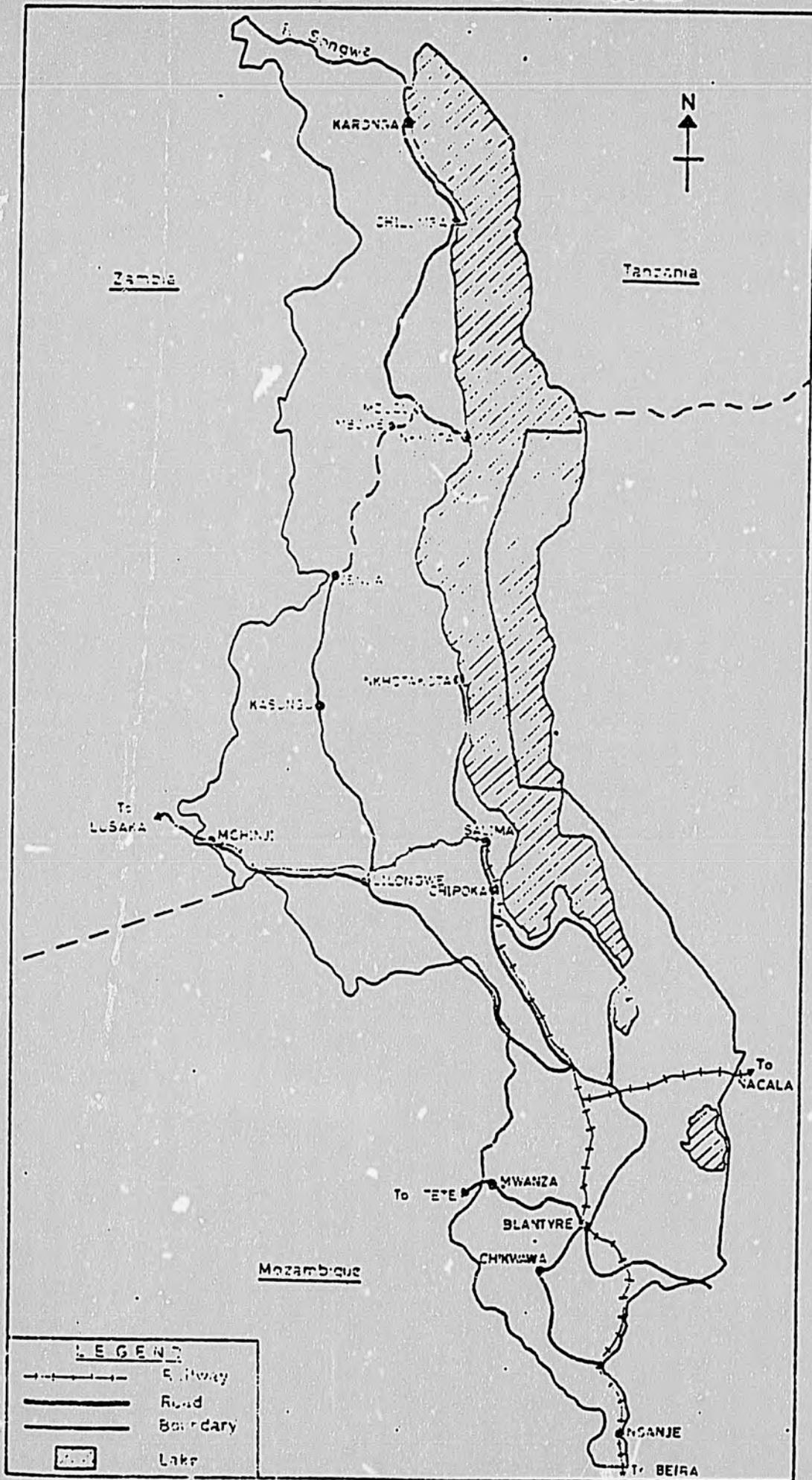
The trunk road network totals approximately 2500 km. of which over half is paved. The majority of the paved roads are in the southern half of the country. The main north-south axis road Bangula-Chikwawa-Blantyre-Zomba-Dedza-Lilongwe-Kasungu-Jenda is paved however certain sections are in a poor condition. This connects with the Mzuzu-Karonga road which is paved, however the connecting section from Jenda-Luwawa-Mozamba-Mbowe-Mzuzu which is in difficult terrain is not fully paved. A connecting road to be paved to link with the Tanzania border so as to complete the overall north-south corridor is currently under discussion.

To the south and east paved roads connect with Mozambique at Bangula and Mwloza. To the west, a new connection to Zimbabwe via Mozambique from Lilongwe to Mwanza is scheduled to be built whilst a paved road connects with the Zambian border further north at Mchinji.

The critical missing links therefore in the road network are a section of the M1 between Jenda and Mzuzu which requires paving, and the connecting link which requires construction to connect with the Tanzanian border in the north.

b. Rail

Malawi Railways has a single line rail network with two branches which connect with Mozambique at Nasanje and Nayuchi. The former links with the Mozambican 'Caminhos de Ferro' line to Beira whilst the latter connects with the port of Nacala. These two lines meet at Nkaya and link with both Blantyre and Lilongwe. The last section of rail line to be constructed recently connects Lilongwe with the Zambia border at Mchinji which will then connect with Chipata in Zambia. The rail network also connects with the lake services at the port of Chipoka.



c. Lake

Lake Malawi has traditionally been used to provide some passenger and freight services although volumes are fairly low. There are small ports at Monkey Bay, Chipoka, Nkhota Bay and Chilumba. Most activity occurs at Chipoka where the railway connects with the port.

d. International Transport Corridors

Due to its landlocked position Malawi is dependent on international transport corridors in neighbouring countries for the import and export of commodities. The following outlines the routes which connect with principal seaports. These are the main transit transportation links for the Republic of Malawi. There are essentially six routes which are available. These are:

1. Rail to Beira.
2. Rail to Nacala.
3. Road via Tete and Harare to Durban.
4. Road via Lusaka and road or rail via Gabarone to Durban.
5. Road via Lusaka and road or rail via Tanzania to Dar es Salaam.
6. Road via Lusaka and road or rail via Tanzania.

The seventh option depends on opening up the northern road link into Tanzania in the future (See Section II.B)

2. Road, Rail and Port Facilities

The previous section has outlined the principal international transport routes upon which Malawi is dependent. The following highlights the infrastructure and facilities on each of the main routes.

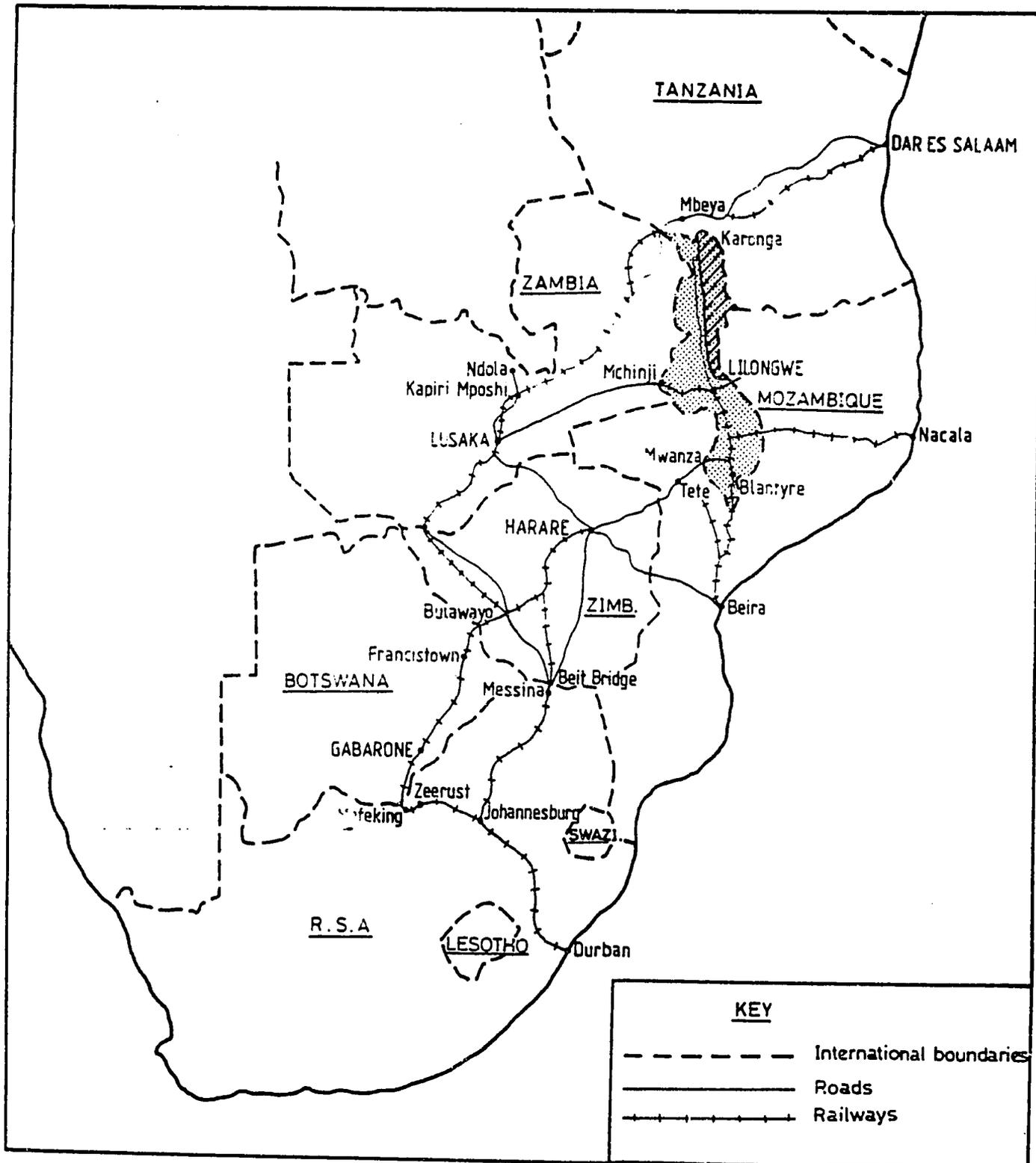
1. Nsanje-Beira (Rail)

This is the shortest distance to the coast and consists of a single line track, sections of which are badly deteriorated. The line which previously served as the vital link for Malawi is currently virtually closed due to insurgency in the region. The port of Beira can receive ships up to 25,000 t.dwt. and can handle bulk and break-bulk cargoes, Ro-Ro traffic, fuel and coal. Cranes and handling facilities are adequate and transit cargo storage of up to 60,000 m² is available.

2. Nayuchi-Nacala (Rail)

This is a single line track, sections of which are poorly constructed and maintained which leads to problems during the rainy season. There is a rehabilitation program which is due to be implemented shortly. Communications on the line are poor if not non-existent. Nacala

INTERNATIONAL TRANSPORT ROUTES



is a deep seaport with good access. There are four conventional shipping berths and two container berths. There are facilities for POL and facilities for transferring containers directly between ships and wagons and a large rail mounted gantry. Handling facilities are good and covered transit cargo storage of 24,000 m² is available. However the ground at the container terminal is not paved which leads to handling difficulties during the rainy season.

3. Mwanza-Tete-Harare road/Harare-Beit Bridge-Messina-Durban rail.

A new paved road is scheduled to be built between Lilongwe and Mwanza. In Malawi the present road from Blantyre to Mwanza is gravel. Over the border in Mozambique the road is paved but badly deteriorated up to Tete and has been subject to insurgency recently. The bridge at Tete has also been closed. If this occurs this necessitates using the alternative longer road route to Harare via Lusaka. The road section in Zimbabwe from Harare to Beit Bridge is paved and good.

4. (a) Mchinji-Lusaka road/Lusaka-Chirunda-Harare road/Harare-Beit Bridge-Messina-Johannesburg-Durban rail.

This is a paved road, sections of which need reconstruction on the section from Lusaka to Harare. At Harare transshipment facilities for containers exist but require expansion. In Zimbabwe the NRZ presently operates diesel locomotives but this section first to Sombula and then through to Beit Bridge is being electrified. In South Africa the rail route passes via Pretoria from Messina to Durban. Parts of this are electrified.

4. (b) Mchinji-Lusaka road/Lusaka-Harare-Beit Bridge road/Beit Bridge-Messina-Johannesburg-Durban rail.

The alternative to the above route is by road all the way through Zimbabwe via Harare to Beit Bridge to the South African border and to transship at Messina onto the South Africa rail system. The paved road is good and good warehousing and transshipment facilities exist at Messina.

5. (a) Mchinji-Lusaka road/Lusaka-Livingston-Bulawavo-Gabarone-Mafeking-Durban rail.

This is a paved road to Lusaka, parts of which are poorly maintained and badly deteriorated in Zambia. Lusaka road/rail transshipment facilities and warehousing are

available. Container handling facilities are available but require improvement. Zambian Railways (Z.R.) serves the route to Victoria Falls bridge where the National Railways of Zimbabwe (NRZ) takes over. Sections of the Zambian railway are scheduled for improvement under a IBRD investment program. In Zimbabwe steam locomotives are used up to Victoria Falls as it runs through the Wankie coal producing area. From Victoria Falls to Bulawayo and on to the Botswana border, and in Botswana itself after Francistown for 640 kms, the railway is operated by NRZ. The Botswana Government plans to take this over in 1987.

In South Africa the railway is operated by South African Transport Services (S.A.T.S.) from the Botswana border via Mafeking, Zeerust and Johannesburg to Durban (1047 kms). This is part diesel operated and part electric. Services are good. At the port of Durban ships up to 80,000 t. dwt. can be handled and 59 berths are available for bulk, break bulk, containers, Ro-Ro and fuel cargos. Container facilities and handling facilities are good and 95,000 m² of covered storage space are available. S.A.T.S. owns and operates the port which facilitates cargo handling and loading onto the railway.

5. (b) Mchinji-Lusaka road/Lusaka-Kazungula-Francistown Gabarone-Mafeking-Zeerust road/Zeerust-Johannesburg-Durban rail.

An alternative to the above consists of a similar routing by road all the way from Lusaka to the South African border. The road from Lusaka to Kazungula is paved with some sections requiring rehabilitation. At Kazungula (where four countries meet) there is a ferry crossing. Proposals have been made to replace this by a bridge in the long term. Beyond Kazungula, in Botswana, there is a section of gravel road followed by a new section of paved road to the South African border at Mafeking. At Zeerust (in R.S.A.) there are transshipment facilities to link with the South African railway.

6. (a) Mchinji-Lusaka road/Lusaka-Dar es Salaam rail.

This route consists of delivering goods by road to Lusaka, transshipping them which are then routed via Zambian Railways to Kapiri Mposhi. They travel on the remaining section of this route (which is 1860 kms to Dar es Salaam) on the Tazara railway powered by diesel locomotives. This line is new but certain sections of the line are subject to landslides.

The port of Dar es Salaam is fairly modern with facilities for conventional ships and some RoRo facilities. There is a buoy for crude oil inputs which can cater for very large tankers of 100,000 t.dwt. (A crude oil pipeline connects with Ndola in Zambia). Containers must be off-loaded by ships equipment. There is a project for

developing and expanding the container facilities. Handling facilities exist but availability is often poor due to the lack of spares, fuel, etc. Additional warehousing facilities are being constructed.

6. (b) Mchinji-Lusaka-Dar es Salaam road.

The road to Kapiri Mposhi from Lusaka is paved and fairly heavily trafficked. Beyond Kapiri Mposhi the road is the TanZam Highway which is paved and forms part of the Trans-African Highway. In Tanzania sections of the road are being reconstructed. Presently this road carries approximately 200,000 tonnes of international freight traffic per annum.

7. (a) Karonga-River Songwe-Ibanda-Dar es Salaam road.

In Malawi the north/south road to Karonga is paved except for a section between Jenda-Luwawa-Champhoyo which is under construction and from Champhoyo to Mbowa where the road is gravel. Beyond Karonga there is a dirt road to the border at the River Songwe. There is no bridge there. On the Tanzanian side there is a gravel road to the border from Ibanda but another bridge is required to cross the river Kiwira. Beyond this there is a paved road connecting Ibanda to Mbeya which lies on the TanZam Highway.

This overall connecting route is currently non-functional due to the lack of a border connection, but it is under serious study for future development.

7. (b) Karonga-River Songwe-Ibanda-Mbeya-Dar es Salaam rail.

The alternative to the above route consists of road to Mbeya (once the Karonga-River Songwe-Ibanda road is completed), transshipment at Mbeya and rail (via Tazara) to Dar es Salaam. Transshipment facilities at Mbeya will need expansion.

C. Description of international transport flows by commodity.

The following section describes the volumes and mode of movement of the principal import commodities into Malawi.

1. Fertilizer

Total imports of fertilizer into Malawi in recent years have been as follows:

<u>Table 1.11</u>	<u>Fertilizer Imports (Tonnes)</u>
1976	72,504
1977	78,278
1978	103,398
1979	81,225
1980	80,800
1981	127,319
1982	117,472

Source: N.S.O.

Considerable variation has occurred in recent years due to transport difficulties. It is estimated that the actual demand in 1982/83 was for 72,000 tonnes for smallholders and 50,000 tonnes for the commercial sector (estates). Fertilizers are required on a seasonal basis and it is essential that they are available for application before the end of December. Recently under IBRD/IFAD supervision, a revolving fund has been set up by ADMARC to facilitate the provision of fertilizers for smallholders. The aim is to be able to distribute approximately half of the fertilizer in June/July to smallholders when they still have cash from crop sales and the other half to be distributed by the end of the year. The commercial sector usually ensures its own arrangements for the provision of fertilizers to the estate.

Recent imports of fertilizer have been considerably complicated by transport difficulties caused by the problems in Mozambique. At one stage 80,000 tonnes of fertilizer for Malawi were tied up in the port of Beira. This has been gradually reduced but 50,000 tonnes are still available awaiting shipment.

In 1982 when it was realized that much of this fertilizer would not arrive in time for application, emergency measures were enacted by the Government to purchase and ship additional fertilizer into the country. An additional 11,300 tonnes was purchased in South Africa and shipped via Harare and Lusaka by road and rail in November/December 1982 to Malawi and a further 10,000 tonnes was ordered later.

It was hoped that during the year the backlog of fertilizer in Beira would be gradually released and delivered to Malawi. However only 13,000 tonnes were obtained by ship to Nacala and by rail to Blantyre which was essentially for the commercial sector. Some of this was brought in by container.

Due to the continued transport difficulties, Malawi finds itself again in the same dilemma in 1983, as in the previous year. Strategic storage stocks have not been able to have been drawn up and there is still a significant volume of fertilizer tied up in Beira. Emergency measures are again required to bring in additional fertilizer incurring relatively higher transportation costs. Approximately 40,000 tonnes of top dressing (C.A.N.) at a minimum are required for the smallholders for the forthcoming season. Assuming separate assignments of 13,000 tonnes and 5,775 tonnes already available, an additional 21,225 tonnes is scheduled to be purchased and shipped from South Africa by road and rail via Lusaka and Harare to Malawi. New orders have been late in arriving overland from South Africa. New purchases are on a CIF Lilongwe delivery contract, hence control of overland transport is vested in the supplier.

Total cost of the proposed 1983/84 emergency procurement is estimated at K. 7.8 million of which (56%) will be transportation costs-an average transport cost of K. 120/tonne. Transport costs are estimated K. 170/tonne via Lusaka, K. 120/tonne via Harare and K. 245/tonne direct by road.

If this fertilizer is not obtained losses to the three main smallholder crops are estimated at K. 13.8 million, distributed as follows: K. 3.6 million tobacco; K. 9.5 million maize; K. 0.7 million rice.

Over the next five years the demand for fertilizer from the smallholders is expected to grow to approximately 110-120,000 tonnes. If the commercial sector demand remains at 50-60,000 tonnes, provision of transport for 180,000 tonnes of fertilizer per annum will be required.

2. Petroleum Products

Total imports of petroleum products into Malawi have been as follows:

Table 1.12 Petroleum Imports ('000 Litres)

Period	Petrol Premium	Petrol Regular	Parrafin	Diesel and Other Fuels
1972	33,267	16,125	18,443	64,825
1973	34,877	15,702	18,788	69,190
1974	32,158	13,724	16,011	62,480
1975	36,204	13,138	16,565	70,285
1976	42,550	12,215	13,942	76,641
1977	38,220	10,782	10,886	74,904
1978	46,046	9,203	11,689	83,043
1979	50,262	7,107	9,780	87,907
1980	52,373	1,553	7,559	92,104
1981	53,636	774	6,061	77,928
1982	47,564	1,186	5,838	70,051

Source: N.S.O.

Historically petroleum products have been imported through the ports of Beira and Nacala and railed to Malawi. In 1981, the last year of normal operations, an average of 300 tank cars per month (12 million litres) were delivered. Since October 1982, the Beira line has been effectively shut down. Deliveries from Nacala have risen from about 60 cars/month in January to about 150 in June. Considerable variation from month to month can be expected as had occurred historically, and is shown in Figure 1, delivery capacity during the rainy season being considerably less because of derailments and track failures.

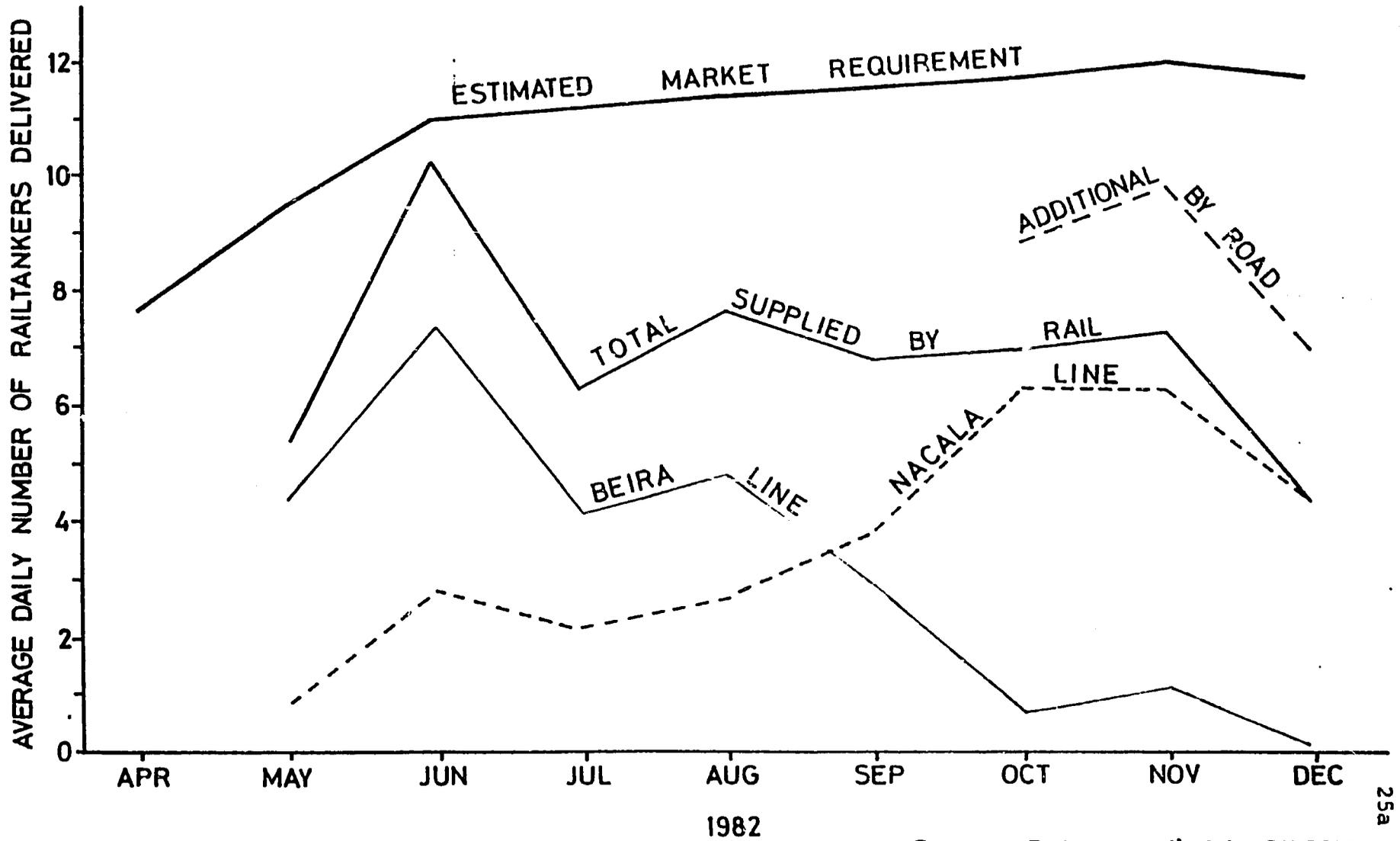
Aside from better management, the state of the track is the key determinant of tank car turn-around times. It is anticipated that the track improvement works to be completed in about 3 years on the Nacala-Nampula section plus improved rolling stock maintenance will lead to gradually improving productivity by the end of 1986. The section Nampula-Cuanba is to be improved subsequently. Storage facilities at Nacala are the equivalent of almost 700 tank cars and present no restriction on throughput.

Consequently one can expect delivery capacity by rail through 1986 to average about 5.2 million litres/month or 62.4 million litres/year. National consumption of petroleum products is expected to rise from 141 million litres in 1983 to 162 million litres in 1987. (OILCOM forecast). Domestically produced ethanol mixed with petrol reduces import requirements by about 10 million litres. Therefore in 1983, about 69 million litres (or 53% of fuel imports) will have to be road hauled and by 1986/87 about 90 million litres (or 59% of requirements). The route used is from Lusaka to Lilongwe. When the Nacala route is unable to satisfy all requirements, petrol is purchased from the Ndola refinery in Zambia.

Figure 1

AVERAGE DAILY DELIVERIES OF PETROLEUM FUEL
IN MALAWI APRIL - DECEMBER 1982

(In Railtanker Loads of 40,000 Litres)



Source: Data supplied by OILCOM.

However diesel is being purchased in South Africa which necessitates long rail journeys via Zimbabwe and Zambia to Lusaka, and then movement by road to Malawi. The following Table 1.13 summarizes recent movements of fuel into Malawi:

Table 1.13 Fuel imports by transport mode

<u>Year</u>	<u>Rail via Mozambique</u>	<u>Road via Zambia</u>	<u>Road/rail via Zimbabwe</u>	<u>Road/rail via R.S.A.</u>	<u>Total</u>
1980	99.5%	0.5%	--	--	100%
1981	99.0%	0.5%	0.5%	--	100%
1982	98.5%	0.5%	0.5%	0.5%	100%

It should be noted that in the first half of 1982 Beira was able to supply practically all of the fuel needs of Malawi. It was not until October that deliveries ceased. In the first six months of 1983 only 50% of requirements were supplied in Nacala.

3. Coal

Total imports of coal into Malawi in recent years have been as follows:

<u>Table 1.14</u>	<u>Coal Imports (Tonnes)</u>
1976	62,471
1977	56,529
1978	55,307
1979	33,759
1980	65,383
1981	47,739
1982	70,415

Source: N.S.O.

Traditionally coal was imported from the Wankie mine in Zimbabwe before the border was closed in the 1970's. This coal has a high calorific value. The Moatize mine at Tete, Mozambique, then replaced Wankie as the principal supplier. However, operations of this mine have been disrupted and in particular the railway and road have been subject to insurgents. Malawi has its own coal resources, principally at Ngana, but these have yet to be commercially exploited.

The principal user of coal in Malawi is the Portland Cement Company. This requires approximately 30-35,000 tonnes per annum which accounts for approximately half of the coal imports. The remainder is mainly for manufacturing industries, tea and tobacco although fuelwood is replacing coal for the tea and tobacco industries.

Coal demand is likely to remain constant, but unless coal can be obtained from Mozambique or Zimbabwe the alternative is to import coal from South Africa or Swaziland at a correspondingly much higher price. Previously coal from South Africa has been routed via Maputo and Beira which has resulted in double handling and delays. With the virtual closure of the Beira line this route is not a viable alternative. The following Table 1.15 shows the current routing of coal by total tonnage.

Table 1.15 Coal imports by transport mode

<u>Year</u>	<u>Road via Tete</u>	<u>Rail via Tete</u>	<u>Rail via Zimbabwe</u>	<u>Rail via R.S.A.</u>	<u>Total</u>
1980	25%	45%	5%	25%	100%
1981	19%	52%	3%	26%	100%

Source: UNDP/UNCTAD
RAF/77/017.

4. Other industrial imports

In addition to fuels, coal and fertilizer, Malawi imports a variety of other industrial products. This consists of vehicles and plant, spare parts, iron and steel products and paper/card products. Some other food products are also imported, for example, cereals, flour and salt. In total this has averaged 100-200,000 tonnes annually. This is routed either via the port of Nacala, mainly in containers, or higher value products have been imported via Durban and routed via road to Malawi.

The following section describes the movement of the principal export commodities.

5. Tea

Total production and exports of tea from Malawi in recent years have been as follows:

Table 1.16 Tea Production and Exports (Tonnes)

<u>Year</u>	<u>Production</u>	<u>Exports</u>
1978	31,690	30,583
1979	32,609	30,995
1980	29,915	31,274
1981	31,965	31,527
1982	38,484	37,254

Source: N.S.O.

Tea has traditionally been exported in chests but recently it has increasingly been bagged and shipped in containers. Tea is either sold locally at auction or it may be sold at the London auction or the Offshore Tea Auction. Due to the high value of the commodity, the offshore auction has been increasingly used by tea producers, F.O.B. Nacala, Dar es Salaam or Durban. Since payment is not made until a bill of lading is given there is an incentive to deliver the tea to the port as rapidly as possible. Hence tea exporters are prepared to pay high prices to expedite delivery to the port.

Tea has been exported in containers by rail via Nacala but subsequent to the transit problems in Mozambique greater volumes have been moved by road to Durban. For example, in 1981 and 1982 movements were as follows by percentage of total tonnage:

<u>Year</u>	<u>Break bulk</u>	<u>Rail</u>	<u>Rail container</u>	<u>Road</u>	<u>Total</u>
1981	26%		61%	13%	100%
1982	19%		66%	15%	100%

Source: UNDP/UNCTAD
RAF/77/017.

6. Tobacco

Total auction sales and exports of all types of tobacco from Malawi in recent years have been as follows:

<u>Year</u>	<u>Sales</u>	<u>Exports</u>
1978	51,061	40,512
1979	53,980	54,519
1980	54,411	60,311
1981	50,672	39,967
1982	58,520	44,843

Source: N.S.O.

(Note: Sales may not necessarily be exported the same year)

Traditionally tobacco has been exported in bales. however increasingly containers are being used for transport. Whilst tobacco is of high value, an exporter is often less interested in transit time than transit costs, since it may be held in storage on arrival. Tobacco is exported where possible via Nacala, otherwise via Lusaka. In 1981 and 1982 typical movements were as follows:

Table 1.18Tobacco exports by transport mode

<u>Year</u>	<u>Break bulk rail</u>	<u>Rail container</u>	<u>Road</u>	<u>Total</u>
1981	34%	64%	2%	100%
1982	29%	48%	23%	100%

If the present transport problems continue it is estimated that an increasing volume of exports will have to be exported by road.

7. Sugar

Total production and exports of sugar from Malawi have been as follows:

Table 1.19Sugar Production and Exports (Tonnes)

<u>Year</u>	<u>Production</u>	<u>Exports</u>
1978	93,476	48,029
1979	107,629	63,246
1980	147,423	91,303
1981	166,644	123,290
1982	171,794	101,105

Source: N.S.O.

Sugar prices have suffered a severe drop in world markets in recent years. Consequently due to its high bulk and low value, producers seek to use the lowest cost mode of transport. Conventionally sugar has been exported by rail via the south and east through Mozambique. However with the transport difficulties in Mozambique and the closing of the Beira line, insufficient capacity has been available on the Nacala line in order to export all of the sugar available. Consequently, at the end of 1982 approximately 50,000 tonnes of sugar was stored, awaiting transport for export. This situation is likely to be further exacerbated in 1983. Due to the constraints on the rail line, sugar producers have been increasingly looking to other means to export the sugar, for example as back hauls via road. The following Table 1.20 shows this.

Table 1.20Sugar exports by transport mode

<u>Year</u>	<u>Exports via rail</u>	<u>Exports via road</u>
1981	100%	-
1982	72%	28%

With the fairly recent opening of the second sugar estate at Dwangwa, transport problems have worsened. It is unlikely that Sucoma will be able to export more than half of its production in 1983.

export more than half of its production in 1983.

8. Maize

Total potential sales of shelled maize in Malawi as represented by the quantity purchased domestically by ADMARC are given below:

Table 1.21 Maize Purchased by ADMARC (Tonnes)

<u>Year</u>	<u>Tonnes</u>
1976	64,845
1977	89,920
1978	120,617
1979	82,171
1980	91,888
1981	136,647
1982	246,062

Source: N.S.O.

During the early seventies the Republic of Malawi was not self sufficient in maize and some maize was imported for internal consumption. However maize production has gradually increased such that in 1982/1983 Malawi now has surplus maize which it is able to export. Currently as of 15 September 1983, the ADMARC depot in Lilongwe reported having 200,000 tonnes in storage, one half of which was 1982 maize.

The following Table 1.22 shows the sales of maize which have already been confirmed by ADMARC.

Table 1.22 Maize export to .ages (1983)

<u>Total sales</u>	<u>Already delivered*</u>	<u>Destination</u>
100 000 t.	- F.o.t. Lilongwe	Mozambique, Zimbabwe, Zaire
60 000 t.	26500 t. C.i.f. Lilongwe	Zambia
15 000 t.	3600 t. F.o.t. Dar es Salaam	Tanzania
6 000 t.	4200 t. F.o.t. Lilongwe	Zaire
10 800 t.	100 t. F.o.t. Lilongwe	Ghana, World Food Program
10 000 t.	4300 t. F.o.t. Lilongwe	Mozambique, Tanzania

Source: ADMARC

* estimate as of September 1983.

This reversal has had significant impacts in terms of transportation. As shown in Table 1.22 Malawi has firm exports for 200,000 tonnes of maize, most of which is destined for adjoining countries. Since maize is a high bulk and low value commodity, the least cost transport mode is preferred. Maize is produced predominantly in the central and northern parts of the country and storage silos with capacity of 180,000 tonnes are available at Lilongwe. Most exports will originate from Lilongwe. This implies a greatly increased demand for road transport services to export this via Mchinji to Lusaka. Some maize may be exported by rail destined for Mozambique but due to the capacity constraint it is expected that the majority will be exported by road and where possible on backhauls.

9. Other Export Commodities

Other commodities have traditionally been exported as shown in Table 1.23.

The principal commodities in terms of weight have been molasses and groundnuts, with animal feed, dried peas and beans, and rice in lesser volumes. Generally these commodities have represented about 30% of total exports by weight. However with the recent transport problems these generally low value commodities have not been able to bear high transport costs. Hence with capacity constraints on the rail line to Nacala, and road transport to Lusaka acting as the only viable alternative route, many of the above commodities have been either stockpiled or wasted. For example molasses are either being used for conversion to ethanol or are being discarded at the sugar estate.

Until viable low cost alternative transport routes are established this situation is unlikely to alter.

10. Projections

a. Exports

The following Table 1.24 indicates projections for the export of principal crops (by tonnage) over the period 1983-8. Steady growth in tea and tobacco is expected. It should be noted that the 1983 export of maize is expected to be substantially higher than that indicated, since 200,000 tonnes has already been sold. Also the forecast for sugar exported is likely to be lower than that indicated due to transport constraints and is unlikely to reach 100,000 tonnes even though there is a substantial volume available ready for export. Cotton and rice are expected to constitute a small percentage of total exports.

b. Imports

With respect to imports, it has been forecast that the growth of imports is expected to be proportional

Table 1.23

Other exports (Metric tonnes)

<u>YEAR</u>	<u>GROUNDNUTS</u>	<u>PULSES</u>	<u>RICE</u>	<u>COTTON</u>	<u>COFFEE</u>	<u>MOJASSES</u>	<u>ANIMAL FEED</u>	<u>DRIED PEAS BEANS/CASSAVA</u>	<u>TOTAL</u>
1978	6,830	8,452	7,698	796	152	30,000	10,200	18,500	82,628
1979	13,697	8,845	6,960	1,437	372	27,900	8,400	15,900	83,511
1980	25,556	6,450	9,803	3,013	248	49,100	6,300	10,600	111,070
1981	11,121	6,628	8,061	1,031	494	26,900	7,900	15,200	77,335
1982	7,228	3,035	2,617	500	820	--	7,000*	10,000*	31,200

Source: N.S.O.

Estimate

Table 1.24

Projections - exports of major crops (1983-88)Export Sector - Exports of Major Crops

Volume (000 MT)	1982 ^a	1983	1984	1985	1986	1987	1988
Tea	37.2	35.0	36.4	37.9	39.5	41.1	42.8
Tobacco	44.8	49.3	48.8	54.5	59.4	63.2	67.2
Sugar	101.1	120.0 ^b	120.1	118.2	116.2	114.2	112.1
Cotton	0.5	3.0	1.0	1.9	2.9	3.2	3.4
Groundnuts	7.2	7.4	10.9	15.6	21.7	29.7	40.1
Maize	50.0	60.0 ^c	82.8	70.5	67.2	63.7	62.7
Rice	2.6	0.0	0.0	2.0	5.5	10.0	15.7

Source: 1983 Economic Report - Office of the President and Cabinet

(a) Actual Data from N.S.O.

(b) Sucoma estimate: 70.0t

(c) ADMARC estimate: 200.0t sold but unlikely that more than 100t can be moved in 1983.

to the growth in gross domestic product (G.D.P.) in the forthcoming years. 1/ For the period 1981-6 the growth in G.D.P. at factor cost has been estimated as 4% per annum and for the period 1986-90, estimated as 5% per annum. 2/ Gradual growth in the economy is therefore expected with a corresponding impact in terms of the volumes of principal commodities imported.

1/ Reference Section 2.18 - 1983: Economic Report - OPC.

2/ Op. Cit. Section 7.13.

D. Analysis of Transportation Bottlenecks and Macro-Economic Impacts.

Of the principal routes used for Malawi's external trade the main bottlenecks can be identified as follows:

- virtual closure of Beira rail line due to insurgents
- capacity constraints on the Nacala rail line
- limitations on the use of the Tete road link due to insurgents.

All of the above result from problems encountered within Mozambique. Since capacity for importing and exporting goods via Mozambique is considerably reduced, this results in significantly increasing the volumes which have to be transported via other routes. Hence the only rail route being used effectively now is the Nacala rail link and currently the only other viable alternative route by road is through Zambia to Lusaka. The impact of this is investigated hereafter.

Projected annual exports and import requirements for the Republic of Malawi for the forthcoming year have been estimated as follows:

Table 1.25 Projected imports & exports (Tonnes) rounded

<u>Imports</u>		<u>Exports</u>	
Diesel:	65,000	Tea:	40,000
Petrol:	40,000	Tobacco:	50,000
Other fuels:	15,000	Sugar:	100,000
Fertilizer:	110,000	Maize:	100,000
Coal:	70,000	Other:	<u>10,000</u>
Miscellaneous:	<u>200,000</u>		300,000 tonnes
	500,000 tonnes		

These tonnages should be assigned to the most appropriate mode of transport and route, taking into consideration the transport costs which each commodity will bear and the available capacity. It should be noted that a directional imbalance exists, with total imports exceeding total exports, however in the coming year if the capacity was available, more maize could be exported.

1. Recent Performance on Nacala Line

In 1981 and 1982 fuel deliveries to Malawi averaged just over 3 fuel wagons per day. In the same year, the number of containers delivered to Malawi averaged approximately 16 T.E.U. and 11 T.E.U. respectively, whilst the number of containers departing Malawi averaged approximately 20 T.E.U. and 15 T.E.U. respectively. In terms of wagons* this represents a daily average of 8 and 5.5 flat bed wagons in during 1981 and 1982 and a daily average of 10 and 7.5 flat bed wagons out during the same period. Since containers are primarily used for the export of tea and tobacco, it is necessary to bring in a sufficient number so as to facilitate exporting the tonnages required by container. In terms of the total loaded wagons delivered to Malawi, the daily average of loaded wagons delivered in Malawi in 1981 and 1982 was 15 and 11 loaded wagons respectively. This can be summarized as follows in Table 1.26.

Table 1.26 Average Daily Rail Deliveries to Malawi on Nacala Line (Wagons) rounded

	<u>1981</u>	<u>1982</u>
Fuel tank cars in	3	3
Flatbed (container) wagons in	8	6
Other wagons in	<u>4</u>	<u>2</u>
Total wagons in	15	11

Source: UNDP/UNCTAD
RAF/77/011

It is also interesting to look at recent experience this year. The following Table 1.27 shows the number of loaded wagons delivered to Malawi from Nacala during the three month period May - July 1983, for specific commodities.

Table 1.27 Number of loaded wagons delivered to Malawi

	<u>Fertilizer</u>	<u>Petrol</u>	<u>Diesel</u>	<u>Other P.O.L.</u>	<u>Paper</u>	<u>Wheat</u>	<u>Total</u>
May	112	51	59	27	1	-	250
June	118	33	79	41	8	15	294
July	<u>102</u>	<u>45</u>	<u>53</u>	<u>43</u>	<u>11</u>	<u>48</u>	<u>302</u>
	332	129	191	111	20	63	846

Source: Malawi railway

* 2 containers per wagon

Hence on average ten loaded wagons have been delivered per day. In addition 49,500 tonnes of miscellaneous goods were delivered during the quarter (April-June 1983). With an average load of 35 tonnes this implies delivery of 15 wagons per day, on average. In total therefore during this period under consideration 25 wagons per day have been reaching Malawi. This is fair performance during the dry season.

2. Estimated capacity on the Nacala Rail Line

As indicated above, in 1981 the number of loaded wagons delivered to Malawi via the Nacala railway line averaged approximately fifteen per day. In 1982 this average had been reduced to eleven in the same direction, but recently has been averaging 25 loaded wagon deliveries. The Malawi and Mozambique railways operating plan estimates that the line should handle thirty wagons in each direction per day. This is an optimal figure and as can be seen has not been achieved in recent years. ^{1/} Given the poor track condition, lack of maintenance and consequent derailments, and given the shortages of skilled manpower and poor management, the railway has been unable to achieve the targeted performance. Given certain improvements in these parameters, which may be expected due to the proposed rehabilitation program, it is considered that performance will improve from half of its target level (15 wagons per day in each direction) to about two thirds of its projected capacity (20 wagons per day in each direction). In terms of trains this represents an average of one train per day in each direction (15 wagons) during the rainy season and two trains per day in each direction (15 wagons each) during the dry season.

Assuming therefore a delivery capacity of 20 wagons per day as a yearly average, the following Table 1.28 shows the breakdown of projected commodity movements.

^{1/} Best monthly performance in 1981 was 18-19 wagons per day in January, June, and July. Highest level in 1982 was 15/day for November.

Table 1.28 Allocation scenario for Nacala rail line

<u>IMPORTS</u>	<u>Tonnes/Year</u>	<u>Tonnes/Day</u>	<u>TEUs/Day</u>	<u>Wagons/Day</u>
Fuel	50,000	150	-	5
Fertilizer	25,000	72	4 ^a	2
General Cargo	100,000	275	22 ^b	11
Break-Bulk (fertilizer)	25,000	80	-	2
	<u>200,000^c</u>	<u>577</u>	<u>26</u>	<u>20</u>
	(121,000)			
<u>EXPORTS</u>				
Tea	40,000	110	11 ^d	5.5
Tobacco	50,000	140	14	7
Break-bulk (Sugar/maize)	25,000 ^e	80	-	2
Empty Cars	--	--	--	5
	<u>115,000</u>	<u>330</u>	<u>25</u>	<u>19.5</u>
	(74,000)			
Total In/Out	315,000			
	<u>(195,000)^f</u>			

^a Assumed 18 tonne/TEU

^b Assumed 12.5 tonne/TEU

^c For comparison Malawi's non-regional imports in 1985 are estimated at about 300,000 tonne (EEC/GOM/Hoff and Overgaard, 1980).

^d Assumed 10.0 tonnes/TEU

^e Perhaps could be increased to maximum 50,000 tonnes if partially containerized. However receiving ports likely to charge extra for container discharge. Would imply that some 15,000 tonnes of tea/tobacco moves by road.

^f 1981 volumes for comparison.

Fuel: Approximately one half of the total fuel imports have been assigned to this rail route. Since each rail tank car has capacity for 40,000 litres, this represents approximately 30 tonnes per wagon. So 150 tonnes per day can be transported in 5 wagons or approximately 50,000 tonnes per annum.

Containers: It has been assumed that all tea and tobacco exports will be taken out by container by rail. Assuming that tea and tobacco is loaded at the rate of 10 tonnes per container, 250 tonnes per day can be transport in 25 boxes (T.E.U.) requiring 12.5 flat bed wagons - enabling the full 90,000 tonnes per annum to be exported by container.

If an equal number of containers are brought into the country, it is assumed that the majority are filled with general cargo. Where containers might otherwise be brought into the country empty, these are assumed to be filled with fertilizer. Hence if general cargo is loaded at the rate of 12.5 tonnes (T.E.U.), totalling 100,000 tonnes per annum. If a further four boxes are available, packing fertilizer at a rate of 18 tonnes per box, enables 72 tonnes per day to be transported or a further 25,000 tonnes per annum. Therefore on balance by carrying 25 boxes per day out and 26 boxes per day in (requiring 13 rail wagons) a total of 90,000 tonnes per annum of tea and tobacco can be exported and 125,000 tonnes per annum of general cargo and fertilizer can be imported.

Break bulk: The remaining capacity both in and out has been filled with break bulk cargo. It has been assumed that this will consist of fertilizer imports in bags and sugar or maize exports in sacks. Assuming 2 wagons per day each with 40 tonnes capacity, a total of 25,000 tonnes per annum can be transported in each direction.

By allocating goods in this fashion trains can be fully loaded in each direction. This implies that each day 20 wagons are transported in each direction (consisting of five tank cars, thirteen flat beds and two high sided wagons). This will enable a total of 200,000 tonnes of commodities to be imported and 115,000 tonnes of exports to be transported annually via this rail link.

This should be feasible without incurring constraints due to the availability of rail tank cars, wagons or containers. This assumes that the existing tank car fleet is maintained at the existing level (approximately 47 C.F.M. and 67 M.R. tank cars). It also assumes the availability of containers.

3. Zambia route - Fuel delivery requirements

With respect to fuel it has been estimated that in 1983, in addition to 66 million litres on the Nacala line about 69 million litres will have to be transported by road via Zambia to Malawi . (See Section ID.2)

Assuming road haulage in specialized tanker vehicles of 35,000 litre capacity, there would be a requirement for about 2,000 one-way tanker deliveries per year in 1983 rising to 2,600 in 1986/87. If all of this were coming off the railhead at Lusaka for delivery at Mchinji or Lilongwe, since internal delivery beyond these depots is mandated to be carried by rail or by Malawian oil company trucks, and if trucks were making 100 turns/year, a minimum of 20-26 truckers would have to be dedicated to this service. Some additional tanker-trailers would have to be reserved for dealing with seasonal fluctuations in supply and demand, breakdowns, and deliveries from Ndola.

Presently petrol is being purchased and hauled from the Ndola refinery in Zambia, whereas diesel is being delivered from South Africa. It is intended to prioritize rail deliveries firstly to jet fuel and paraffin and thereafter to petrol as the most economical routing. Of the projected 1987 rail capacity of 62 million litres, jet and paraffin shipments are expected to be 21 million litres, allowing 41 million for petrol as compared to estimated import requirements of about 48 million litres. Under these assumptions about 15% of petrol requirements would still be purchased from Ndola and all diesel, 83 million litres, would be imported from South Africa via rail to Lusaka for transshipment by road to Malawi.

This would place a requirement for 2,075 annual rail tank car deliveries at Lusaka or about 40 per week carrying 1.6 million litres. A normal trainload of tank cars carries 675,000 litres. Therefore 2.4 trainloads a week will be required. BP storage in Lusaka available for Malawi is only 500,000 litres so that rail arrivals and truck supply must be closely coordinated and allowance made for some reserve capacity.

To the extent that the railroad is unable to deliver these volumes dependably, trucking from South Africa will have to substitute for rail at approximately double the transport cost. There have been capacity problems on Zambia Railways as well as restrictions by South African Railways on the number of tank cars they are willing to have on the Zambia system at any one time, stemming from slow return of empty wagons from Zambia. (All products move in SATS tank cars).

There are presently under contract 69 Zambian tankers, 14 Zimbabwean, and 4 Malawian of various capacities (22,000 - 35,000 litres) for Zambian-Malawi road haulage. This is clearly more than required for existing flows.

Under the assumptions made above, a well managed fleet of say 30-35 tankers of 35,000 capacity would be required for Zambia-Malawi service. The number of tankers required for South African runs is completely dependent on Zambian railroad delivery capacity.

4. Present Traffic Levels on Mchinji-Lusaka road

In recent years heavy traffic on the Mchinji to Lusaka road has been very low (for example two-directional traffic of approximately 60 heavy vehicles per month in 1981). With the changing circumstances in Mozambique traffic has considerably increased. The following Tables 1.29 and 1.30 give heavy vehicle counts for vehicles entering and leaving Malawi for three months during 1983 (May-July) and also indicate the origin (in terms of the country of registration) of the vehicle.

Table 1.29 Number of heavy vehicles entering Malawi at Mchinji (by country of registration)

<u>1983</u>	<u>Malawi*</u>	<u>Zambia</u>	<u>Zimbabwe</u>	<u>R.S.A.</u>	<u>Botswana</u>	<u>Total</u>
May	147	202	157	62	6	574
June	212	175	152	62	4	605
July	151	253	93	62	2	561

Table 1.30 Number of heavy vehicles leaving Malawi at Mchinji (by country of registration)

<u>1983</u>	<u>Malawi*</u>	<u>Zambia</u>	<u>Zimbabwe</u>	<u>R.S.A.</u>	<u>Botswana</u>	<u>Total</u>
May	144	124	144	53	9	474
June	204	126	112	59	7	508
July	140	238	94	66	1	539

Source: Ministry of Transport and Communications

* There are 26 tankers owned by Zimbabwe firms but operating with Malawi registration under contract to the Malawi Finance Co. It is estimated that these trucks accounted for about half the tanker capacity or about 425 vehicle trips over the 3 month period.

In terms of tonnages, these heavy vehicles have been transporting goods on the Lusaka-Mchinji road whose origins and destinations are shown in Tables 1.31 and 1.32.

Table 1.31 Trip Origin of import commodities transported (tonnes) by road to Mchinji

1983	Zambia to Malawi	Zimbabwe to Malawi	R.S.A. to Malawi	Botswana to Malawi	Tanzania to Malawi	Total
May	7859.0	5309.3	1995.4	64.2	126.1	15354.0
June	8705.5	4759.2	1682.3	216.9	95.7	15459.6
July	<u>7279.5</u>	<u>2736.8</u>	<u>1738.4</u>	<u>28.0</u>	--	<u>11782.7</u>
	23844.0	12805.3	5416.1	309.1	221.8	42596.3
	(56%)	(30%)	(13%)		(1%)	(100%)

Table 1.32 Trip Destination of export commodities transported (tonnes) by road from Mchinji

1983	Malawi to Zambia	Malawi to Zimbabwe	Malawi to R.S.A.	Malawi to Botswana	Malawi to Zaire	Malawi to Tanzania	Total
May	556.4	5102.5	1354.5	129.2	32.2	35.1	7210.0
June	2738.0	3243.3	1309.6	169.7	-	196.7	7657.3
July	<u>7680.6</u>	<u>2347.4</u>	<u>1481.6</u>	<u>22.0</u>	<u>22.6</u>	-	<u>11554.2</u>
	10975.	10693.2	4145.7	320.9	54.9	231.8	26421.5
	(42%)	(40%)	(16%)	(1%)		(1%)	(100%)

Source: Ministry of Transport
and Communications

This can also be expressed by commodity as shown in the following Tables 1.33 and 1.34.

Table 1.33

Imports via Mchinji by Commodity

IMPORTS	May		June		July		Total		Average Load Tonnage
	No. veh.	Ton-nage							
Petrol, diesel, etc.	202	5807	224	6645	108	3280	534	15,732	29.5
Coal	112	2954	69	1761	9	234	190	4,949	26.0
Fertilizer	4	116	17	487	77	2292	98	2,895	29.5
Wheat & Flour	36	1028	26	720	29	797	91	2,535	27.9
Building Materials	13	360	31	774	43	1144	87	2,278	26.2
Steel Pro. & Machinery	36	881	33	892	7	218	76	1,991	26.2
Mixed & Gen. Cargo	70	2044	48	1188	51	1356	169	4,588	27.1
Others	85	2164	118	2944	101	2470	304	7,578	24.9
Sub-total	558	15,354	566	15,411	425	11,782	1549	42,546	27.5
Empty Trucks	16	-	39	-	136	-	191	-	-
Total	574		605		561		1740	42,546	24.5
Excl. tankers							1015	26,814	26.4

Source: Ministry of Transport and Communications

Table 1.34 Exports via Mchinji by commodity

EXPORTS	May		June		July		Total		Average Load Tonnage
	No. veh.	Ton- nage	No. veh.	Ton- nage	No. veh.	Ton- nage	No. veh.	Ton- nage	
Tea	98	2,600	40	1,038	29	646	167	4284	25.6
Tobacco	50	1,252	67	1,724	64	1,471	181	4447	24.6
Sugar	75	2,013	83	2,149	45	1,273	203	5435	26.8
Maize	-	-	64	1,765	251	7,087	596	8852	26.9
Other	86	1,346	55	981	42	1,076	142	3403	24.0
Sub-total	309	7,211	309	7,657	431	11,553	1049	26,421	25.2
Empty Tankers	116	-	139	-	75	-	350	-	-
Empty Trucks	49	-	40	-	33	-	122	-	-
Total	474	7,211	508	7,657	539	11,553	1521	26,421	17.4

Source: Ministry of Transport and Communications

In terms of movement of containers, the following Table 1.35 shows the number of full and empty containers being moved in each direction via Mchinji.

<u>Table 1.35</u>		<u>Container Movements via Mchinji</u>		
<u>Imports</u>	<u>May</u>	<u>June</u>	<u>July</u>	
Full containers in	179	157	141	
Empty containers in	<u>44</u>	<u>47</u>	<u>53</u>	
Total	223	204	194	
<u>Exports</u>	<u>May</u>	<u>June</u>	<u>July</u>	
Full containers out	117	82	173	
Empty containers out	<u>4</u>	<u>-</u>	<u>-</u>	
Total	121	82	173	

Source: Ministry of Transport and Communications

The following comments can be made concerning this recent but small sample concerning commodity movements in 1983 by road via Mchinji.

1. Malawi based transporters are making approximately 30% of the total number of international trips. (This includes temporary tankers under hire from Zimbabwe).
2. The volume of imports is significantly larger than the volume of exports. However, maize is constituting an increasing percentage of the total volume of exports.
3. One half of the total volume of imports and exports (by weight) has its origin or destination in Zambia and one third has its origin or destination in Zimbabwe.
4. Fuel constituted over one third of the volume of imports via this route and maize is almost two thirds of the volume of exports.
5. On average approximately 50 empty containers per month are being brought in via this route (usually transported in groups of three). All outgoing containers are full.
6. All fuel tankers necessarily return empty. However, some diesel has been imported experimentally by container in inflatable rubber tanks.

7. In terms of seasonality during this period tea exports are low, whilst tobacco and maize exports are beginning to rise. Fertilizer imports are also rising and fuel imports may be slightly understated. Overall it is expected that imports and exports will exceed the actual level recorded in a typical three month period.
8. If the present trend continues, this route will handle approximately 100,000 tonnes of exports in a full year and 170,000 tonnes of exports.

5. Road Link to Zimbabwe through Mozambique via Mwanza

There is one other alternative road link out of Malawi to Zimbabwe through Mozambique. This road passes through Tete from Mwanza and is used principally for importing coal from the Moatize mine. Recent tonnages moved on this route are as follows:

	<u>June</u>	<u>July</u>
Imports	4,257.6	3,617.7
Exports	2,336.7	2,118.1

Source: Ministry of Transport and Communications

This road has been and is subject to some disturbances due to insurgent activity in Mozambique. As can be seen, imports are predominant, the majority of which is coal. If movements continue at the present rate, it is envisaged that approximately 50,000 tonnes of imports and 25,000 tonnes of exports can be transported via this route on an annual basis.

In terms of haulers, the following Table 1.37 shows the country of registration of the vehicles using this route. Generally Zimbabwean registered vehicles are more frequent.

Table 1.37 Country of Origin of Vehicles using
Mwanza-Tete road

<u>Imports</u>	<u>June</u>	<u>July</u>
Vehicles in - Malawi registered	73	89
Vehicles in - Zimbabwe registered	123	92
Vehicles in - R.S.A. registered	<u>-</u>	<u>1</u>
Total	196	182
<u>Exports</u>	<u>June</u>	<u>July</u>
Vehicles out - Malawi registered	66	90
Vehicles out - Zimbabwe registered	98	96
Vehicles out - R.S.A. registered	<u>3</u>	<u>-</u>
Total	167	186

In terms of movements, the recent number of vehicle trips has been as follows:

Table 1.38 Number of Vehicles using Mwanza-Tete road

<u>Imports</u>	<u>June</u>	<u>July</u>
Trucks in	196	182
<u>Empty trucks in</u>	<u>-</u>	<u>-</u>
Total trucks in	196	182
<u>Exports</u>	<u>June</u>	<u>July</u>
Trucks out	99	90
<u>Empty trucks out</u>	<u>68</u>	<u>96</u>
Total trucks out	167	186

Source: Ministry of Transport
and Communications

Many trucks which brought in coal, return empty. With respect to containers, the position is as follows:

Table 1.39 Containers movements on Mwanza - Tete Road

<u>Imports</u>	<u>June</u>	<u>July</u>
Full containers in	139	86
Empty containers in	-	-
<u>Total</u>	<u>139</u>	<u>86</u>
<u>Exports</u>	<u>June</u>	<u>July</u>
Full containers out	43	42
Empty containers out	-	1
<u>Total</u>	<u>43</u>	<u>43</u>

Source: Ministry of Transport and Communications

As can be seen there is generally no movement of empty containers.

5. Summary

In summary present routes appear to be handling, or to be able to handle, the following volumes of goods:

Table 1.40 Commodity movements by route

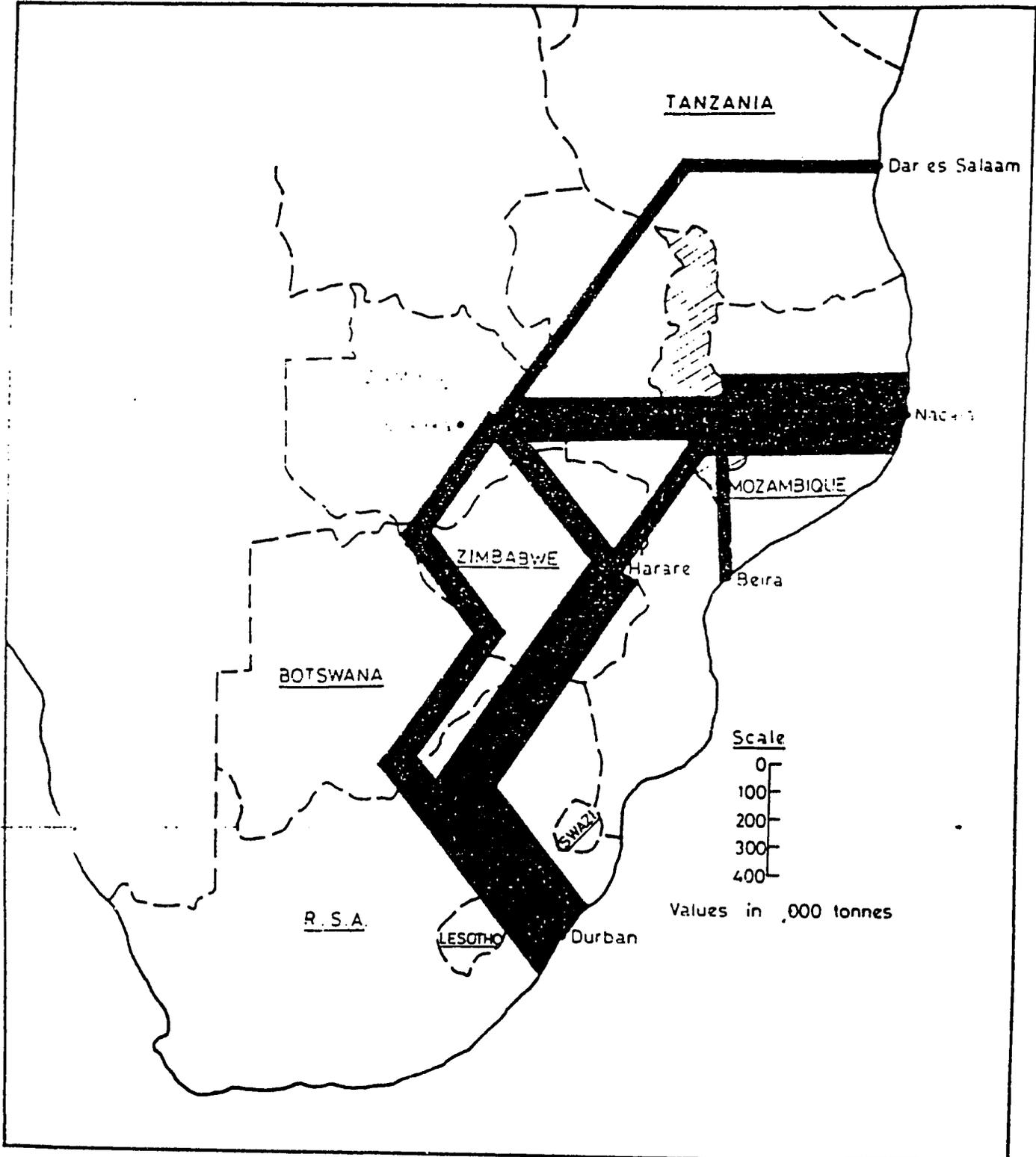
	<u>Imports</u>	<u>Exports</u> (tonnes)
1. Nacala rail link:	200,000	115,000 (1)
2. Lusaka road link (Mchinji):	170,000	100,000 (2)
3. Tete road link (Mwanza):	<u>50,000</u>	<u>25,000</u> (3)
Total	420,000	240,000
Projected Volume	<u>500,000</u>	<u>300,000</u>
Shortfall	80,000	60,000

Note: (1) Estimate of capacity
 (2) Projection of recent commodity movements
 (3) Projection of recent commodity movements

At existing levels of utilization the Lusaka road will carry approximately the same volume of goods as the Nacala rail line, whilst the Tete road carries approximately one quarter of either of these routes.

Whilst capacity on the Nacala rail line is limited and possibly also on the Tete road (due to insurgents), the

MALAWI COMMODITY FLOWS*



* Imports and Exports

only route capable of expansion is the Lusaka route. Hence the shortfall indicated above is likely to be transported on this route. In terms of vehicle trips, this can be translated into an additional 50% increase over existing volumes.

In terms of axle loads, assuming no overloading, this implies an additional number of approximately 17,000 standard 8.2 tonnes equivalent axles per annum, or, assuming that the Lusaka road is used for a total volume of 400,000 tonnes of exports and imports per annum, traffic for or from Malawi alone will be imposing approximately 50,000 standard equivalent axles on the road per annum.

Sections of this road are already in bad condition, particularly between Nyimba and Petauke. It has been estimated that approximately 10% of the road requires major reconstruction, a further 10% requires major pot hole repairs, and approximately 20% requires major shoulder repairs. Hence if the road is already approaching its design life of 0.5 million equivalent standard axles, (estimated year of construction 1968), urgent rehabilitation work is required so as to prevent further deterioration and to enable the life of the road to be extended for a further ten years or at least 0.5 million equivalent standard axles.

The condition of this link is therefore critical to Malawi. If the road is allowed to deteriorate this will result not only in significantly increased financial and economic vehicle operating costs on this route, but also in the extreme, in a breakdown in the supply of essential imports to the country and foreign exchange export earning commodities.

II. GOVERNMENT'S ROLE IN TRANSPORT

A. Outline of Government Policies in the Transport Sector

Since the recent transport problems have developed the Government of Malawi has been active in discussing and in developing alternative strategies to try to offset some of the difficulties encountered. Its response has been directed to each mode of transport.

1. Rail Transport

a. Nacala Line

Rail has been significantly affected with the virtual closure of the Blantyre-Beira line. The line to Nacala continues to operate despite derailments and operational difficulties. Given that this is the only reliable operational link, policy has been to maximize all available capacity on this line. It is the shortest and least cost route to a seaport. Rehabilitation on the Nacala-Nampula section is due to commence imminently. On average on this route it is considered possible to handle monthly in each direction 4,000 tonnes of break bulk cargo, 600 T.E.U.'s of containers and 130 tank cars. Monthly fluctuations above and below this average are anticipated due to the impact of rains on operations.

Due to its limited break bulk capacity, strategy has been agreed by the newly formed National Transportation Committee, which is described in the following section, to use all incoming break bulk capacity for fertilizer and outgoing for sugar containers, since currently more containers are required for export than for imports; where possible empty incoming containers will be filled with fertilizer at Nacala. New fertilizer purchases are being landed at Nacala in containers whenever possible.

The overall aim is to balance the flows in each direction such that all available capacity is fully utilized. Whilst fuel tankers must necessarily return empty efforts have been devoted to ensuring that containers are not moved empty. It is hoped that the National Transportation Committee, with representatives of Government, producers, transporters, haulers and shippers will act as a catalyst in agreeing to preferred routing modes for goods during the present crisis. A shippers information center has been established by Malawi Railways to provide timely information to shippers concerning cargo in-transit on this route.

b. Internal rail transport

Another Government policy is to induce transporters to move as much freight as possible within the country, by rail. This has the dual benefit of using spare capacity on the railway, generating revenue to cover large fixed overheads, in addition to reducing heavy vehicle traffic wear on the main paved road network. Consequently road service permits have been withdrawn for foreign road haulers operating in either direction between Blantyre and Lilongwe. Transshipment facilities are due to be constructed at Mchinji so that fuels can be transferred from tanker trucks for onward delivery within Malawi by railroad.

c. Rail tariffs

Rail tariffs have recently been increased by Malawi Railways. Tariffs are not scaled to distance. Tariffs are commodity rated, with higher tariffs for high value commodities. There is no special rate for containers. Sample tariffs are referred to later in Section III D. Sugar, fertilizer, maize and coal are the major commodities with the lowest rates.

Generally the railway tariffs are significantly lower than transport tariffs. Tariffs applied by both the Malawi and Mozambique railways are fairly uniform.

2. Road Transport

Traditionally Malawi has not had a strong international road transport industry. Only with the recent transport difficulties has the need arisen for a fully competitive international road transport industry. Domestic haulage capacity however has been extensive. Asian road haulers are gradually being phased out through not having their permits renewed.

Policy has been that trade and commerce, and road transport in particular, should operate freely in the private sector without government interference. However, with the need to develop international operations, the government has been searching for a way to help develop an indigenous transport capability, thus reducing existing reliance on foreign transporters for more than 80% of international trips.

There are few Malawi enterprises therefore which presently have the skills, financial resources or experience to operate an international route. Government policy is presently seeking means to expand their capabilities. This is discussed in more detail in the following section. Domestically road transport is competitive with many firms seeking few contracts. Prices therefore tend to be bid down as road haulers compete. Vehicle operating costs are higher than for transporters from R.S.A. or Zimbabwe, because of higher taxes on fuel and lubricants and more

costly capital, imported spares, tyres, batteries, etc. A significant amount of working capital is therefore needed to operate effectively. Insurance rates are also very high and licenses and permits contribute to high overheads.

In the road sector as a whole, government policy has been geared to developing the road network, in particular the principal north-south axis. In addition the extension and improvement of feeder roads has been a priority to facilitate movement of agricultural inputs and outputs. With one exception (to Tanzania) the country is adequately connected by road to the adjoining countries.

Axle loadings are enacted under the Road Traffic and Traffic Regulations Act but enforcement procedures are being reviewed. Limits are currently 7.7 tonnes per two wheeled axle and 8.2 tonnes per four wheeled axle (as compared to 10.0 tonnes per four wheeled axle in Zambia).

3. Lake Transport

Before the development of other transportation modes, Lake Malawi provided the main form of transport between the north and central parts of Malawi. However the use of this mode has declined for both passengers and freight.

Given the recent transport difficulties and high transport costs, interest in lake transport has been re-awakened. With the commissioning of a new 300 tonne fuel tanker there is considerable excess capacity for internal distribution of fuel. It is envisaged that this capability can be further expanded to include larger volumes of other freight. Further port studies are therefore expected with a view to developing this mode. Freight tariffs are extremely competitive, being similar to rail rates but much lower than road charges.

B. Description of current government activities in
response to the present transport crisis

In the field of transportation, the Ministry of Transport and Communications is the key Government Ministry. It controls all rail, road and air transport and telecommunications and has responsibility for road traffic regulations and permits through the Road Traffic Commissioner. Recently, in response to the critical transport problem it has focused on four specific tasks:

- a. establishment of a National Transportation Committee.
- b. establishment of Malawi International Transport Company (M.I.T.C.O.)
- c. negotiation of bilateral agreements with neighbouring countries.
- d. promotion of Malawi road haulage capacity.

1. National Transportation Committee

In April 1983, in response to the general transportation problems incurred due to the landlocked nature of the Republic of Malawi, the Ministry was instrumental in establishing a restructured National Transportation Committee. The objectives of this Committee are to assist in formulating policy and in monitoring and directing the flow of cargo traffic through the transit corridors serving Malawi for the following purposes:

to support efforts to restore and strengthen Malawi's traditional low-cost rail transit routes to the ports of Beira and Nacala;

to identify and evaluate specific transit routes available to Malawi and determine how they might best be utilized;

to reduce the cost and improve the performance of transit transport operations;

to achieve closer co-ordination between import and export movements so as to obtain more cost-effective utilization of available transit services;

to undertake timely corrective actions in response to anticipated and unforeseen emergency situations;

to improve the effectiveness of Malawi's representations to and relations with neighbouring states on transit matters;

to endeavour to prevent consignments to/from Malawi from becoming stranded in ports or in the transit pipeline for any reason.

There are eleven full voting members of the committee which include representatives from the:

Office of the President and the Cabinet

Economic Planning Department

Ministry of Works and Supplies

Ministry of Transport and Communications

Ministry of Trade and Industry

Malawi Railways

Chamber of Commerce

Shippers Council

Clearing and Forwarding Agents Association

There are many associate members of the Committee which consist of representatives from the business and commercial community in Malawi for example, the tobacco exporters, tea and sugar producers, coal users, petroleum and fertilizer industry, ADMARC, etc.

The full Committee meets quarterly to recommend policy and operational changes to Government. It is supported by a secretariat whose function is to collect and analyse data concerning transit commodity flows. From this it develops suggested or advisory routing and traffic flow plans. An Action Forum consisting of 5 delegates of Full Members is assigned to work on a continuing basis with the Secretariat. Findings are communicated via an information system for the benefit of its members.

The secretariat has initiated the monitoring of road traffic flows at the border crossings at Mchinji and Mwanza. Malawi railways are also monitoring rail movements and commodities at Nayuchi and Nsanje. From knowledge of conditions on different routes advisory routing plans have been prepared. In addition the committee has been investigating methods for enhancing the use of Mchinji as a transshipment point, especially for fuel.

2. Malawi International Transport Company - MITCO (Road freight booking agency)

In recognition of the difficulties faced by both Malawian buyers of transportation services in obtaining an efficient level of international haulage service at affordable cost and of Malawian transporters in obtaining a share of this haulage work, an international road freight "booking agency", has just been established. It is designed to manage the inland transport of Malawi's import/export traffic moving by road or road/rail. The organization is known by the acronym M.I.T.C.O. Its objectives have been defined as follows:

to improve the performance and to reduce the costs of inland road and road-rail transit transport services, with particular attention to foreign exchange requirements. (This includes better co-ordination of import and export movements to reduce empty running, smoothing peaks in demand to improve vehicle utilization and providing long-term contracts with front-end payments for haulers to reduce risk and costs and to increase vehicle utilization);

to ensure the supply and availability of adequate locally controlled road transport capacity to meet minimum essential import and export requirements;

to improve access by Malawian transporters to Malawi's own import traffic;

to improve the performance and to reduce the costs of critical road/rail transfers in Lusaka, Harare and elsewhere, as may become necessary.

It is a subsidiary of the Malawi Finance Corporation incorporated in Malawi 1/, and will charge its customers for transport services supplied at cost plus a commission to cover the agency's expenses. It will be accessible to all Malawi haulers and will distribute charges between front and back hauls according to a formula agreed with the National Transportation Committee. It aims to assist Malawi transporters to expand their capability to carry their fair share of imports and exports. Traffic will be routed appropriately according to the recommendations of the National Transportation Committee. Contracts will be maintained with international road haulers so as to strive to maintain a balanced fleet with equitable participation by haulers based in each country transited in proportion to the volume of traffic on each route and with regard to any bi-lateral agreement in force.

In addition it is envisaged that the agency will take full responsibility for contracting and managing the specialized road tanker fleet required for the import of petroleum fuels.

It will place at least half of the minimum road transport capacity required for dry cargo imports under long-term haulage contracts and will operate the traffic booking agency for imports and exports with haulers under contract and additional transporters as necessary.

It will have responsibility for directing road/rail transfer operations for Malawi import/export traffic in Lusaka, Harare, and other locations as necessary. This will include making arrangements with contractors to perform the required services, supervising and paying them, and collecting charges from users on a cost plus commission basis.

1/ The Malawi Finance Company has two functions: 1) it provides financing (6 month credits) to the private sector for imports and 2) acts as Governments purchasing agent for imports, including a large portion of the imports for parastatal organizations. The company is owned 60% by FINCOM and 40% by Balfour and Williamson, a private finance house owned by LONRHO. FINCOM is a holding company owned 100% by ADMARC.

Co-ordination of front and back haul trips will be undertaken as closely as possible so as to achieve maximum vehicle utilization. This will include co-operation with Malawi Railways and the National Transportation Committee in developing the use of Mchinji as a road-rail transfer point.

Transport performance contracts will be developed which will include performance guarantees, incentives and penalties.

The agency will work with importers and exporters in order to develop methods for spreading import and export traffic so as to avoid excessive concentrations and so as to make more effective use of available capacity. Where possible the Government will direct its imports through the Agency. It must also ensure that MITCO's accounts are settled promptly. Government will also assist with providing foreign exchange.

3. Bilateral Agreements with Neighbouring Countries

A draft agreement between the Governments of Malawi and Zambia has been prepared and is presently under discussion. This aims at granting each country reciprocal rights to transport goods in transit through the other's country. If this is successfully negotiated, a similar agreement will be proposed with neighbouring Zimbabwe.

The agreement aims essentially:

- to coordinate hours of customs posts at ports of entry.
- to prohibit carriage of goods between two internal points in the other's country.
- to implement a system for issuing trip or route service permits.
- to exempt vehicles registered in one country and operating in the other from paying any corresponding taxes or duties. This also applies to road tolls.
- to determine the services, routes, frequency, tariffs etc. for passenger services between the two countries.
- to ensure compliance of vehicles with the legally established technical standards in the country of operation and that drivers hold valid heavy vehicle operator's licenses.
- to enable carriers to solicit return traffic in the other's territory provided that this is undertaken through officially licensed agencies.
- to ensure compliance with regulations in the other's country and in particular that carriers maintain valid insurance in accordance with the country's regulations.

- to institute agreed procedures where infringements of the above regulations occur.
- to ensure that charges for the transport of goods are stated and collected in the currency of the country where the vehicle is registered. The cargo rates shall be set through open market competition.
- to enable carriers operating in the other's country to make arrangements to pay for fuel, maintenance, repairs etc. in the other's country in the currency of that country, and to enable operators to maintain bank accounts in the other's country.
- to establish a joint commission to manage the implementation and operation of this agreement.

Route service permits will be valid for one year and cargo transport trip permits will be subject to annual quotas (for two periods of six months) divided equally between the two countries. Certain cargos will be exempt from the quota. A scale of fees will be agreed for the issue of the trip and route service permits. Efforts will be made to prevent domination or control over cargo routes by any single transporter or group of transporters.

This agreement is presently under discussion and it is hoped will be enacted by 1984.

4. Promotion of Malawi Road Haulage Capacity

Although Malawi does have some haulers who operate internationally, most lack the organizational support, skills and financial resources necessary to operate effectively in competition with the highly-professional foreign-based transporters, who presently dominate Malawi's international road haulage market.^{1/} The need is therefore to develop a small, but competent, locally controlled road haulage industry which is responsive to the needs and the interests of the country such as rapid response to emergency needs, flexibility in routings and foreign exchange savings opportunities. Emphasis must be given to achieving better performance, reducing costs and maintaining financial discipline.

The Ministry of Transport and Communications is investigating a means of creating several Malawian "umbrella" organizations to engage in and promote international road haulage operations. They would be privately owned and would operate their own vehicles and in addition would sub-contract work, lease equipment and provide other services to individual owner-operators. Each organization would be professionally managed with

^{1/} See Section III, B for detailed discussion of Malawi's road transport services.

specialists in planning, operations, maintenance and repairs and accounting and financial management. These specialists would in turn train counterparts who would eventually take over the management of the existing organizations. The aim is to bring these organizations to the level of standards required to operate long international transit transport routes.

Individual owner-operators will be used under contract to the extent that they are able to perform according to the requisite standards. Separate financial records will be maintained for each vehicle and a guaranteed supply of goods traffic will be ensured. Other options will be investigated, for example through leasing vehicles from the "umbrella" organization to employee drivers, whom through incentive payments earned, may be able to gradually acquire ownership in the vehicle. Simultaneously the operation will be acquiring technical and financial skills so as to develop their own capability.

There is a shortage of private capital in Malawi. Potential investors, such as banks, equipment dealers and insurance companies, have suffered heavy financial losses from financing domestic truckers in the past. They therefore view financing indigenous operators as a high risk and prefer allocating their limited resources to other types of enterprises.

In order to help meet the capital requirements of these umbrella organizations, Government will seek assistance from international development organizations in the form of donations of equipment.

The equipment donated 1/ for use in developing Malawi's commercial road transport industry would be specifically directed to the Ministry of Transport and Communications. The Ministry would turn these over to the Industrial Development Bank of Malawi (INDEBANK) to manage on its behalf.2/ INDEBANK would then offer these vehicles at commercial interest rate terms (inclusive of all duties) to proposed "umbrella" organizations on either sale or lease terms, or to owner-operators working under an "umbrella" organization through the umbrella organization (which would thus assume responsibility for meeting payments due out of revenues), subject to Ministry approval.

1/ Tractors, semi-trailers of various types, recovery vehicles, tools and initial supplies of spares.

2/ INDEBANK is a non-profit institution 78% owned by overseas private and official financial institutions and 22% by ADMARC. INDEFUND, established to provide credit of up to K. 100,000 to small businesses might also be tapped to provide equity, working capital or loan guarantees to owner operations.

The funds so realized by INDEBANK would be placed in a special revolving trust fund for future use in expanding the fleet, purchasing replacement vehicles, or for the purchase of equipment which would benefit the entire industry. The bank would be entitled to a management fee for the services so provided. The funds held in trust could, with Ministry approval, be invested to earn interest. The funds could be disbursed only with the joint approval of the Ministry and the INDEBANK Board of Directors.

One specialized function of this fund would be the management of specialized semi-trailers (such as purpose-built petroleum tankers) which are required for national security, but whose utilization may vary considerably due to changing conditions which it is difficult to foresee with any degree of accuracy. These units would be allocated to private operators on a short term lease basis only, so that they could be withdrawn at times and under circumstances when need slackens. In this way the financial burden of specialized equipment required only occasionally for national security is carried by the Ministry rather than private industry. These arrangements are designed to prevent unequal treatment of operators who supply their own equipment in comparison to those who utilize donated equipment.

The two INDEBANK plans outlined above have been accepted in principle, with final approval subject to board action based upon specifics. This action is to be withheld pending the development of arrangements which meet the approval of concerned donor countries.

Since payments into the revolving fund will be local currency and purchases from the Fund will require foreign exchange Government will have to make allocations of foreign exchange adequate to the Fund requirements.

The goal of the proposed plan is to lower some of the risks of private investment in international road haulage so as to encourage private investors to participate in this activity. However significant initial private investment is still required in order to initiate this process. Two companies have already expressed serious interest in creating new companies, along the lines proposed, with capital, generated in part from external sources.

Section IV, A.1 shows a micro analysis of the conditions under which international trucking might be operated and its commercial viability under several sets of assumed operating and cost parameters.

5. Development of North/South Corridor via Tanzania

a. North/South Corridor Study

Due to the current transport difficulties encountered in importing and exporting commodities via Mozambique, the Government of Malawi has been investigating other possible transit routes, in particular via Tanzania. With this aim the Ministry of Transport and Communications is commissioning a feasibility study to investigate the northern access route to Tanzania. This will study the transport systems linking the Blantyre/Dar es Salaam corridor. This is an attractive solution, due to the existence of road, rail and lake modes, which is also significantly shorter than routes being presently used and necessitates transiting only one other country. The study will investigate both possible incremental short term and longer term permanent solutions. Inter-modal transport options will be examined in addition to the institutional and regulatory problems. This will involve study of physical facilities in Tanzania and at the port of Dar es Salaam, in addition to options for the improvements of road, rail and lake facilities in the Republic of Malawi.

b. Tanzanian Road Link

In addition to this broad corridor study, the Ministry of Works is studying a particular road link within the corridor. By 1985 with the exception of a 59 km mountainous section between Champhoyo and Mbowe, the north-south internal road axis in Malawi will be paved between Chikwawa (south of Blantyre) to Kasungu in the north. The existing earth road from Karonga to Songwe River has poor formation, alignment, and drainage. A new Class I bitumen road on a new alignment is proposed to link Karonga in Malawi across the Songwe River border to Ibanda in Tanzania. From there the road will connect to join the Itungi-Mbeya road which links with the Trans-East Africa Highway (Tan-Zam) to Dar es Salaam. The proposed road is 50.3 kms in length, 4 kms of which are in Tanzania, and necessitating two bridges over the rivers Songwe and Kiwira. This is a vital link, to which both Malawi and Tanzania have agreed in principal, and will take 2.5 years to build at a cost of approximately K.20 million. By completing this critical link Malawi will become fully accessible by road through Tanzania to the port of Dar es Salaam.

c. Lake Services

Within the north-south corridor, considerable interest is focused on developing the existing capability of the lake services. Currently some passenger and freight services are provided on the lake by Malawi Railways. The principal ports of Chilumba, Nkhota Bay, Chipoka and Monkey Bay are linked by regular but infrequent services. Chipoka is significant in that it links with the existing rail system. A new fuel tanker has been built at Monkey Bay,

capable of transporting up to 300 tonnes of fuel on the lake. With the existing barges, there is a vessel capacity for moving about 1,000 tonnes of fuel, considerably in excess of internal distribution requirements. Assuming vessels could make two round trips per week between Chilumba/Chipoka (approximately 450 kms), there is a potential existing capacity for movement of 100,000 tonnes or say 120 million litres) of fuel. The Nacala railway line should be able to handle about 50% of fuel import requirements through 1987 or about 80 million litres. If remaining fuel imports/year were carried on the proposed lake system existing vessel capacity is adequate for both imports and local distribution.

Further attention is being focused on the possibility of using the lake for more significant transport services. For example, by introducing a Ro-Ro system onto barges, goods could be transported from Chipoka to Chilumba at competitive rates and without incurring large capital costs. Two small barges each carrying say 10 trailers (20 T.E.U. or 400 tonne capacity) making 100 round trips per year could offer a maximum 80,000 tonne/year capacity on a Ro-Ro system. Malawi Railways is currently investigating suitable locations for the development of a new or existing port. It is expected that the outcome of the North/South corridor study will contribute to current thinking in this respect. Kapwe has been discussed as a possible suitable location in the north.

The Lake Service of Malawi Railways is now making arrangements to ship 200 tones/day of sugar from Dwangwa (south of Nkhota Bay) to Chipoka by barge with existing equipment. The sugar will be pre-loaded in slings at Dwangwa, carried as break-bulk to Chipoka and transferred there to rail. They are charging K. 21/tonne for the vessel movement including handling costs which is competitive with trucking.

III. ORGANIZATION OF TRANSPORT SECTOR SERVICES

The major industries/firms which utilize the international transport system for exports or imports (defined as generators of 10,000 tonnes or more cargo) are as follows:

1. ADMARC (parastatal) - fertilizer, maize, groundnuts
2. Optichem - fertilizer
3. Tea estates
4. Tobacco
5. Sugar estates (Sucoma and Dwangwa)
6. Portland Cement
7. Coal Users
8. Oil Companies
9. Lever Brothers - soaps and edible oils.

The following section provides a brief description of each of the above, the type and quantities of commodities involved, and the manner in which the industries have adapted to the transport problem.

A. Description of principal Firms/Organizations
purchasing transport services

1. ADMARC

ADMARC is the parastatal company responsible for the purchase and sales of all smallholder farm inputs and commercialized production, with the exception of some tobacco which is sold directly on the auction floors.

It is therefore a major purchaser of transport services both within Malawi and for export/import. In 1982 ADMARC imported about 70,000 tonnes of fertilizer and exported about 12,000 tonnes of food crops and 8,300 tonnes of tobacco. In 1983 in addition to its normal exports, ADMARC has already sold about 200,000 tonnes of export maize destined largely for regional markets.

Since most of its fertilizer imports will be coming in from South Africa (supply from Nacala being unavailable) it is taking advantage of the opportunity to load maize to Lusaka on trucks arriving with fertilizer. Although some of the in-bound trucks will pick up backhauls of tobacco and sugar, the majority will take out maize from the same ADMARC depot in Lilongwe where fertilizer is delivered. With 81,000 tonnes of maize sales to Zambia, Tanzania, and Zaire in 1983, the historical pattern of import flows exceeding export flows and consequent empty backhauls will change. Consequently average tonne-Km costs of road movements will be spread over more tonnage.

2. Optichem (Malawi) Limited 1/

This is a major importer of fertilizer for the estates sector. In addition to this, the company also produces and distributes various compound fertilizers throughout the country. Its major customers are the tea, tobacco and sugar estates.

The company normally imports about 25,000 tonnes of top dressing fertilizer which is placed directly in depots for resale. An additional 25,000 tonnes is imported as unprocessed chemicals and is granulated and blended to specifications at its plant in Limbe. The latter used to be imported in bulk via Beira but with the railroad closed must

1/ Ownership: INDEBANK 20%, ADMARC 20%, Old Mutual 27%
 FINMOS 33%.

be imported via Nacala in bags, all containerized. Containerization is preferred because of the limited break-bulk capacity at Nacala. Purchases are made from South Africa or other world sources based on delivered price and availability. A premium is paid for delivery by container from European sources, because of the higher labor cost of filling the containers.

Presently containerised imports through Nacala are carrying a rail transport cost of K.80/tonne delivered Blantyre. Costs of delivery by rail/road from South Africa are about K.180/tonne. Imports of unprocessed chemicals cannot bear high road transport costs. If Nacala were unavailable for the 25,000 tonnes/year of this importation, the company would have to close down its processing plant.

The company has had 13,000 tonnes of bagged fertilizer in Beira since last year. This is now being moved as break-bulk by ship to Nacala for raiting to Blantyre. Government has given evacuation of the company's fertilizer from Beira priority over the ADMARC and Government owned fertilizer of 55,000 tonnes remaining in Beira.

The Company reports that it expects to have adequate supplies for its customers for the 1983-84 season.

3. Tea Estates

The main tea producing areas are Thyolo and Mulanje in the Southern Region, with a small hectarage at Nkhata Bay in the Northern Region. All growers are members of the Tea Association which represents the industry on all national and international matters concerning the interests of growers and producers. The Association negotiates with conference lines for ocean transport rates. It occasionally has made fertilizer purchases. The Association is not otherwise involved in purchases, sales or transport.

There are 29 companies established as tea producers in Malawi. In addition, there is a smallholder project controlled by the Smallholder Tea Authority. The smallholder leaf from the Mulanje area is processed in a factory owned by Malawi Tea Company (Muloza) Limited which opened in December 1974. The estates process tea in their own factories.

The tea companies market their produce in various ways. A large quantity, though decreasing in proportion, is sold in the traditional manner through the London Auction and some is sold offshore FOB (vessel). The USA is buying a large share of the remainder. Production of tea has been increasing since 1968. Tea production in 1982 was 38,500 tonnes about 20% higher than in 1981. A large proportion of the tea produced was sold at local tea auctions in Malawi (in 1982 26% compared to 20.9% in 1981). The average price for Malawi tea at the London Auction was 3% above the price realised in 1981 - the best price since 1977. Output of tea is expected to increase provided

favourable weather conditions prevail in the tea growing areas. The Tea Research Foundation which is financed by the industry has been of considerable assistance to the growers. Prices in 1983 (January - April) on auction are averaging higher than for the same period in 1982.

Tea for local auction is packed in boxes and trucked to Limbe auction floors. After auction its buyers arrange for a freight forwarding agent to handle shipping. Tea sold overseas is packed in bags on the estates and then loaded in containers either by the estate itself or by a freight forwarder (generally more expensive). The freight forwarder controls the supply of containers and arranges for their shipment overseas. The use of containers has enabled the industry to abandon packing in traditional tea boxes (handled break-bulk) and to substitute bagging, resulting in considerable cost savings.

The tea industry requires about 7,000 T.E.U.'s/year to move its production with about 10 tonnes net cargo/TEU. Eighty percent of the tea crop is harvested between December - May. The tea crop is available for export earlier than other crops and thus has not had as much problem competing for rail capacity. However, rail capacity is reduced during the rainy season. Now that large stocks of sugar and maize are competing for transport year round, more tea is and will be transported by road.

4. Tobacco

The Tobacco Association represents the interests of the growers in the private sector (flue-cured and burley), while the Agricultural Development Marketing Corporation, a statutory corporation, is responsible for the marketing of all types of tobacco grown by farmers on customary land (fire-cured, sun/air-cured and oriental) and represents these growers at official level.

Total sales in 1982 at 58,520 tonnes were the highest on record. This was largely accounted for by sales of 27,600 tonnes of burley which at an average price of K.216/kg was selling at about double the value prevailing in the period 1974-80. Flue-cured sales were 22,600 tonnes, about average for the last 5 years but average prices at K.2.09/kg were highest on record and about 25% higher than the average 1974-80. Production of other types of tobacco totaled 8,300 tonnes.

All types of tobacco are sold at the Limbe auction floor except oriental which is sold privately. Modern facilities are available for handling and packing. The Auction floor in Lilongwe started operating in 1979 in addition to the Auction floor in Limbe. The Limbe sales are unique, in that five different varieties of tobacco, burley, fire-cured, flue-cured and sun/air-cured are offered on a single morning's sale. The market usually opens each year at the end of March and thereafter sales are held until October.

Growers hire transport for delivery of their baled tobacco to the auction floors. Because the volume of Northern and Central Region production has exceeded the Lilongwe floors capacity, some is being shipped to Limbe for auction.

Once the tobacco is sold, the buyer arranges for processing and export baling at one of the nearby factories which are presently working with about a two months backlog. The tobacco is held after processing until the buyer gives instructions for shipping which is then arranged through a freight forwarding agent. Most tobacco is now shipped in containers, by rail if available, otherwise by road through Durban.

5. Sugar Estates

Sugar is grown on two large estates both managed by LONRHO. For SUCOMA which is situated in the Lower Shire Valley, used plant was moved from Mauritins and installed in the late 1960's. Cane growth is extremely fast under irrigation and 100-120 tonnes cane/hectare/year are averaged on the estate. Average sucrose percent of cane is around 13% over the harvesting season which lasts from April-December. Yields of sugar average 11-13 tonnes/hectare/year. Total grounding capacity is 230 tonnes/hour. The plant produces raw sugar for export and has a refinery capable of handling 15 tonnes/hour. The local market absorbs 75% of refined and 25% of raw, the remainder available for export.

Dwangwa Sugar Corporation located near Nkhotakota, was incorporated in 1976, its major shareholders being ADMARC, Press (Holdings) Ltd and Lonrho Sugar Corporation. Total capital employed was about K.64 million which is funded by shareholders equity and overseas and local loans. About 6,000 irrigated hectares are planted. The estate has created jobs for about 5,000 persons and under a smallholder scheme, 326 two hectare plots. The factory was commissioned in 1979 and sugar production in 1981 was about 70,000 tonnes. It is designed to process 150 tonnes/hour of cane and can produce both refined and raw sugar.

Production, consumption, and export surplus was as follows:

Table 3.1 Sugar production and consumption

<u>Year</u>	<u>Sucoma</u>	<u>Dwangwa</u>	<u>Consumption (Metric Tonnes)</u>	<u>Exportable Surplus</u>
1978	92,672	-	34,000	58,672
1979	92,069	15,785	38,000	69,854
1980	99,541	47,882	41,000	106,423
1981	96,217	70,426	48,000	118,643
1982	100,000	71,000	50,000	121,000
1983	105,000	75,000	55,000	125,000

Source: N.S.O. and SUCOMA

Malawi has an EEC quota of 20,000 tonnes and a US quota of 15,000 tonnes which can be sold at prices substantially higher than the world market price (quota price in 1983 \$0.23/lb; world market price, US \$0.15-16). The remainder of the export surplus must be sold at spot prices. There was an unsold surplus carry-over from the 1982 crop of 50,000 tonnes. Export sales in 1983 are now anticipated at about 70,000 tonnes which would add another 55,000 tonnes to stocks. A stock of 105,000 tonnes would have an inventory value (cost of production) of about K. 23.6 million.

Sugar sold outside the quotas reportedly will return a loss on total costs to the enterprises if transport costs exceed a range of K.25-50/tonne.^{1/} Railroad via Nacala costs about K.50 and all road alternatives are unacceptable on the basis of cost even where special backhaul rates are negotiated with transporters who would otherwise be returning without a return cargo. While the road via Tete to Harare was open, such backhauls, particularly with imports of coal, were available. The sugar enterprises may elect to pay higher transportation prices in the short-run to generate positive cash flow, covering variable costs but not all fixed costs. From the national point of view, once production costs which include a foreign exchange component, have been incurred, any foreign exchange generated by such sales is better than a continuing build-up of stocks.

Although the basic problem of the sugar industry is over-supply on world markets, it is particularly disadvantaged as it is located in a land-locked country where rail capacity is restricted.

^{1/} Presumably costs at SUCOMA are much lower, since milling facilities have been fully amortized.

An ethanol plant was opened in 1982 at Dwangwa producing 10 million litres to be blended with petrol (about 15% mixture). This plant uses molasses as feedstock.

In 1981 Malawi exported 27,000 tonnes of molasses by rail, more than half of this from the SUCOMA estate. While Dwangwa production is being converted to ethanol, SUCOMA's production, with a potential export value of K.3 million, is being dumped because the usual Beira rail route is closed.

6. Cement

Portland Cement Company has experienced difficulty in obtaining its coal supplies of about 20,000 tonnes/year from its cheapest source of supply in Mozambique, the Moatize mine near Tete. Substitution of road transport for rail has increased the delivered cost at the clinker processing plant by K.60 /tonne (K.170/tonne instead of K.110/tonne). This is particularly expensive because there is no adequate road access to the plant for heavy vehicles. Therefore coal imported by road has to be transferred to rail in Blantyre for delivery to the plant.

With the railroad closed and road access interrupted by insurgency, about 5,000 tonnes has had to be obtained from Zambia, by road to Mchinji and by rail within Malawi. Transport cost is about K.100/tonne or a final delivered cost of about K.220/tonne.

Had the building industry been buoyant, there would no doubt have been a shortfall in cement requirements. The value of private buildings completed has dropped 32% in 1982 as compared with 1979 and the value of Government buildings completed dropped by about 40%, heavily impacted by completion of major construction for the new Capital. Sales and production of cement in 1982 were about half the historical peak achieved in 1979. ^{1/} Consequently cement production has been inadequate although high fuel costs have pushed up production costs.

While Portland Cement is still clearly the largest coal dependent industry, its share of coal has fallen from in excess of 50% to around 30-40%.

7. Coal Users Committee

This Committee arranges for purchases of coal for users other than the Portland Cement Company. Requirements for 1983 are 30-35,000 tonnes. The largest users are David Whitehead and Sons and Lever Bros. The preferred

^{1/} Table II and II A, Monthly Statistical Bulletin, May 1983.

source is the Moatize mine in Mozambique. Rail deliveries to Blantyre cost K.10/tonne whereas by road, presently used to the extent security permits, costs K.41 tonnes for a total delivered cost of K.82/tonne.

About 5,000 tonnes has been brought in from Wankie in Zimbabwe in containers by truck. Landed cost is about 2.5 times higher than from Moatize though of better quality. About 3,000 tonnes has been shipped from Zambia but requires crushing before use. They now intend to test a 1,000 tonne supply from Malawi's coal field at Livingstonia (Northern Province). Quality, however, is poorer than from other above mentioned sources.

8. Oil Companies

There are three petroleum distribution companies, Caltex, Mobil and Oilcom. Oilcom, the largest, is managed by BP which also has an ownership participation.

The destruction of Beira tank storage by insurgents and the closure of the Beira railway caused a major disruption in supply. Oilcom has subsequently taken the responsibility in close consultation with the other companies for arranging alternate supplies and routings. These arrangements, which place heavier dependence on South Africa as a supplier of petrol, and related transport implications are discussed in the previous section concerning commodity flows.

The success of their logistics management is demonstrated by the fact that in 1982, petroleum supplies were maintained at 90% of 1981 import levels. Increases in petroleum prices 1/ had some effect presumably on reducing demand so that no serious shortages were experienced. The industry has an in-country storage capacity equivalent to approximately 33 days requirements. Demand for diesel is seasonally high. Stocks were very high as of June 1983.

While extra strategic storage may be in the national interest, the companies are not prepared to invest in such facilities and accept the extra inventory cost unless the Government is prepared to allow a pass-on of these costs to its customers.

1/ Since June there have been three price increases with diesel rising from 75t to 92.2t (23%) and petrol from 85.8t to 98.0t (14%). (Cambala)

9. Lever Brothers Ltd

This firm located in Limbe, produces soaps, washing powders, edible oils, and livestock meal from oil cake. Their production requires imports of about 7,000 tonnes of tallow which now is delivered in specialized tanks fitted to trailer trucks which arrive via Durban, Harare and Zambia. Importation used to be by rail from Beira. The soap factory was closed for 3 months while the alternative, more costly route was established. Imports of coal were discussed under item 7 above.

B. Description of Malawi's Road Transport Services

1. Factors Contributing to the weakness of Malawi's trucking industry

The trucking industry in Malawi is composed of many individual operators, small firms, and a few medium sized firms most of which are just struggling to exist. Historically there is a record of enterprises which have collapsed. The causes can be briefly summarized as follows:

- (a) Entry into domestic trucking has been relatively easy. Most operators have had insufficient capital, management expertise or training to operate as viable businesses. Therefore the industry has a poor business reputation with financiers and insurers. Presently there is overcapacity in vehicles unsuitable for international trucking at least 8-9 months/year.
- (b) The railroad has been provided protection versus trucking and has had the capacity, until the recent crisis, to carry most international traffic at lower cost.
- (c) Foreign based firms have had virtually free entry into Malawi. Since in-bound international cargoes of relatively high value goods have dominated traffic volumes and covered most of the haulage costs, these firms have been able to nearly monopolize international movements. Their vehicle operating costs have also been lower than those of Malawi operators.
- (d) Malawi operators have had great difficulty in obtaining permits to operate through neighbouring countries.
- (e) Malawi purchasers of transport services have made little attempt to take steps to reduce transportation costs through improving terminal efficiencies, reducing seasonal peak elements, balancing two directional traffic and prompt payment for services. Instead their practice has been to place the main burden of keeping transport rates down on the transporters.

2. Rail Protection

From colonial times the railways have received protection from road transport competition. The first stage of protection was to protect the external rail route to Beira. Originally all traffic to Malawi was carried up the Zambezi and Shire rivers in barges towed by paddle wheeled river steamers. These barges were loaded from ships standing off the mouth of the Zambezi river near

Chinde. Four barges of 50 tonnes each were towed to either Nsanje or Chikwawa. This service was closed down when the railway was built in order to provide the railway with the traffic. Furthermore, despite requests to place a road deck over the Zambezi and Shire river rail bridges to allow motor vehicles to cross, the railway refused permission and it was not until 1978 that the railway bridge over the Shire and Chiromo was modified to allow road vehicles to cross.

With regard to internal transport, protection was given to the railways between Blantyre and Salima by refusing permits to transport goods by road from Lilongwe to Blantyre and Luchenza. Thus the local road transporters were denied an internal medium distance route which would have enabled them to develop skills and purchase vehicles suitable for this type of operation.

3. Malawi's Truck Fleet and domestic road haulage

As of the late 1960's there were eight Malawian transport firms with five or more vehicles, and a total fleet of nearly 500 vehicles. Many of these were mostly single vehicle owners totalling perhaps 300 vehicles from this fleet (with capacities up to 10 tonnes). Between 1968-77 four of these firms were dissolved. By 1977 the transport concerns with five or more vehicles comprised the following:

Road Motor Services (Malawi Railways)	36 units - Blantyre and Lilongwe
Clan Transport Co Ltd	5 units - Blantyre
J. T. Karbhari & Son	8 units - Mulanje
J. Tennet Sons Ltd	26 units - Luchenza/ Blantyre/Lilongwe
O. E. Mahomed	17 units - Limbe
A. K. Mahomed	<u>12 units - Blantyre</u>
	<u>104 units</u>

The road haulage companies and individuals serving Malawi at the present time shown in Table 3.2 are divided into two categories, those having in excess of five vehicles and those having five or less vehicles. The total fleet of larger operators is 215 units. In addition members of the African Businessmen's Association, composed of many small owner/operators, have about 150 vehicles and other operators have about 40 vehicles, giving a total of approximately 400 vehicles.

Table 3.2 Principal Malawian road haulage operators and ownership

<u>Organisations having more than five goods vehicle</u>		
- Progressive Panel Beaters & Transport Contractors	- 16 units	
- Clan Transport Co. Ltd. (MFS) <u>1/</u>	- 12 units	
- Container Terminals (Mw) Ltd. (MFS) <u>1/</u>	- 8 units	
- J. Tennett & Sons Ltd.	- 16 units	
- Road Motor Services (Malawi Railways, collection & delivery services only)	- 16 units	
- O. E. Mahommed (Asian)	- 29 units	
- African Business Men's Association (separate individual owners of vehicles)	- number not known (estimate 150 units)	
- Press Transport (1975) Ltd.	- 32 units	
- Spearhead Enterprises Transport and Maintenance Services Ltd.	- 15 units	
- Amosi Transport and Maize Mills	- 9 units	
- A. K. Mahommed (Asian)	- 25 units	
- Freight Transport (Asian)	- 11 units	
- Inter Carriers (D. Carvalho)	- 7 units	
- F. A. Lambat (Asian)	- 15 units	
- Kanekha Transport	- 8 units	
	<u>215</u>	
<u>Organisations having five goods vehicles or less</u>		
- Fargo Limited (Asian)	- 4 units	
- Fersons	- 5 units	
- Marine Containers Ltd. (Mixed)	- 5 units	
- Viola Transport	- 5 units	
- Glens Removals & Storage (Mw) Ltd.	- 3 units	
- A.M.I. Rennie Press Ltd. (Mixed)	- 1 unit	
- Cargo Transfer (Asian)	- 3 units	
- Trans-Connection	- 4 units	
- Springbok Transport	- 3 units	
- Rahim I. Hamdani	- 3 units	
- Kwezani Transport Limbe Dhadelia Transport, Blantyre (refugee) Universal Transport, Limbe (refugee) Jumani Transport (refugee)	- owners with one or two vehicles	
- Mkwezalembe Transport		
		<u>40 est.</u>

1/ Owned by Manica Freight Services, one of the largest freight forwarding companies.

* Principally indigenous ownership.

Of the total number of vehicles represented in the above two categories, less than 5% or 20 vehicles are of suitable size and in suitable condition for long distance haulage, particularly haulage of containers.

The Government has a 'localization' plan whereby Asian transporters are to cease operation by the end of 1983. Some of these transporters concerned have been established in the industry for many years. When this plan is finally implemented the number of vehicles operated by road transport contractors in Malawi will fall from 394 to 317. This depletion in the number of domestic road transport operators in Malawi may further weaken the international road transport capabilities. Several of these operators have had the financial resources and successful operating experience to engage in long distance trucking.

A complete list of Malawi road haulage contractors showing the number of vehicles and the make and the size of the vehicles used by each operator is given in the following Table 3.3. This specifies in more detail the type of vehicles used, whether used on international or local haulage and typical trip frequencies. Average rates for international transport (in Kwacha per tonne) are also shown.

This shows the potential Malawian fleet that could be used for international operations. However it should be noted that in aggregate all of the units available for use on international routes are not currently operating at the frequency indicated.

TABLE 3.3

LIST OF MALAWIAN ROAD HAULAGE CONTRACTORS

TRANSPORT COMPANY & NO. OF VEHICLES	MAKE OF VEHICLES	SIZE OF VEHICLE	NO. ON INTERNATIONAL HAULAGE	NO. ON LOCAL HAULAGE	INTERNATIONAL RATES	FREQUENCY OF TRIPS
Press Transport 32 units	Mercedes Benz 1621 2624	26 tonne 30 tonne	27 units	5 units	K0.08/tonne km. to K0.12/tonne km.	3 trips per month per truck
F.A. Lambat 15 units	Mercedes Benz	26 tonne	10 units	5 units	Lusaka K110/ tonne	1 trip per week per truck
Mkwezalamba Trans- port. 3 units	3 Mercedes Benz	26 tonne	2 units	1 unit	K73/tonne to Lusaka (ABA set rate)	1 trip per week per truck
Trans Connection 4 units	3 Mack 1 Benz	30 tonne 30 tonne	4 units	-	-	-
Springbok Transport 3 units	1 Benz 1 Benz	30 tonne 26 tonne	2 units	1 unit	K110/tonne Lusaka K140/tonne return	1 trip per week per truck
Intercarriers 7 units	3 Benz 2 Benz 1 Leyland 1 Hino	30 tonne 26 tonne 15 tonne 8 tonne	5 Benz 1 Leyland	1 unit	K100/tonne to Lusaka outbound K110/tonne return	1 trip per week per truck
Progressive Trans- port. 16 units	4 Benz 12 Miscellaneous	30 tonne	4	12 units	K140/tonne to Lusaka	1 trip per week per truck
Kanekha Transport 8 units	6 Benz 2 Benz	26 tonne 30 tonne	2x30 tonne units	6 units	K67/tonne Lilongwe to Lusaka	1 trip per week per truck
Viola Transport 5 units	1 Mack 2 Benz 1 Toyota 1 Hino	30 tonne 26 tonne 7 tonne 7 tonne	3 units	2 units	K180/tonne to Zimbabwe	1 trip per week total

TABLE 3.3 cont'd

TRANSPORT & NO. OF VEHICLES	MAKE OF VEHICLES	SIZE OF VEHICLE	NO. ON INTER- NATIONAL HAULAGE	NO. ON LOCAL HAULAGE	INTERNATIONAL RATES	FREQUENCY OF TRIPS
Amosi Transport 9 units	2 Benz 1 Mack 2 Leyland Hippo 3 Leyland 1 Leyland	21 tonne 30 tonne 25 tonne 7 tonne 15 tonne	1 Benz unit 1 Mack unit	7 units		3 trips per week in all
Container Terminals (Malawi) Lts. 8 units	1 Mack 1 Leyland Land Train 6 Leyland	30 tonne 30 tonne 21 tonne	2 units (intended on Zimbabwe run)	6 units	-	-
Fersons Ltd. 5 units with 3 to be purchased.	3 Benz 5 miscellaneous	30 tonne 12-20 tonne	3 units	5	-	-
J.Tennett & Sons Ltd. 16 units	1 Benz unit 1 Guy unit 1 Bedford TM 1 AEC unit 1 FODEN 1 ERF unit 6 Leyland 1 Ford 1 Toyota 1 Fuso 1 Bedford	23 tonne 36 tonne 21 tonne 27 tonne 12 tonne 12 tonne 15 tonne 10 tonne 7 tonne 7 tonne 5 tonne	Occasionally 3 units	16		
Clan Transport 12 units						
Freight Transport 11 units		ONLY OPERATE	LOCALLY			
A. K. Mahomed 25 units		ONLY OPERATE	LOCALLY			
O. E. Mahomed 25 units		ONLY OPERATE	LOCALLY			

TABLE 3.3 cont'd

TRANSPORT COMPANY & NO. OF VEHICLES	MAKE OF VEHICLES	SIZE OF VEHICLE	NO. ON INTER- NATIONAL HAULAGE	NO. ON LOCAL HAULAGE	INTERNATIONAL RATES	FREQUENCY OF TRIPS
R. I. Mahomed (in Lilongwe)		LOCAL	OPERATION	ONLY		
Road Motor Services 12 units		LOCAL	OPERATION	ONLY		
African Business Men's Association (ABA)	Miscellaneous					
Spearhead Enter- prise Transport & Maintenance Service 15 units	15 Toyota	LOCAL	OPERATION	ONLY		
Fargo Limited 4 units						
Marine Containers 5 units	Leyland	LOCAL	OPERATION	ONLY		
Glens Removal & Storage 3 units		LOCAL	OPERATION	ONLY		
A.M.I. Rennie Press 1 unit	Mack					
Cargo Transfer 3 units						
Rahim I. Hamdi 3 units						

There have been institutional problems contributing to the weakness of the local transport industry. Before 1979 Government used to set road haulage rates. It is reported that these were usually too low to earn a reasonable return. Although private sector hirers of transport frequently paid in excess, Government and parastatals were the predominant users.

Presently Government sets minimum and maximum haulage rates for internal transport, in the range of 10.5 to 27.2 tambala per tonne-km. Because of the keen competition for business, the prevailing rates tend to be at the low end of this range. ADMARC, as the single largest parastatal company purchasing transport essentially for smallholder crops and farm inputs, has specific rates intended for small trucks which are 15.0 tambala per tonne-km. for bitumen roads and 19.6 tambala per tonne-km for non-surfaced roads. Special adjustments are allowed for short hauls but are seldom paid in order to keep transport costs low. These rates would be profitable if vehicle utilization was high. In fact due to an excess of transporters, limited backhauls, long terminal delays and poor transport management, many transporters have failed to operate profitably. This has given road transport a bad reputation among financial institutions.

Real efforts by buyers of transport services to keep transport costs down, through more efficient terminal operations and organization of backhauls, would have helped transporters achieve higher vehicle utilization. For example, for agricultural products it is not uncommon for vehicles on a 70 km haul to spend an average of 200% of running time each day in queuing, loading and offloading.

In summary, the local transport industry, predominantly small operators, has suffered low utilization rates and has not appreciated the relationship of utilization rates and load factors to profitability. Purchasers of transport services also have been concerned with obtaining low tariffs, rather than taking steps to manage their own transport handling more efficiently and thereby permitting transporters to achieve better utilization. Government's policy of free entry to the trucking industry has permitted over-capacity in an industry dominated by small operators who frequently do not clearly understand the market and whom have poor management skills.

This expertise with domestic internal transport has contributed to the present situation where few indigenous truckers have the financial or management capability to undertake the more expensive and organizationally complex tasks of international transport.

4. International Road Haulage

During the time of the Federation the main companies operating the Malawi-Zimbabwe route were United Transport, Clan Transport and Bulwark Transport. There were only three licences on the route operated by Clan Transport and possibly six licences operated by United Transport from Blantyre. Bulwark Transport was a Zimbabwean company which operated from Zimbabwe and was controlled by United Transport's parent company in Zimbabwe. Clan Transport in Blantyre also had a parent company in Zimbabwe, and for this reason many Clan and United lorries belonging to the parent companies in Zimbabwe served the route and use the depots of their subsidiary companies in Malawi to supply all their terminal facilities.

Licences on all the external routes were very difficult for anyone else in Malawi to obtain. Even if the Malawi Government had been prepared to issue permits for their section of the roads, the authorities in Zimbabwe and Zambia were not so inclined. As a result there was no real growth in the external transport capability of Malawi's own transport organization.

This problem was compounded when the border between Zimbabwe and Malawi via Mozambique was closed by the Mozambique authorities in about 1975. After that time no road traffic moved on that route until after Zimbabwe independence in 1980. Since that time the route to Zimbabwe via Tete has again been closed as a result of attacks on vehicles by Mozambique dissidents. The cross border transport capabilities of Malawi road transporters are therefore very limited at the present time. There are a number of operators with large vehicles which could operate these routes, but in several cases their vehicles are operated by their owners more as a sideline than as a professional road transport business.

~~For many years there was little effort by the Malawi Office of the Road Traffic Commissioner to ensure that Malawi transporters obtained foreign permits, although recently the office has actively supported applications by three Malawian firms to operate in Zambia and by eighteen firms (mostly single vehicle owners) to operate through Botswana.~~

Prior to 1977 a few foreign based transport contractors operated into Malawi. These were Swift Transport (Zimbabwe), Clan Transport (Zimbabwe), Biddulphs (Zimbabwe), Glens Removals (Zimbabwe), Central African Road Services (Zambia). These were part of multinational companies having subsidiaries in Zambia, Botswana, Zimbabwe and South Africa.

Since 1977 the list of foreign based contractors into Malawi has expanded considerably. The names are given in the Table 3.4 below - against each is given the countries in which vehicles are registered.

Table 3.4 Foreign registered road haulage contractors

Contract Haulage	(Zambia)
Clan Transport	(South Africa, Zimbabwe, Zambia)
Freight Speed	(South Africa)
Bormans	(South Africa)
Shamrock	(South Africa)
Arrow International	(South Africa)
Central African Road Services	(Botswana)
Swift	(United Kingdom with subsidiaries in South Africa, Zimbabwe, Zambia, Botswana, Botswana, Malawi)
Allways	
Cargo Carriers	(Zimbabwe)
M.T.S.	(Zimbabwe)
Intercept	(South Africa)
Coley Hall	(Zimbabwe & South Africa)
Rennies	(South Africa)
Unfreight	(South Africa)
Interfreightways	(South Africa)
Russel Noach	(Zimbabwe)
North Eastern Transport	(Zimbabwe)

This fleet has been of benefit to Malawi in keeping open a corridor to a sea-port. However, no restrictions were placed on the road service permits pertaining to foreign registered vehicles, with the result that in many cases the foreign registered vehicles were delivering to the door and taking out return loads from source. This meant that Malawi domestic transport, which traditionally provided the feeder service to railways, was left standing idle whilst foreign vehicles collected and delivered their goods. From the economic standpoint it meant that Malawi was paying foreign exchange for the transport of goods moving over a road within its own borders, sometimes for a distance of nearly 600 kilometres. The impact of this on the already depressed domestic transport industry has been critical.

Within the last three months the Government of Malawi has announced that foreign permit holders will have to terminate transport runs within certain restricted areas at Lilongwe from Mchinji and at Blantyre from Mwanza. The main intention of this is to bring traffic back onto the railways. Domestic road transporters should benefit from

this move since this routing will help to re-establish the traditional collection and delivery system to and from the railways. According to traffic data collected in the period May-July 1983, foreign transporters' vehicles consist of 70% of total vehicles entering/departing Malawi (Mchinji) on the Zambian route and 66% on the Mozambique (Tete) route.

Presently only three R.S.A. transporters have permits to carry cargo to Malawi, Zambia, and Zaire, namely SABOT, Truck Africa, and Swift (which is closing down its international operations). Truck Africa is very expensive. Access to Zimbabwe is also limited to those carriers who maintained services during the Zimbabwe civil war. Other R.S.A. transporters carry goods to either the Zimbabwe or Botswana border for transshipment. R.S.A. permits are limited to protect South African rail traffic. This is particularly true between Durban and Johannesburg. Most of the shipments with origin or destination at Durban have to be moved by rail on the Durban/Johannesburg segment. This restriction helps to keep more international traffic on the R.S.A. rail system. Since R.S.A. does not offer container rate, truckers' competitive advantage is improved for high rated rail cargo moving in containers.

Facilities for rail/road transshipment at the R.S.A. borders Beit Bridge/Messina and Zeerust need improvement. In particular, frequent forwarders need to establish offices, handling facilities, and storage, now that these locations are receiving more Malawi and Zambian traffic. Facilities and services at Harare however, are much better and are preferred, accounting for the fact that Zimbabwe trucking firms are capturing a large portion of the Malawi traffic with origin or destination in R.S.A. If R.S.A. railways could be induced to provide an attractive container rate for shipments to/from Harare, the cost of this road/rail routing could be substantially reduced for high value cargo.

Foreign transporters have had two major cost advantages over Malawian transporters. Firstly, vehicle operating costs for South African and Zimbabwean transporters are lower than those of even an efficient Malawi operator. Costs of vehicle purchase, spare parts, tyres and insurance are lower. Equipment is either manufactured locally or imported at lower cost and taxation is generally lower. Additionally vehicles are generally operated by large well managed firms who achieve high rates of utilization.

Secondly these firms have had access to high value imports arriving at Durban or the Harare railhead. Typically they charge road tariffs on import commodities sufficient to cover all or most of the round-trip. Upon arrival in Malawi they can offer charges for backhauls at low rates which are largely additional profit. In contrast the Malawi transporter has to charge a tariff on out-bound cargos sufficient to cover all or most of his round-trip costs. Few Malawian truckers have the

capacity to arrange for a guaranteed high tariff backhaul originating in another country.

The competitive position versus Zambian truckers is better. Operating costs and efficiency levels are more comparable, particularly given present problems and costs of maintaining vehicles based in Zambia. Given the relative proximity of Lusaka and the large volume of Malawi cargo with origins or destinations at the Lusaka railhead, it is easier to obtain high vehicle utilization rates and two directional cargoes. For these reasons, Malawi truckers have been relatively more successful in obtaining a share of these cargo movements. Likewise, these cargoes are the logical target for expanding Malawi fleet participation into international haulage.

C. Global Analysis of Industry Impact and Response to the Current Problem

The actions of major transport users for coping with the transport problems may be grouped into three categories: the exporters of high value produce, the exporters of low value produce and the importers of essential supplies.

1. Exporters of high value produce

Tea at about K.1000/tonne and tobacco at about K.3000/tonne are relatively high value agricultural products. Although accustomed to paying about K.150/tonne for delivery by rail to port of shipment, the industry is prepared to pay prevailing rates of K.300-400/tonne to move products to Durban when rail is unavailable. The industry has critical contract delivery dates to meet. The industries face cash flow problems if payments are delayed. Interest costs mount quickly where short-term borrowing can cost 1% month. This is more critical for the individual tea estates whose financial capacity is more limited than for the large firms which buy tobacco at auction. However, the price buyers will pay for these products is reduced by their estimates of inventory and shipping costs, so the impact is finally passed back to the grower.

Some shipments have been tried through Dar es Salaam but more transport is offered on the Durban route which offers better security and guarantee of delivery times. Even air freight has occasionally been resorted to when attractive backhaul rates have been offered.

All exporters will use the Nacala rail route to the coast, whenever possible, as being the most economical transport route. Their contingency plans are therefore to use Nacala if possible and road/rail or simply the road route to Durban via Zambia and Zimbabwe, or Zambia and Botswana, in the event of congestion on the Nacala rail route.

The packaging of tea and tobacco in containers, rather than break-bulk, has been accelerated by the transport problem. Nacala port has relatively good capacity for handling containers but is very limited for break-bulk. Since all of the container boxes are controlled by freight forwarders, the shippers are completely dependent on these agents to organize the most expeditious transport at the lowest cost. Sometimes these agents have been able to negotiate backhauls to Durban at rates competitive with rail.

2. Exporters of low value produce

Exporters of sugar and maize, worth K.150 and K.275/tonne respectively, are most seriously affected by the Beira rail line closures. The value of the product will not stand the cost of long distance road transportation, therefore options are very limited. In the main producers hope to use the Nacala line, and have to stockpile their produce during times when the line is congested. When covered warehousing capacity is exhausted, produce has to be stockpiled under tarpauling.

Maize is available for large quantity exports this year, and has been sold largely to regional markets and therefore has to move mainly out of Malawi by road. High transport costs tend to constrain access to other export markets.

In the case of sugar the world market price largely dictates the transport options. The possibility of water borne navigation on the Shire and Zambezi rivers, which operated at the turn of the century, is out of the question because of route insecurity. If security were restored, the Beira rail route would presumably be available again, and this would be used.

Small tonnages of sugar are being exported by rail. these have to compete for limited break-bulk capacity with maize sold to Mozambique. Some sugar tonnage is moving at low rates as backhauls to other higher value imports, but opportunities are increasingly limited. With large quantities of sugar and maize competing for out-bound trucking capacity, the traditional imbalance of tonnage in favour of imports is being reversed. Therefore it is possible that it will take a long time to move all of the available sugar and maize out of the country. Maize is likely to receive priority both because it has been sold to regional markets, and since ~~it can carry a higher transport cost by virtue of having~~ a lower production cost.

3. Importers of essential supplies

Importers of essential supplies, which include liquid fuels and fertilizers, have a number of options open to them regarding routing. Although it may be more expensive, there will always be an alternative mode of transport and the additional cost can be passed on to the buyer. While there is obviously an economic limit as to how much consumers will pay, it has been demonstrated that in the case of fuel, the consumer in the short-term will pay the additional cost whilst in the long-term the industrial user will look for alternative types of fuel. For example, twenty years ago, a large number of tea estates used oil firing which has now been superseded by firewood, which is grown on estates themselves on an eight year cycle.

In the case of fertilizer, estates have not reduced their facilities purchases in the face of induced higher transport costs. However, as discussed earlier, Optichem would cease to produce fertilizer if raw materials had to be delivered at road transport costs.

Smallholder use of fertilizer for the 1982/83 season was restricted by availability of about 70,000 tonnes whereas the targeted need was estimated at about 120,000 tonnes. Nevertheless, production of maize and tobacco is at record levels this year. This is a result of putting into production more hectareage in anticipation of higher prices. Thus, there will again be a shortfall between estimated demand and supply for fertilizer as discussed in Section I, D.1.

The demand for fertilizer is a function of the price of fertilizer to the smallholder (presently subsidised by ADMARC) and the price paid to the smallholder for his output. A World Bank Mission constructed a simple model to simulate these relationships with respect to maize as follows:

- 1) Assume present fertilizer price and present maize prices (base case). For the base case, total fertilizer demand is 92,000 tonnes, (fertilizer demand for maize is 57,860 tonnes) and production is 1.24 million tonnes. For the alternative scenarios, if maize prices were not increased, total fertilizer demand would drop to 66,000 tonnes and fertilizer demand for maize would decline to 42,850 tonnes and production would drop to 0.8 million tonnes. With a 10% increase in maize prices, fertilizer demand and production would be similar to the base case. Farm profits are maximized in the base case while Government revenues are greatest when fertilizer prices are increased without an increase in maize prices.
- 2) Assume a 45% increase in fertilizer price, which would eliminate almost all the subsidy on fertilizer imported through Durban, with a 10% increase in maize prices or with present maize prices. 1/

An increase greater than 10% in the price paid for maize or K. 11 per 90 kg bag is not considered. The current selling price of maize FOB Malawi is about K. 13 per 90 kg bag. ADMARC handling and transportation costs are estimated at K. 34/tonne or about K. 3. per 90 kg bag. Therefore ADMARC would appear to break even at a price of K. 10 per 90 kg bag.

1/ For a detailed description of the model and other policy simulations considered see "Fertilizer Policy Analysis", prepared by an IBRD Mission for the Government of Malawi, June, 1983.

Prices of other essential imports from non-regional sources are impacted by higher inland transport costs which thus increases the cost of industrial production and the cost of living. Presently there are no evident shortages of consumer production and industrial inputs nor business failures which can be directly attributed to the transport problem.

4. Summary

It is clear that the transportation bottlenecks and attendant transport costs are serious and impact on different industries to varying degrees. Certainly it will create a further deterioration in the terms of trade by increasing the cost of imports and decreasing the value of exports. Net foreign exchange earnings potential is diminished to the extent that additional foreign exchange is required for transport, earnings are foregone for production which can not be moved, and agricultural productivity is diminished due to the lack of adequate fertilizers. The cost of living will rise as the costs of domestic production and direct imports rise as a consequence of additional transport costs.

The Malawi Government and the private sector, however, have taken many initiatives to cope with the problem and to alleviate the hardships which might otherwise have occurred. Those actions directly related to transport have been described earlier in this report. Otherwise the economy could have been crippled by the crisis.

In a subsequent section several innovations are described for alleviating the transport problem which will have considerable potential for reducing the foreign exchange costs of external transport as long as rail transport capacity is restricted.

D. Comparative costs of alternative routings

1. Typical rail charges

In general a large proportion of railway costs are fixed overhead costs. The tariff structure for the transport of goods has been so designed that the marginal transport costs are covered for each commodity. The recovery of overhead costs is then split between commodities so as to reflect what each commodity can bear. In some cases Government may vary the tariffs in order to encourage certain sectors by keeping costs down, but the above approach broadly reflects the strategy for setting tariffs in Malawi.

As an example, the following Table 3.5 shows typical tariffs of Malawi Railways as of January 1983 for different commodities. Manufactured goods accordingly have higher tariffs per tonne/kilometre.

With respect to international operations Malawi Railways (M.R.) works generally in close cooperation with C.F.M. (Mozambique rail). Tariffs were last raised in January, 1983. Tariff classifications are uniform, although there are small differences in the rates. Most freight is billed on one invoice to the customer for inter-systems movement with each system prorating the relative costs.

A study of Malawi Railways has been undertaken by Coopers and Lybrand (Final Report, October, 1982). In this, efforts have been made to separate costs by terminal and movements, into fixed and variable costs. This will clarify actual overhead costs, and will in turn have implications for the determination of tariff levels.

2. Typical road haulage charges

International road haulage to and from Malawi is competitive but is dominated by some large road haulers in neighbouring countries. As indicated earlier, Malawi transporters do not have a large share of this market. In some cases quasi-monopolists tend to set highly profitable rates, whilst in other cases many small firms with available capacity tend to bid down rates below full costs in order to obtain a small share of the market. Rates are also considerably complicated by the different pricing for front and back-hauls. For a foreign road hauler a journey to Malawi represents a front haul, which traditionally sets the price whilst for a Malawian based operator, this represents a back haul. This has resulted in lower haulage rates out to South Africa than Malawi operators would quote, since South Africans would price for the inward journey and offer low back haul rates for trucks which might otherwise return empty. This is a key factor affecting the viability and competitiveness of Malawi operators.

Table 3.5 Rail tariffs (effective January 1983)

Commodity Class	Commodity Example	- Example of Tarrifs for Moving one tonne from Lilongwe.		Effective rate per tonne-km (tambala) in Malawi
		Border to Lilongwe	Border to Nacala	
		MR	CFM	
1	Electrical goods	58.20	87.80	15
2	Cotton goods	58.20	77.00	15
3	Tyres	51.90	71.30	13.3
4	Iron & Steel Prod.	51.90	65.50	13.3
5	Cables	44.70	62.20	11.5
6	Lubricating oil	44.70	59.70	11.5
7	Tractors	37.60	56.10	9.7
8	Beer, tea, tobacco	37.60	53.50	9.7
9	Flour	31.20	43.00	8.0
10	Bitumen	31.20	36.20	8.0
11	Coffee	22.63	27.88	5.8
12	Sugar	22.63	23.42	5.8
13	Fertilizer	15.67	19.45	4.0
14	Coal	15.67	16.15	4.0
	Petrol	37.49	48.54	

Container

Min. 20t per km per wago

Motor vehicle
< 1800 kg

Min. 45t per km per veh.

> 3600 kg

120t per km per veh.

Border to Nacala : 615 km.
* Lilongwe to border: 389 km.

Source Malawi Railways: Limbe

With this in mind it is interesting to compare typical haulage rates as quoted recently for different commodities. (See Table 3.6)

Table 3.6 Examples of negotiated front and back haul rates to/from Lilongwe via Lusaka (1983) - Malawi Kwacha/tonne (rounded)

	EXPORTS				IMPORTS		
	Bagged Maize	Bagged Sugar	Containerized Tea	Containerized Tobacco	Bagged Fertilizer	Fuel	Containerized Manufactured goods
Road to Lusaka	70	60			60	90	
Road to Harare (via Lusaka)			95	110	110		
Road to Dar Es Salaam (via Lusaka)		320		345	90(B)		
Road/rail to Dar Es Salaam (via Lusaka)	215			325			
Road/rail to Durban (via Lusaka & Harare)			300	300	160		
Road/rail to Durban (via Lusaka and Gabarone)	265		(160) B	315	180		270
Road to Durban	200		400		245		265

Note: For coal see III, A, 6 and 7.

* B = backhaul

It is not easy to generalize a typical road tariff structure due to the different value and bulk of commodities, different handling required and inter-modal transfers on some of the routes. Possibly actual road haulage rates can be best compared on the Lilongwe-Lusaka road link.

In terms of fuel it is interesting to compare road transport costs of petrol from Ndola to Lilongwe and diesel (delivered from South Africa) from Lusaka to Lilongwe. Presently rates for petrol are averaging 14 tambala per tonne kilometre (or approximately K.105 per tonne) and 12.5 tambala per tonne kilometre for diesel (or approximately K.95/tonne). (See Table 3.7)

Generally rates are quoted in terms of Malawian Kwacha per tonne for a particular route. Whilst transporters know their operating costs per tonne kilometre, road haulage rates are quoted per truck or per load for a particular movement. Hence it is usually difficult to compare movement costs per tonne kilometre for different commodities.

Table 3.7 Fuel Transport Financial Costs 1983 from
Zambia to Malawi 1/

	Petrol (tambala per tonne kilometre)	Diesel (tambala per kilometre)
A. <u>Existing Road Rates</u>		
Zambian (BP) Contractors	14.4	12.2
Zimbabwean (MFC) Contractors	14.3 - 13.5	12.1 - 11.4
Malawian (PVHO) Contractors	13.0	13.0
B. <u>Anticipated Road Rates 2/</u>		
Zambian Contractors	13.6	11.7
Zimbabwean Contractors	12.7	10.6
Malawian Contractor 3/		
C. <u>Rail Tariffs (for comparison)</u>		
Movement costs	6.0	6.0
Terminal costs 4/	0.4	0.4

For domestic transport, the Government sets minimum and maximum haulage rates which are presently in the range of 10.5 - 27.2 tambala per tonne kilometre. On the Blantyre to Lilongwe route this would correspond to K.51 - 132 per tonne. ADMARC also levies standard rates for road haulage, primarily for small trucks, which are 15 tambala per tonne km. on bitumen roads and 19.6 tambala per tonne km. on non-bitumen roads.

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- 1/ Source MOTC Paper on Petroleum movement costs (draft)
- 2/ Assuming improvements in handling, management etc. at Ndola and Lusaka.
- 3/ Not calculated but probably similar to Zambian contractor costs.
- 4/ Total cost per km divided by average loaded wagon distance of 1,000 kms (Nacala/Blantyre approximately 800 kms, Nacala/Lilongwe approximately 1,200 kms).

Table 3.8

Priority Routings
according to least cost transport corridor

PORT	CORRIDOR	IMPORTS			EXPORTS			
		FERTILIZER	COAL	FUEL	CONT. TEA	CONT. TOBACCO	MAIZE	SUGAR
BEIRA	1. Rail from Beira	1	1	1	1	1	1	1
	2. Rail from Nacala	1	1	1	1	1	1	1
NACALA	3. Rail Road from Durban via Harare and Tete (Rail: Durban-Harare; Road: Harare-Tete-Mwanza)	2	2		3	3		3
	4a. Rail/road from Durban via Harare and Lusaka (Rail: Durban-Harare, Road: Harare-Lusaka-Mchinji)			4				
	4b. Rail/road from Durban via Messina and Harare and Lusaka (Rail: Durban-Messina Road: Messina-Harare-Lusaka-Mchinji)	4			2	2		
	5. Road/rail from Durban via Gabarone and Lusaka (Rail: Durban-Gabarone-Lusaka; Road: Lusaka-Mchinji)							
	6. Rail/road from Dar-es-Salaam via Lusaka (Rail: Dar-es-Salaam-Lusaka, Road: Lusaka-Mchinji)			4			4	
DAR ES SALAAM	7. Road from Dar-es-Salaam via Lusaka							
	8. Road/lake from Dar-es-Salaam via Mbeya; (Road: Dar-es-Salaam Mbeya)			3			3	4
	9. Rail/road/lake from Dar-es-Salaam via Mbeya	3	3	2	4	4	2	2

Source: UNDP/UNCTAD

In order to minimize total inland transport costs, preferred routings are listed by priority for different commodities in the following Table 3.8. This shows in summary the preferred routing by priority (1-4) for the nine routes considered for different import / export commodities.

3. Total costs of alternative routings

In Section I.D the principal transport links and facilities have been described. In terms of international transport, the routes shown in Table 3.9 exist for the movement of commodities in and out of the Republic of Malawi. The shortest distances to a port are the two rail links through Mozambique and the longest are the two road/rail routes through Botswana. For each of the routes listed a detailed analysis of the costs of moving different commodities has been undertaken within the UNDP/UNCTAD Transit Transport Project for the Southern Africa Sub-Region. The principal costs and their implications are discussed below.

The cost of transport of four representative high and low value commodities was studied via each route - bagged fertilizer and containerized general cargo imports, and bagged sugar and containerized tobacco exports.

Firstly inland transport costs were calculated which included the cost of road or rail transport, the cost of handling at terminals or modal transshipment points, port charges at the port and modal change points.

Secondly total transport costs were calculated which included inland transport costs plus the cost of shipping, insurance and inventory costs associated with time spent by goods in transit.

The following Tables 3.10 and 3.11 summarize the results of this analysis.

Table 3.9 International Transit Routes *

	<u>Mode</u>	<u>Int. Transit Distance km.</u>
1. Villa de Fronteira-Beira	Rail	439
2. Entre-Lagos-Nacala	Rail	615
3. Zobue-Tete-Harare-Messina-Durban	Road/rail	2568
4a. Mchinji-Lusaka-Harare-Messina-Durban	Road/rail	3121
4b. "	Road/rail	3665
5. Mchinji-Lusaka-Livingstone-Gabarone	Road/rail	3437
6a. Mchinji-Lusaka-Dar es Salaam	Road/rail	2731
6b. "	Road	2661
7a. River Songwe-Mbeyi-Dar es Salaam	Road/rail	955
7b. "	Road	993

* See Table 1.10 for details.

Table 3.10

96

Inland Transport Costs (K. per tonne) - December, 1982

Corridor	Import	Import	Export	Export
	Bagged Fertilizer to Limbe 39t per wagon 28t per truck	Gen. Cargo (motor car spares) containerized to Limbe 12t per T.E.U.	Bagged Sugar from Bangula 38t per wagon 28t per truck	Tobacco Containerized from Lilongwe 9t per T
1. Rail from Beira	57.6	162.0	35.6	130.5
2. Rail from Nacala	57.6	162.0	46.9	130.5
3. Rail/Road from Durban via Tete and Harare (Rail: Durban-Harare; Road: Harare-Tete-Mwanza)	127.1	548.2	201.0	301.8
4a. Rail/road from Durban via Harare & Lusaka (Rail: Durban-Harare, Road: Harare-Lusaka-Mchinji)	194.5	425.5	267.7	314.7
4b. Rail/road from Durban via Harare and Messina (Rail: Durban-Messina Road: Messina-Harare-Lusaka-Mchinji)	184.6	385.6	251.3	291.1
5. Road/rail from Durban via Gabarone & Lusaka (Rail: Durban-Gabarone-Lusaka; Road: Lusaka-Mchinji)	209.4	328.1	271.9	329.7
6a. Rail/road from Dar-es-Salaam via Lusaka (Rail: Dar es Salaam-Lusaka, Road: Lusaka-Mchinji)	199.2	345.2	216.5	323.6
6b. Road from Dar es Salaam via Lusaka	319.4	379.6	333.0	345.7
7a. Road/Lake from Dar es Salaam via Mbeya; (Road: Dar es Salaam Mbeya-Chilumba)	191.6	345.0	207.2	384.7
7b. Rail/road/lake from Dar-es-Salaam via Mbeya	136.8	296.7	148.6	305.9

Source: UNDP/UNCTAD

a. Inland Transport Costs

The two rail routes to the Mozambiquan ports are clearly the least cost for all commodities due to their short distance and low rates. Excluding these, the next lowest cost routes are:

- by road to Harare via Tete and by rail to the port of Durban for incoming fertilizer (approximately 2,600 kms from Blantyre)
- by Lake Malawi to Chilumba, by road to Mbeya and by rail to Dar es Salaam for outgoing sugar and incoming containerized general cargo (if this route was functional) (approximately 1,500 kms from Chipoka).
- by road through Lusaka to Harare and Messina, and by rail from Messina to Durban for outgoing containerized tobacco (approximately 3,500 kms from Lilongwe).

For all of the above calculations it has been assumed that road haulage rates are similar in both directions, which unless traffic is directionally balanced, is unusual, with backhaul rates usually being lower than front haul rates.

Generally the costs correlate with the distance and complexity of the routes used. If the Tanzanian road link was constructed, a road/lake/road or a rail/lake/road/rail link would be attractive for low value commodities such as sugar and fertilizer, and even for containerized general cargo and fuels, with rail between Mbeya/Dar es Salaam offering the lowest costs. Ro-Ro facilities have been assumed for this routing. Without this new corridor, and if the Tete route is disturbed by insurgency, the road/rail link via Lusaka and transiting Zimbabwe to South Africa offers the next least cost alternative. However it is interesting that for a high value commodity (containerized tobacco) the least cost routing (after Mozambique) is by road to Lusaka, by road through Zimbabwe and then by rail to Durban.

It should be stressed that all of these costs include both movement charges by road and/or rail and also port handling charges, clearing and forwarding agents charges, modal transfer charges, etc. Generally these constitute about 10-15% of total inland transport costs for break bulk commodities and about 20-25% for containers.

Table 3.11 TOTAL TRANSPORT COSTS, DISTANCES AND TRANSIT TIMES ^{1/} (K. per tonne - December, 1982)
(Including Shipping Costs) ^{2/}

		Import Bagged Fertilizer to Limbe 39t per wagon 28t per truck	Import Gen. Cargo (motor car spares) con- tainerized to Limbe 12t per TEU	Export Bagged Sugar from Bangula 38t per wagon 28t per truck	Export Tobacco Containeri- zed from Lilongwe 9t per TEU
1. Rail from Beira	Dist. 640.0 Cost ^{3/} 76.0 Days 27.0	640.0 600.9 26.0	501.0 71.0 36.0	1,019.0 408.5 29.0	
2. Rail from Nacala	Dist. 815.0 Cost 76.1 Days 27.0	815.0 600.9 27.0	944.0 86.8 28.0	1,002.0 406.9 28.0	
3. Rail/road from Durban via Tete & Harare (Rail: Durban-Harare Road: Harare-Tete- Manica)	Dist. 2,661.0 Cost 164.7 Days 29.0	2,661.0 791.2 29.0	2,757.0 245.1 29.0	3,009.0 769.1 30.0	
4. Rail/road from Durban via Harare & Lusaka (Rail: Durban-Harare, Road: Harare-Lusaka-Mchinji)	Dist. 3,609.0 Cost 255.8 Days 31.0	3,609.0 577.1 31.0	3,705.0 316.2 31.0	3,261.0 612.3 30.0	
4b. Rail/road from Durban via Harare & Lusaka (Rail: Durban-Mossina, Road: Mossina-Harare Lusaka-Mchinji)	Dist. 3,467.0 Cost 225.1 Days 27.0	3,467.0 827.1 27.0	3,563.0 298.2 27.0	3,119.0 581.6 26.0	
5. Rail/road from Durban via Gaborone & Lusaka (Rail: Durban-Gaborone-Lusaka Road: Lusaka-Mchinji)	Dist. 3,806.0 Cost 252.4 Days 36.0	3,806.0 780.4 36.0	3,902.0 321.2 36.0	3,458.0 635.1 35.0	
6a. Rail/road from Dar es Salaam via Lusaka (Rail: Dar es Salaam-Lusaka; Road: Lusaka-Mchinji)	Dist. 3,100.0 Cost 251.4 Days 49.0	3,100.0 868.3 49.0	3,196.0 277.6 49.0	2,752.0 712.8 48.0	
6b. Road from Dar es Salaam via Lusaka (Road: Dar- Lusaka-Mchinji)	Dist. 3,030.0 Cost 369.3 Days 24.0	3,030.0 842.7 24.0	3,126.0 391.5 24.0	2,682.0 672.1 24.0	
7a. Road/Lake from Dar-Es Salaam via Mbeya (Road: Dar-Mbeya-Chilumba)	Dist. 1,789.0 Cost 234.6 Days 24.0	1,789.0 784.7 24.0	1,885.0 256.5 24.0	1,625.0 700.6 23.5	
7b. Rail/Road/Lake from Dar- Es-Salaam via Mbeya (Rail: Dar-Mbeya, Road: Mbeya-Chil.)	Dist. 1,770.0 Cost 178.5 Days 27.5	1,770.0 740.1 27.5	1,899.0 196.0 28.0	1,667.0 624.3 27.0	

Source: UNDP/UNCTAD

- 1/ Transit times include overland travel time and time spent at the port but excludes sea voyage time.
2/ To and from North European ports.
3/ Assumes transit times improve.

b. Total Transport Costs

As indicated, the total transport costs include the actual costs of shipping, insurance and inventory costs. Inventory costs are based on the inland transit time of the cargo from the ships side. Ships' journey time is not included. Whilst shipping costs do not alter the differentials significantly inventory costs do, since for a high value product, long transit times can be costly.

The same least cost routes again result when total transport costs are considered, with the proposed routes to be developed using the lake via Tanzania remaining attractive. Whilst this introduces additional modal transfers, it is suited to low value commodities which cannot bear the additional higher transport costs on other routes.

The total distances and transit times incurred are also shown for comparison.

IV. OPTIONS FOR USAID ASSISTANCE

A. Introduction

In this section four options for USAID assistance are examined.

- 1) Commodity assistance to help develop a Malawian international road haulage industry.
- 2) Technical assistance to Government and private enterprise to improve skills in international road transport management.
- 3) Development of a new North/South transport system linking Malawi with Dar-es-Salaam.
- 4) Rehabilitation of the Zambian section of the road linking Lusaka with Malawi at Mchinji.

In considering these options, it should be emphasized that the present transport crisis has been generated by conditions in Mozambique which are beyond Malawi's control, both with respect to the insurgency problem and the infrastructure and management problems of the Mozambique railway. While one can anticipate some significant improvements on the Nacala line by 1987, as a consequence of SATCC sponsored and donor commitments thereto it is impossible to predict how soon security may improve on the Beira line or if and when physical and management improvements can be made on this route.

We have excluded, as options, any USAID assistance to Mozambique. If and when security and political relationships permit, options for USAID assistance in coordination with the donor community should be examined as high priority since routes through Mozambique, operating efficiently, provide the best system for all of Malawi's non-regional external trade.

Meanwhile donor assistance should seek to offer options which will as quickly as possible meet Malawi's requirements over the next five years without investing a large amount of resources in systems or facilities which may become redundant when and if the Mozambique problems are overcome.

Options 1 and 2 above are very attractive because they can be implemented fairly quickly and therefore provide relief over the next 5 years. Moreover a well managed Malawi trucking capacity has the flexibility of being utilized on any of several routings as conditions and commodity flows change. The investment in vehicles furthermore is amortized within 5 years.

Option 3 is more long-term. The new routing would take at least until 1987 to be put into place and would require large amounts of capital investment which could be underutilized if conditions on traditional Mozambique routings permit most extra-regional external trade to return thereto. This new system, however, would provide a measure of insurance against continued problems in Mozambique. It would also reduce Malawi's heavy dependence on R.S.A. as both a supplier of imports and as a principal transit country for external trade. It would also improve Malawi's potential for export of maize to Tanzania.

Option 4 deserves serious consideration, because the rate of road deterioration poses a serious risk with continued heavy use of this key route for Malawi's external trade. The deterioration moreover has been generated by recent heavy traffic utilization for Malawi's needs. While a rehabilitation program may take several years to complete, most urgent repairs should be undertaken as quickly as possible. Investments incurred would continue to provide an important service for Malawi's regional trade, particularly for maize exports.

B. Strengthening of the Malawi International Road Haulage Industry

The present condition of Malawi's road haulage industry, its deficiencies and causality, and the services provided by foreign transporters have been discussed in Section III, B. Government policy and actions with respect to improving the management and capacity of road transport have been discussed in Section II; this section addresses the Government's intent to encourage the establishment of new enterprises specifically designed to create a well-managed, commercially competitive, Malawian based capacity for international trucking. The creation of such enterprises should meet the objectives listed in Section II, B.4 and conserve foreign exchange, as explained later in Section V, A.

In spite of there being about eleven Malawian operators owning about 60 vehicles which are sometimes used for international trips, few are engaged in international haulage full-time nor do their vehicles conform to specifications considered necessary to meet foreign permit requirements and to perform efficiently and competitively on long international routes. Many of these vehicles are unreliable because they are poorly maintained.

1. Sizing of fleet

The actual number of tractors, trailers and other equipment which should be included in a Malawian fleet will require further detailed study. Parameters which will determine the fleet sizing and specifications include:

- a) Quantities and types of cargo requiring road transport
- b) Routes to be serviced
- c) Percentage of traffic on these routes to be handled by Malawian trucks
- d) Targeted utilization (i.e. number of kms. per year per unit)
- e) Operating plan for utilization of trailers, which may involve purchasing upto three trailers for each tractor unit
- f) Number of existing units which are suitable and available for international use
- g) Number of new trucking organizations created and their management capabilities.

By way of example, one can make a gross estimate of total requirements. There is likely to be at least 400,000 tonnes and more likely 500,000 tonnes of Malawi

generated international trade to be transported annually by road up to 1987. If one-third of this is targeted for Malawi transporters (150,000 tonnes), if average haul distance is 1,200 kms, and trucks make eight round trips per month (115,000 kms/yr) with an average payload of 25 tonnes, a total of 120 tractor units would be required and an equal or probably greater number of trailers. ^{1/} It should be assumed, however, that much of this fleet would be purchased independently of donor financing and that such a target would be attained gradually over several years.

2. Pro-forma Cash flow and Profitability

This sub-section is devoted to demonstrating the various conditions under which units in such a fleet might be operated and the operating costs and cash flows implied. This demonstrates the potential commercial viability of the proposed scheme.

a) Turn-around

For purposes of illustration, a single tractor unit is assumed to be operating between Lilongwe and Lusaka. The following analysis, in cases 1 and 2, shows the difference between operating eight and four round-trips per month given existing costs facing the small operator. Eight trips should not be difficult to achieve if containers are carried in both directions as loading/unloading operations should be rapid. Given present loading/unloading experience with break-bulk only four round trips are assumed. However, if the tractor is uncoupled from the trailer at the point of delivery and a loaded trailer is available for prompt pick-up, productivity should be as high as for containers. This would require ownership of three trailers for each tractor. This option is presented in Case 3.

b) Loading

In Case 1, the most profitable scenario, both single and two directional loads are analysed though the former is dismissed. In other cases only two directional loads are considered.

Case 4 is a variation of Case 3. Here it is assumed that a new trucking organization exists to help finance the one tractor, three trailer package on 48 month terms and that through this organization insurance is obtained more cheaply.

$$\frac{1}{25} \frac{150,000 \text{ tonnes}}{\text{tonne/trip}} \div 50 \text{ trips/yr} = 120 \text{ units}$$

c) Rates

The rates assumed are the most common quoted per trip where backhauls are guaranteed. This amounts to about K.3,000 per round trip of approximately 1,500 kms or K.2.00/km.

d) Hire purchase of rig

Cases 1-3 are based on the current selling price ex-Maltraco of a Mack 686 with semi-trailer which is as follows:

Mack 686 Horse	K.126,000
Trailer	<u>K. 40,000</u>
	K.166,000

Payment Terms

15% Deposit on Horse	<u>K. 18,900</u>
Balance Horse	K.147,100
Trailer	K. 40,000

This is to be repaid monthly inclusive of prevailing 14% p.a. interest on the initial balance, as follows:

	<u>Period</u>	<u>Monthly</u>	<u>Total</u>	<u>Total</u>
			Y1	Y2
Tractor (horse)	18 Mths	K.7,200	K. 86,400	K.43,200
<u>Trailer</u>	12 Mths	K.3,800	<u>K. 45,600</u>	<u>-</u>
Total Instalments			K.132,000	K.43,200
<u>Plus Deposit</u>			<u>K. 18,900</u>	<u>K.-</u>
Total Annual Payments			K.150,900	K.43,200

Case 4 similarly assumes a 15% deposit on the tractor, none on the trailers and 18 months financing at 14% p.a. Interest rates are the same, on the assumption that even new financing schemes will charge commercial rates. Vehicle costs are assumed equal in all cases, i.e. duties and taxes would be included.

e) Running costs

FUEL - On advice from an operator on this route, fuel consumption is 390 litres for travel Lilongwe/Lusaka. Half of the fuel is considered as purchased in Malawi at K.0.92/litre and half in Zambia at K.0.67/litre. These costs have been averaged to K 0.78/litre. Account is taken of non-earning kilometrage on a ratio of

approximately 5% of total kilometres.

PREVENTIVE MAINTENANCE - This is allowed at Maltraco's current rates.

REPAIRS - AMI's repairs experience has been used as a guide, with the truck covering approximately 130,000 kilometres per annum. A major engine overhaul has been allowed in the fourth year.

TYRES - One complete tyre change every 35-40,000 kms has been allowed on the advice of an operator on the route. This excessive allowance comes from the condition of the road, which is causing major tyre failures. New tyre prices are incorporated, and the benefits to be derived from retreading are ignored.

INSURANCE - Insurance costs in Cases 1-3 are at prevailing rates, K.30,000/yr for the small operator. A large operator has been quoted K.17,000/yr. In Case 4 we assume K.20,000/yr, making some allowance for additional trailers even though only one of three would be on the road at one time.

INFLATION - Both costs and income have been computed at current rates.

3. Analysis of Cases

Case 1: The operator has a small negative cash flow in year 1. Cash flow is strongly positive in year 2 when the operator begins to show a return on overhead and profit. Over five years the operation is highly profitable. The operator should be able to add another unit to his fleet by year 3. Single direction hauling is very unprofitable and should be avoided on most trips.

Case 2: The operator has a large negative cash flow in year 1 and over the five year period operations are not commercially viable even with two way loads.

Case 3: There is a sufficiently large negative cash flow in year 1 to discourage most operators from adopting the option of purchasing three trailers for each tractor. Although cash flow in year 2 is positive, cumulative cash flow is still negative. In years 3-5 the operation makes a substantial contribution to overhead and profit.

Case 4: Year 1 cash flow is positive and all years thereafter. Cash flow is more evenly distributed than in other cases. Costs per/km are equal to Case 1 and lower than in Cases 2 or 3. Over five years, this option makes a large contribution to overhead and profit, although slightly less than Case 1, both in absolute and discounted cash flow values. Case 4 is therefore attractive both in terms of cash flow and returns for transport of breakbulk.

A Malawian based international trucking operation therefore can be successful and profitable. It must, however, aim at tractor utilization of 130,000 - 150,000 kms/year of revenue generating operation. In order to achieve this, standing time for loading and offloading must be minimized. This is no particular problem when carrying containers since terminals are equipped to handle these cargos rapidly. However the required productivity cannot be achieved when carrying break-bulk cargos because of the time required to load and unload at terminals. At Lusaka this often includes awaiting arrival of loaded wagons or empties for loading. These delays are beyond the control of the truck operator who is not compensated for his standing time. Consequently, the best system would be to operate three trailers for each tractor. Loaded trailers could then be immediately dropped at terminals and new loads collected. Because of the high capital cost of this system, financing of equipment must be available on longer terms than at present. Longer term financing would also help the cash flow of the operators handling containers alone but this is not essential. Insurance is a substantial operating cost and measures to reduce this should have high priority and will significantly improve profitability.

There are two major conclusions to be drawn with respect to the viability of Malawian international trucking:

- There are many features of the cost of owning and operating a long-haul vehicle which place severe limits on entry and profitability.
- If these are overcome, and if efficient vehicle utilization can be achieved, international trucking can be profitable.

INCOME/EXPENDITURE OF MACK 686 WITH SEMI TRAILER

CASE 1 Route: Lilongwe/Lusaka

	Y1	Y2	Y3	Y4	Y5	TOTAL
	8 Trips per month with containers					
Annual Kilometres-En Route	144,000					
Other	7,000					
Running Costs - Fuel	55,000	55,000	55,000	55,000	55,000	275,000
PM Contract'	4,500	4,500	4,500	4,500	4,500	22,000
Repairs	5,000	10,000	15,000	30,000	15,000	75,000
Tyres	55,000	55,000	55,000	55,000	55,000	275,000
Insurance	30,000	30,000	30,000	30,000	30,000	150,000
Wages	3,000	3,000	3,000	3,000	3,000	15,000
Lease Purchase Cost	150,900	43,200	-	-	-	194,100
Total Expenses	303,400	200,700	162,500	177,500	162,500	1,006,600
Income - One Way Load	144,000	144,000	144,000	144,000	144,000	720,000
Two Way Load	288,000	288,000	288,000	288,000	288,000	1,440,000
Contribution to overhead and Profit (Loss) - One Way Load	(159,400)	(41,000)	(18,500)	(33,500)	(18,500)	(270,900)
- Two Way Load	(15,400)	87,600	125,500	110,500	125,500	464,500
Average Cost =	K1.33/km					

CASE 3: General Bulk Cargo - loaded both directions; 8 trips/month

	Y1	Y2	Y3	Y4	Y5	TOTAL
Running Costs	152,500	157,500	162,500	177,500	162,500	817,500
Hire Purchase Cost	<u>225,000</u>	<u>65,000</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>290,000</u>
Total Expenses	377,500	222,500	162,500	177,500	162,500	1,107,500
Income	<u>288,000</u>	<u>288,000</u>	<u>288,000</u>	<u>288,000</u>	<u>288,000</u>	<u>1,440,000</u>
Contribution to overhead and profit (loss)	<u>(89,500)</u>	<u>65,500</u>	<u>125,500</u>	<u>110,500</u>	<u>125,500</u>	<u>332,500</u>

Average cost = K1.73/km

CASE 4: Above with 4 years instalment payments and insurance at K20,000/year

	Period	Monthly						
Horse	48 mths	K3480	41,760	41,760	41,760	41,760	-	167,040
Trailers (3)	48 mths	K3900	46,800	46,800	46,800	46,800	-	183,200
Total Instalments		K7380	88,560	88,560	88,560	88,560	-	350,240
Plus Deposit			18,900					18,900
Total Annual Payments			106,460	88,560	88,560	88,560	-	369,140
Running Costs			142,500	147,500	152,500	167,500	152,500	762,500
Hire Purchase Cost			106,460	88,560	88,560	88,560	-	372,140
Total Expenses			248,960	256,060	261,060	256,060	152,500	1,154,640
Income			288,000	288,000	288,000	288,000	288,000	1,440,000
Contribution to overhead and profit			39,040	31,940	26,940	31,940	135,500	285,360

Average cost = K1.33/km

4. Cost Constraints

- a) The cost of a tractor and trailer is about K.160,000. Only supplier financing is available on 18 month terms for the tractor and 12 month terms for the trailer. These short repayment periods reportedly reflect the terms on which capital is available to the supplier. Equipment costs are significantly lower in South Africa and Zimbabwe where terms up to five years are available. Down-payments are 15-30% of vehicle cost. Import and surtax is about 12.5% which the dealer has to pay upon customs clearance.
- b) No organization offers equipment leases.
- c) Bank financing for working capital requirements is unavailable. Capital is scarce and transporters are considered poor risks. There is no facility for borrowing using transporter contracts as collateral.
- d) Insurance rates are very high. Risks are perceived as great and the problems of settling claims for losses occurring outside Malawi are difficult and costly. Insurance firms are selective in whom they will underwrite. Comprehensive insurance for a truck/trailer carries K.30,000 premium. For this value, the operator gets coverage with a 7.5% deductible on each accident. Some discounts are available for large fleets and a record of no claims.
- e) Payments for services rendered are normally paid in 60-90 days but may take 150 days. Payments for services received are collected within 30 days when provided by the shipping agent (such as purchases of fuel in other countries, commissions, etc). Local fuel purchases are payable before delivery. Diesel costs K. 0.92/litre, of which 46% is tax, substantially higher than in Zambia, Zimbabwe or the R.S.A.
- f) Maintenance costs are relatively high because spares have to be imported and high rates of taxation - likewise for tyres.

Consequently, it is estimated that an operator wishing to purchase and operate one tractor-trailer unit would need K.70,000 available for the first year alone.

C. Provision of Technical Assistance

The following proposals for technical assistance and training have been previously proposed:

Technical Assistance to the Ministry of Transport and Communications for an expatriate position for short and long term contingency planning, and for transit transport monitoring and control.

Training of three different kinds:

(1) For the Ministry of Transport and Communications:

One person from the International Transport Office in transit transport planning and control, and one person from the Road Traffic Commissioner's Office in the issuance and control of route service permits, vehicle and driver registrations, heavy vehicle driver instruction and testing, and heavy vehicle technical inspections.

(2) General instruction and training of Malawi transport managers and operators in:

- a. Operations planning, management and supervision;
- b. Preventive maintenance planning, reporting and programming and in failure diagnostics;
- c. Costing and financial management.

(3) Technical training within individual commercial operations concerning:

- a. Selection and control of operator/drivers;
- b. Proper operator/driving techniques for large articulated vehicles;
- c. Running operations, maintenance and care; ~~prevention of serious disabilities;~~
- d. Loading techniques for weight distribution to comply with axle loading limitations;
- e. Coping with non-mechanical institutional difficulties encountered by drivers on international routes.

The proposed technical assistance remains valid. The Ministry is charged with providing the Secretariat for the National Transportation Committee with the following:

- . preparing policy recommendations with respect to integration of all modes of transport;
- . representing the Government's interests within MITCO;
- . promotion of new trucking organizations;

- . negotiation of bi-lateral transport agreements with neighbouring countries; and
- . identification of new transport schemes that would help alleviate present constraints.

Thus the need is apparent for an experienced multi-modal transport planner to assist the Secretariat in executing the above tasks over the next five years. The position of a UNDP advisor, who was providing valuable research and analysis in support of the Ministry, has been recently terminated, for lack of further UNDP financing.

With regard to training, the requirements of Item (1) above are clearly desirable. The MOTC must develop someone who can replace the expatriate specialist and this will require a combination of formal training complemented by on-the-job training as the expatriate's counterpart. There is no one in the Road Commissioner's Office with the skills which will be required for control of heavy vehicle movements at the scale which is already occurring and which will continue to grow as an indigenous industry develops. Overseas training, probably of an on-the-job character is very necessary.

With respect to the training in Items (2) and (3), requirements cannot be more clearly defined at this point. The needs and manner of implementation must clearly be related to the characteristics of the new transport companies to be established in consultation with the managers of these enterprises. The Malawi Polytechnic already offers a four year vehicle mechanical training industry. Training on specific vehicle makes can be provided in dealers workshops.

D. Development of the North/South Corridor from
Blantyre to Dar es Salaam

As discussed in Section II.B.5 Government is very interested in developing a new inter-modal system to provide access to Dar es Salaam.

In order to make this access route to Tanzania viable, the following sub-projects which require funding can be identified:

In Malawi:

1. Karonga - River Songwe - Ibanda road link. Distance 50.3 km (46.3 km in Malawi and 4 km in Tanzania). Estimated cost K. 19.6 million.
2. Champhoya - Mbowe road link. Distance 59 km.
3. Expansion of port and facilities at Chilumba or Kapwe.

The road links are critical to making the corridor fully accessible by road. In addition, if the lake is to be used seriously for the transport of commodities (e.g. fuel, coal and sugar) the port infrastructure at either Chilumba or Kapwe will require improvement. Also handling facilities or storage at either of these ports or at Chipoka will require development for either fuel or Ro-Ro facilities.

In Tanzania:

The Karonga - Ibanda road will be built to link with the TanZam highway and the Tazara railway. The Tazara line has been encountering financial and operational difficulties since its opening in 1975. Presently there are plans, backed by the SADCC transport and communications commission, to undertake a rehabilitation program, which will involve maintenance and improvements of sections of the line and new rolling stock. A project for the development of sidings at Mbeya should be considered for transshipment of fuel to road tankers or for the handling of containers.

The World Bank is preparing a project for the rehabilitation and strengthening of sections of the TanZam highway and in addition is evaluating a project for the improvement of the port of Dar es Salaam. This will involve the expansion of berths for container ships and container handling facilities, which is valuable for the improvement of this corridor.

By the end of 1984, the North-South Corridor study findings, the engineering design studies and cost estimates for the Karonga-Ibanda road, and details of the

IBRD's assistance to Tanzania should be available. Potential donors will then be in a position to select viable project elements for financing as part of a total system.

E. Strengthening of the Zambian Road Link from Mchinji to Lusaka

Due to the transport difficulties through Mozambique heavy vehicle traffic has dramatically increased and will continue to grow on the Mchinji to Lusaka road as long as movements through Mozambique are constrained. It is envisaged that one half of Malawi's total annual imports and exports (approximately 300-400,000 tonnes) will have to travel on this route.

Assuming no overloading, this implies that approximately 50,000 standard equivalent (8.2 tonne) axles per year will be imposed on this road by Malawi related traffic or effectively 0.5 million axles over ten years. It has been noted that parts of this road are already in poor condition and parts have failed completely. Partial reconstruction is therefore required accompanied by a program of preventative maintenance. The section between Lilongwe and Mchinji in Malawi is in good condition.

The Zambian government has apparently allocated ZK 500,000 towards the reconstruction of one section of the road between Nyinda and Petauke. However, the Roads Department lacks funds to properly maintain the road. An evaluation is required to assess the actual condition of the road in Zambia, incorporating non-destructive load testing of the pavement. This would enable specific sections requiring repair to be identified and a realistic estimate of rehabilitation costs to be made. Funding an IQC contractor to undertake such a study should be given high priority.

The following Table 4.1 gives an order of magnitude estimate of the expected costs for complete rehabilitation. Requirements to keep the road serviceable for say 5 years should be considerably less.

Table 4.1 Estimate of rehabilitation costs for
Mchinji-Lusaka road

Major reconstruction <u>1/</u>	65 km	300,000	=	\$19,500,000
Major repair of potholes <u>2/</u>	65 km	100,000	=	\$ 6,500,000
SSBT and minor repair of potholes <u>3/</u>	130 km	75,000	=	\$ 9,750,000
Major repair of shoulders <u>4/</u>	140 km	75,000	=	\$10,500,000
Minor repair of shoulders <u>5/</u>	<u>300 km</u>	50,000	=	<u>\$15,000,000</u>
				\$61,250,000

Source: USAID-Lusaka -
Groceman memo 5-11-83.

Reconstruction of selective road segments is therefore important with an associated program of periodic and routine maintenance. It should be stressed that with traffic volumes increasing, if rehabilitation is delayed and adequate maintenance is not undertaken in the interim, the total cost of rehabilitation will increase due to a larger proportion of the road requiring reconstruction. From simply the Malawian perspective the rehabilitation of this road is of significant strategic regional and national importance.

-
- 1/ Includes removal of fill and replacement of fill, sub-base, base, shoulders and SSBT.
 - 2/ Includes repair of potholes and shoulders and the application of SSBT.
 - 3/ Includes shoulders repair.
 - 4/ Includes repair of edge of roadway and SSBT on entire road and shoulder surface.
 - 5/ Includes addition of gravel and SSBT on shoulders and road.

V. FOREIGN EXCHANGE IMPACTS

A. Foreign Exchange Savings Potential

1. Malawi Owned Trucks

There are several means by which the increased utilization of Malawi owned and operated trucks on international routes may generate net savings of foreign exchange. Assuming average vehicle operating costs at K. 2.00/km, annual vehicle utilization of 130,000 km/year, and Malawi transporters operating at the same costs as foreign firms the following estimates can be made:

- (a) The tax component of costs incurred by foreign vehicles is now being paid by Malawi in foreign exchange. A Malawi transporter would charge most of these costs in local currency (principal exceptions being taxes on fuel and spares purchased in other countries). Assuming that the tax component of foreign operators is 20% of costs (in Malawi it is about 30%) and that payment of 60% of these taxes could be saved, net savings would be 12% of VOC or K. 0.25/km.
Total foreign exchange saved per unit/year = K.32,500.
- (b) A portion of the vehicle operating costs, net of taxes, now being paid in foreign exchange would also become local currency costs. These are principally driver wages, insurance, licenses, maintenance labor, a portion of the capital costs of locally built trailers (say 25%), and perhaps half of overheads and profit (allowing for a portion of management wages, profits, and purchase of goods and services still requiring foreign exchange). The estimated savings on these items is K. 0.3/km.
Total foreign exchange saved per unit/year = K. 39,000.

Therefore about 30% of operating costs, presently paid to foreign transporters in foreign exchange, would become local currency costs for a Malawian transporter or about K. 70,000/year for each tractor-trailer operated by a Malawi firm replacing a foreign company. For a fleet of 30 trucks total annual foreign exchange savings would therefore be of the order of K. 2.1 million/year.

There may additionally be foreign exchange saved by the extra capacity and flexibility which the expanded Malawi fleet provides to the nation's exporters. Any number of scenarios could be assumed with variables including seasonal constraints, for specific products and specific routes. Each case would have to be examined at a micro level to arrive at particular values.

2. Better organization of transport through MITCO

A new company, MITCO, is being established designed to control and manage the inland transport of import and export traffic moving by road, or by road in combination with rail. Its operations should generate foreign exchange savings through rationalization and therefore cost reduction of product flows transported by both foreign and Malawian carriers. This includes (a) better co-ordination of import and export movements to reduce empty running, (b) smoothing out peaks in demand to improve vehicle utilization, (c) providing long-term contracts with front-end payments for haulers to reduce risks, increase vehicle utilization and reduce costs, and (d) providing improved transshipment facilities to improve vehicle utilization and reduce terminal costs.

Foreign exchange savings will be generated to the extent that more tonnage can be carried at a very small additional marginal cost (principally in fuel consumption and tyre wear). In other words the average cost per tonne/km will be reduced by spreading existing transport costs over a larger volume of goods moved.

The potential foreign exchange may be estimated by:

- (a) calculating the number and average load factor of all trucks entering and leaving Malawi, net of fuel tankers which have no backhaul.
- (b) assuming a reasonable target for improving the average load factor. This can be quite high now that agricultural products for exports, such as maize and sugar, are available in sufficient quantities to provide a return load for all in-bound trucks and that most in-out movements have to use the Lilongwe-Lusaka corridor.
- (c) estimating an average trip length.
- (d) estimated an average tonne/km cost.

From recent traffic counts (May-July) at the Mchinji border post average load of trucks, excluding tankers, entering is 26.4 tonnes and ratio of loaded vehicles to total is 0.84. For trucks exiting the average load is 26.2 tonnes and the load factor is 0.88.

Assuming that this increases to 0.95, Lilongwe-Lusaka trips (750 kms) are about 35% of total trips, 45% of the road traffic has O/D Lilongwe/Harare (1290 kms), 20% has O/D Lilongwe/Durban (2856 kms), therefore the average length of truck haul is 1413 kms.

By increasing the load factor by 10%, one is effectively obtaining extra capacity equivalent to 141 kms for each truck trip. The average number of trucks (less tankers) now transiting Mchinji is 940/month in both

directions, which would offer the equivalent of 1.6 million kms of extra truck capacity per year. At an estimated cost of K. 2/km/truck, which would have otherwise been incurred to transport these goods, one could conclude that the productivity savings potential is equal to K. 3.2 million/year. This should be reduced by say 15% to recognize the additional fuel and tyre consumption and the vehicle operating costs paid in Malawi. Clearly this is a macro-estimate which may be improved by further study.

This potential saving of course would increase as tonnage moved by road increases. However, the average length of haul may decrease as MITCO management optimizes routings and will change with major variations in commodities moved.

3. Savings due to foreign transporters contracts being partially payable in local currency

It has been current practice to pay foreign truckers' contracts fully in foreign exchange. Negotiations are underway with certain Zimbabwe truckers to make 15% of the value payable in Malawi Kwacha. This would be intended to cover fuel maintenance, and some driver allowances costs in Malawi. To the extent that fuel and spare parts are more expensive in Malawi, this may have the effect of increasing total financial costs slightly. Moreover fuel and spare parts net of Malawi taxes are foreign exchange costs to Malawi, even though paid in Kwacha. Therefore the net foreign exchange savings for Malawi would be derived largely from payment of taxes on some petrol and spares in Malawi, as opposed to payment of such taxes to foreign transporters in foreign exchange. The net foreign exchange benefits of 15% payment of transport charges in Kwacha is likely to be in the order of 5% of total costs or K. 0.1/truck/km. Total traffic based on the sample cited above is 19 million of which at least 15 million is by foreign vehicles. Therefore potential foreign exchange savings are K. 1.5 million/year.

There is of course the possibility that other countries would expect reciprocation, i.e. that for services purchased from Malawian transporters, a portion would be paid in Kwacha. As long as more services are provided by foreign transporters, Malawi would still be in a position to save some foreign exchange.

4. Transfer of cargo from road to rail

Within the last three months the Malawi Government has announced that foreign permit holders will have to originate and terminate their transport runs in or near Lilongwe for trucks operating through Mchinji and in or near Blantyre for trucks operating through Mwanza. There is also a plan being developed to terminate fuel

arrivals at Mchinji for onward internal shipment by rail. New storage and transfer facilities would be required.

The main intention of this policy is to move more traffic on to the under-utilized internal rail system. It should also have the effect of reducing foreign exchange costs of international transport. Presently, Malawi is paying foreign exchange for transport over the domestic legs of internal trips carried by foreign transporters, sometimes for distances as great as 500-600 kms.

Portions of the domestic sections under the new rules, would be paid in Kwacha to the railroad and to local truckers who traditionally collect and deliver goods from the railway. Data on the potential savings is not available at this time but would depend on the following variables:

- (1) Tonne-km of specific commodities affected.
- (2) Distribution of these tonne-km between internal road and rail.
- (3) Calculation of the foreign exchange component of domestic rail and road carriage costs.
- (4) Subtracting, from the total charges of foreign carriers for domestic leg hauls, the foreign exchange component of the local rail and road costs for the same service.

Cargo transfer from truck to rail would also reduce traffic and road wear on the heavily travelled M1 between Lilongwe and Blantyre. It has been estimated that over a four year period the present value of road deterioration and maintenance avoided by diverting petrol flows along (Mchinji/Blantyre) to rail would be of the order of K. 600,000. For other cargoes on the segment Lilongwe-Blantyre savings could easily be several times as great.

5. Summary

One can see that the various actions which the Malawi Government has taken, or plans to initiate, have potential for substantial foreign exchange savings of at least K. 7 million/year and possibly as great as K. 10 million/year. This compares with a range of K. 63-88 million of foreign exchange which Malawi will spend on inland international transport in 1983 (see Section B.2 which follows).

B. Financial and economic costs of the transport crisis

1. Historical costs

In this section an attempt is made to measure the macro-impacts of the transportation crisis by comparing the inland transportation costs which Malawi incurred in 1980 with estimates for 1983, 1980 being the last year that normal levels of traffic were carried by the Mozambique Railways linking Malawi with the ports of Beira and Nacala. The fall-off in traffic is dramatically shown in Figure 2.

It is not possible to obtain these transport costs directly from foreign trade or transport services statistics since goods exported FOB Malawi do not include transport costs, while goods imported CIF Malawi have transportation costs hidden in total delivered cost. One must therefore take tonnage statistics for international transport by rail and road, estimate average transport costs, and attempt to calculate the additional costs of shifts from rail to road. In this respect, the work of the UNDP/UNCTAD transport advisor working on the Transportation Project for the Southern African sub-region (referred to as Project RAF/77/017) is very helpful. Another complication arises from the fact that land movement costs are only a portion of total land transportation costs, the latter including freight forwarding services, storage, cargo handling at terminals and transshipment points, insurance and inventory costs. Moreover, while purchases from South African suppliers to replace overseas suppliers of imports has generally increased total delivered costs, the differential in some cases has been narrowed by South African suppliers offering better ex-factory prices than the equivalent landed port price of overseas suppliers.

The distribution of Malawi's external trade by route for 1980 and 1981 is shown in Table 5.1.

Figure 2

AVERAGE LOADED RAILWAY WAGONS RECEIVED PER DAY BY THE MALAWI RLY FROM MOZAMBIQUE BY MONTHS 1981-1982

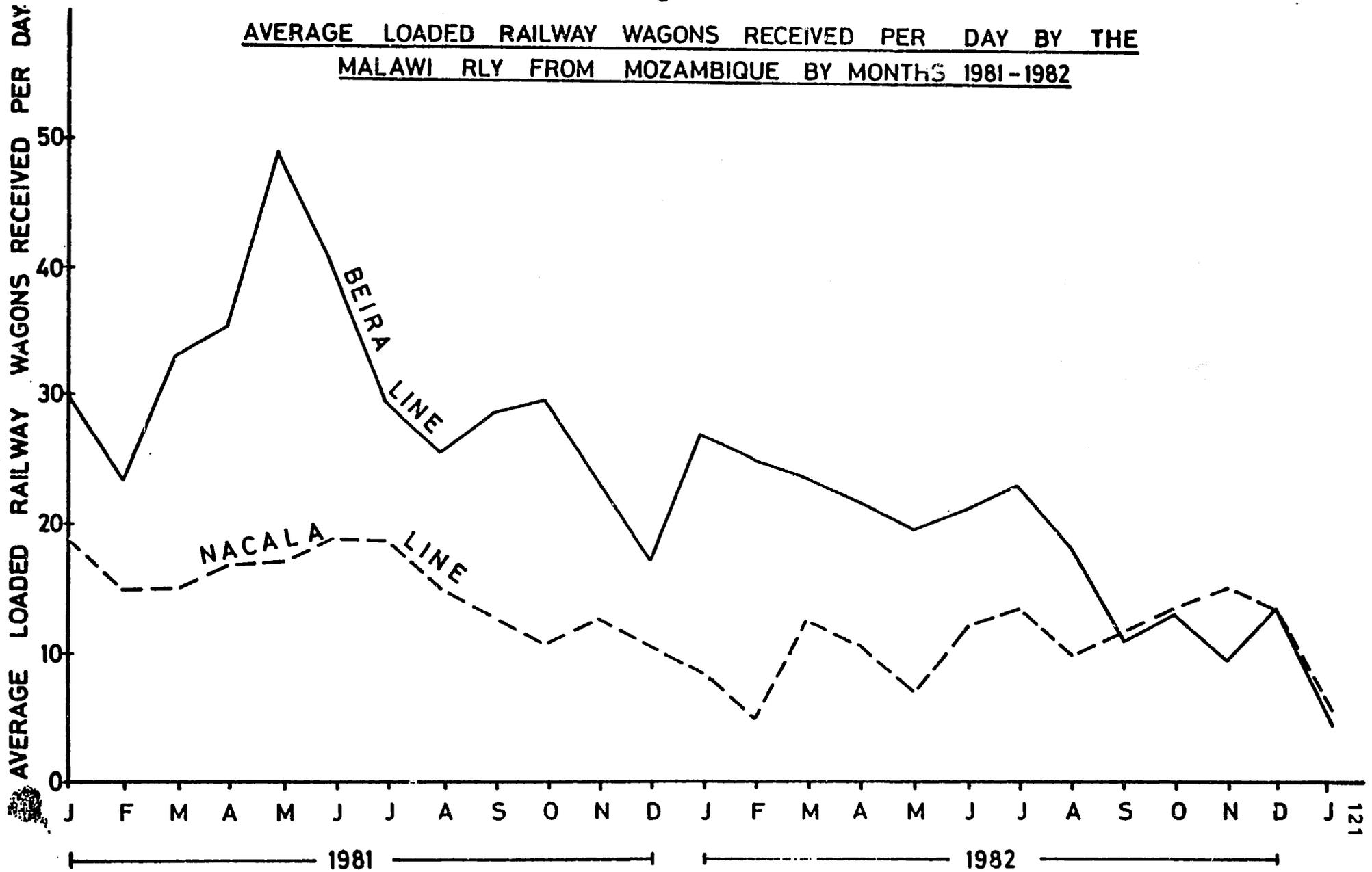


Table 5.1 Distribution of Malawi's External Trade
by Route: 1980-81
('000 tonnes)

		<u>Rail</u> <u>Via Beira</u>	<u>Rail</u> <u>Via Nacala</u>	<u>Road</u> <u>Via Tete</u>	<u>Road</u> <u>Via Lusaka</u>	<u>Total</u>
1980	Exports	197.6	87.4	12.3	7.7	305.0
	Imports	<u>313.1</u>	<u>147.4</u>	<u>20.2</u>	<u>12.3</u>	<u>493.0</u>
	TOTAL	510.7	234.8	32.5	20.0	798.0
1981	Exports	194.7	73.9	12.4	10.9	293.0
	Imports	<u>267.2</u>	<u>125.4</u>	<u>81.0</u>	<u>53.9</u>	<u>531.8</u>
	TOTAL	461.9	199.3	93.4	64.8	824.8

Source: Malawi Railways and
Project RAF/77/017

The railroad carried 93% of the external trade tonnage in 1980 and 80% in 1981. Total imports by rail in 1980 were 461,000 tonnes, producing a revenue to Malawi Railways of K. 4.94 million or about K. 10/tonne. ^{1/} Total exports by rail were 285,000 tonnes producing a revenue of K. 2.33 million or about K. 8.2/tonne. Rates (tonne-km) on both routes and for both Mozambique and Malawi railroads are similar. For Blantyre-Beira the total rail distance is 567 kms of which 359 kms are in Mozambique. Therefore total revenues by route accruing to Mozambique Railways payable in foreign exchange are as follows:

	<u>1980 Railroad Revenue (K million)</u>		
	<u>Beira</u>	<u>Nacala</u>	<u>Total</u>
Exports	4.5	2.7	7.2
Imports	<u>9.3</u>	<u>6.2</u>	<u>15.5</u>
TOTAL	13.8	8.9	22.7
For C.F.M.	8.7 (63%)	6.8 (76%)	15.5 ^{2/} (68%)

For the additional 52,000 tonnes moving by road we estimate an average transport cost/tonne in 1980 of K. 200 or a total of K. 10.4 million. Almost all of this road haulage would have been contracted to foreign truckers.

^{1/} Revenues from Transport Performance Bulletin 1982, Transport Planning Unit, Economic Planning Division, Office of the President and Cabinet, p. 30 Table 3.

^{2/} Actual payments to Mozambique Railways in 1980 according to the Reserve Bank were K. 20.7 million. This, however includes some carry-over payments for freight actually moved in 1979 and port charges and is therefore somewhat higher.

Even for Malawi transporters, foreign exchange costs represent approximately 65% of total costs. Therefore we assume K. 10 million as the foreign exchange cost of truck transport. Malawi Railways operations moreover, incur foreign exchange costs. We estimate these conservatively as 20% of total 1980 operating costs or about K. 2.6 million.

Therefore for 1980, Malawi spent about K. 35.3 million to move imports and exports overland, of which the foreign exchange component would have been approximately K. 28 million.

2. Costs in 1983

We estimate the costs that Malawi will incur in 1983 for overland transport of exports and imports by estimating total tonnage, allocating these to particular routes and applying average cost factors to these routes.

Total import/export tonnage projected for 1983 is estimated at about 600,000 tonnes (Table 1.25). This is approximately the same level as in 1980 and 1981 (shown above). Complete 1982 Statistics are not yet available. Maximum capacity of the Nacala line is estimated at 315,000 tonnes/year, under present operating conditions (see Table 1.28). With Beira closed nearly 500,000 tonnes or 62% will have to be moved by road as compared with 7% in 1980 and 19% in 1981.

Vehicle counts at Mchinji and Mwanza (see Tables 1.29, 1.30 and 1.37) may be used as an indicator of present volumes and origins and destinations of imports and exports moving by truck. We assume that this distribution is representative for the whole year. The distribution, average cost and total costs are then as follows:

Table 5.3 Projected road transport costs 1983

<u>Country</u>	<u>Tonnage</u>	<u>Av. Cost K. per tonne</u>	<u>Total Cost K(000)</u>
Zambia	250,000	80	20,000
Zimbabwe	150,000	150	22,500
S. Africa	75,000	300	22,500
Mozambique	25,000	80	<u>2,000</u>
			K. 67,000

Traffic counts cited above show that tonnage is moving at an annual rate of 75,000 tonnes through Mwanza and 270,000 tonnes through Mchinji. If the May-July traffic level does not increase, there will be a shortfall in capacity of 140,000 tonnes i.e. road transport will account for only 345,000 tonnes. The most likely products to suffer will probably be sugar and maize. In this case, the transport costs shown above might be 30% lower or about K. 47 million. The loss of foreign exchange from sales foregone however would be of the order of K. 200/tonne FOB Malawi or K. 28 million.

One can estimate the 1983 costs of rail movements on the Nacala-Malawi rail route by using the assumptions shown in Table 1.28 where capacity was discussed. This may be a little optimistic for 1983 but provides a reasonable approximation.

Table 5.4 Projected rail transport costs 1983

Imports (to Blantyre)	Tonnage	Av. Cost K/tonne		Total Cost K(000)		TOTAL
		MR	CFM	MR	CFM	
Fuels: Diesel	25,000	17.2	26.7	430	1098	
Petrol	25,000	18.2	48.5	455	1667	
Fertilizers (containerized)	25,000	7.6	19.5	760	677	
General cargo	100,000	21.7	59.7	2170	8140	
Break-bulk (fertilizer)	25,000	7.6	19.5	190	678	
Sub-Total	200,000			4005	12260	16265
<u>Exports (from Lilongwe)</u>						
Tea/Tobacco	90,000	37.6	53.5	3384	8199	
Break-bulk (sugar,maize)	25,000	22.6	23.4	565	1150	
Empty tankers						
Sub-Total	115,000			3949	9219	13298
Total	315,000			7954	21609 ^{1/}	29563

Total rail costs are therefore estimated at K. 29.6 million of which K. 21.6 million is payable in foreign exchange. Adding trucking costs of K. 67 million gives a total freight cost estimate of about K. 97 million of which K. 88 million maybe in foreign exchange. If we were to assume a shortfall in road capacity of 140,000 tonnes and in rail of 50,000 tonnes the low range estimate would

^{1/} Reserve Bank estimates are K. 10.3 million.

be about K. 73 million or K. 63 million in foreign exchange.

One can conclude therefore that to move about 800,000 tonnes in 1983 (maximum projection), as compared to a similar volume in 1980, will cost about 275% more in total and about 314% more in foreign exchange.

The Reserve Bank of Malawi estimates that the total costs of insurance and freight for Malawi's imports in 1983 will be K. 34.3 million greater than in 1980. ^{1/} No estimate for exports have been made. The Bank also estimates that the ratio of freight and insurance charges to value of imports has risen from 21% in the period 1977-80 to 30% for 1982-83.

Another estimate of additional foreign exchange costs generated by the 1982 transportation crisis was prepared by the UNDP/UNCTAD Project, RAF/77/017. This is particularly interesting because it considered both economic and foreign exchange incremental costs for not only overland transport but for port storage, interest on tied-up capital, procurement to replace normal imports, and other costs such as delayed sugar sales, Malawi Railways revenue losses, loss and deterioration of goods. The study compared actual 1982 costs with costs which would have been incurred if normal transportation and commercial systems had been operating. Projections for 1983 were made.

Excess transportation costs were estimated for 1982 at US \$25.5 million for all incremental costs. Projections for 1983 were respectively US \$ 17.7 million and US \$ 24.4 million. Details are shown in Table 5.5.

^{1/} This is calculated by taking a sample of insurance and freight charges and comparing the C.I.F./F.O.B. margins.

Table 5.5

Financial Consequences of Malawi's 1982 - 3
Transit crisis

126

	<u>U. S. D O L L A R S</u>			
	<u>Foreign Ex. Cash Flow</u>		<u>Economic Costs</u>	
<u>PROCUREMENT OF REPLACEMENT SUPPLIES</u>				
Fertilizers	4,093,034	5,500,000	204,992	282,500
Petroleum Fuels	5,438,319	3,900,000	1,455,460	3,900,000
Other industrial materials	-	2,000,000	-	-
	<u>- 9,531,343</u>	<u>-11,400,000</u>	<u>1,660,452</u>	<u>4,182,500</u>
<u>EXCESS TRANSPORT COSTS</u>				
Fertilizers	3,719,551	2,300,000	2,441,551	7,178,850
Petroleum Fuels	1,381,561	9,105,700	1,381,561	9,105,700
Coal	138,740	840,000	138,740	840,000
Industrial Imports	450,000	2,280,000	450,000	2,280,000
Consumer Imports	120,000	760,000	120,000	760,000
Motor Vehicles	-	630,400	-	630,400
Tea Exports	250,000	500,000	250,000	500,000
Tobacco Exports	126,000	300,000	126,000	300,000
Other Exports	450,000	950,000	450,000	950,000
	<u>- 6,635,852</u>	<u>-17,666,100</u>	<u>5,337,552</u>	<u>22,544,950</u>
<u>PORT STORAGE COSTS</u>				
Fertilizers	100,000	768,000	467,266	400,734
General cargo, Beira	10,000	42,000	41,937	10,000
Motor Vehicles, Beira	50,000	123,000	163,000	10,000
	<u>- 160,000</u>	<u>- 933,000</u>	<u>672,203</u>	<u>420,734</u>
<u>INTEREST ON TIED-UP CAPITAL</u>				
Fertilizers	75,000	710,000	685,049	204,000
Petroleum Fuels	19,000	-	38,000	-
General cargo, Beira	35,400	176,305	141,705	70,000
Motor Vehicles, Beira	26,102	182,718	104,410	104,410
Containers, Nacala	52,185	225,555	208,740	69,000
Tea Exports	172,425	200,000	172,425	200,000
Sugar	150,000	650,000	600,000	200,000
Increased industrial inventories	-	25,000	-	50,000
Tobacco	35,000	104,750	139,750	-
	<u>- 565,112</u>	<u>- 2,274,328</u>	<u>2,090,079</u>	<u>897,410</u>
<u>OTHER COSTS</u>				
Delayed sugar sales	- 8,400,000	+ 8,400,000	-	-
Malawi Rwy. revenue loss	250,000	- 500,000	1,250,000	1,500,000
Loss & deterioration	-	-	1,217,600	750,000
	<u>8,650,000</u>	<u>+ 7,900,000</u>	<u>2,467,600</u>	<u>2,250,000</u>
<u>GRAND TOTAL</u>	<u>-25,542,307</u>	<u>-24,373,428</u>	<u>12,248,186</u>	<u>30,295,594</u>

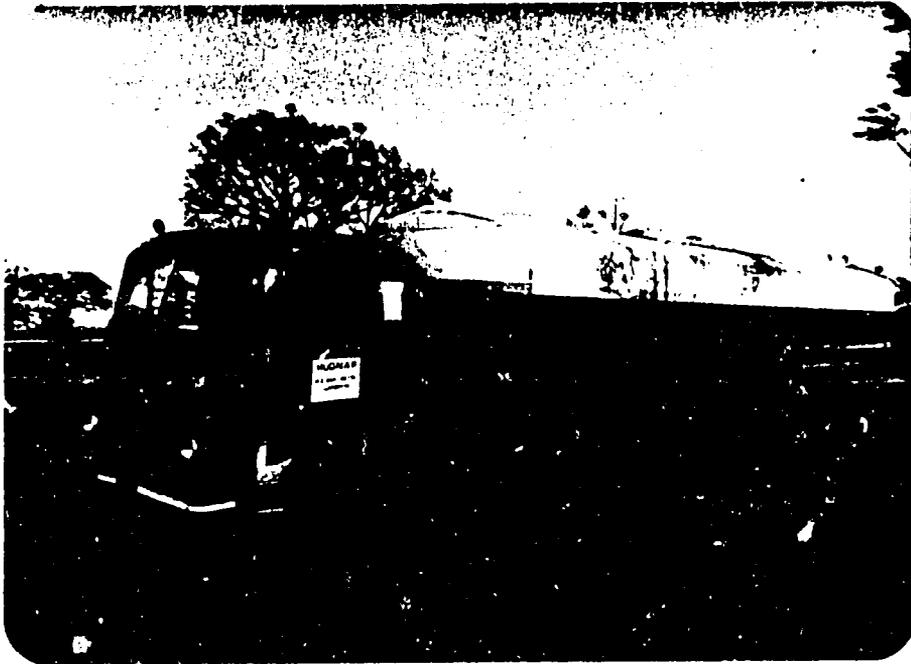
PERSONS VISITED (cont)

21. Maltraco	- Bruce Montgomery
22. UNDP/UNCTAD	- Moniake
23. Coal Users Committee	- Gemmell
24. Glens removals	- P. Charlton
25. Namingomba tea estates	- Barnes
26. Springbok transport	- General Manager
27. Fargo Ltd	- "
28. F. A. Lambat	- "
29. O. E. & A. K. Mohamed	- "
30. Trans Connection	- "
31. Clan Transport	- "
32. Container Terminals	- "
33. A. M. I.	- "

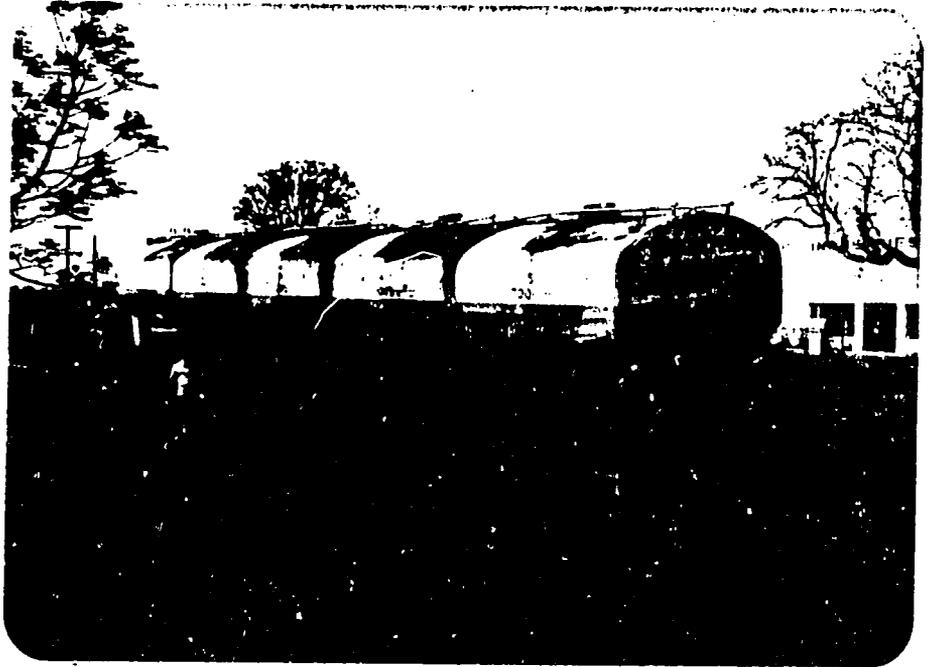
PHOTOGRAPHS

FUEL TANKERS

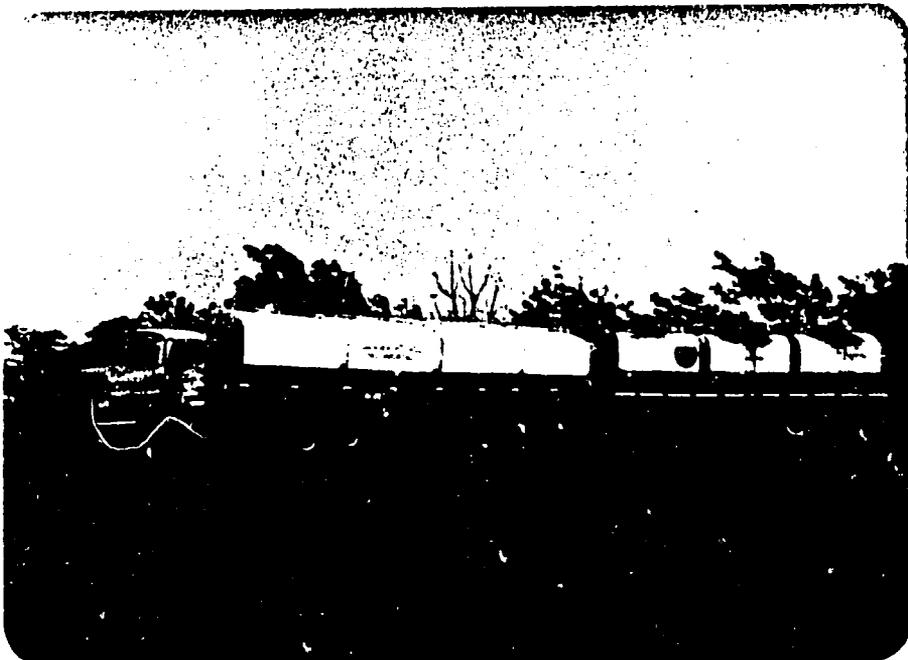
1 tank - 25000 l.
6 axles - 20 wheels
Semi-trailer



5 tanks - 38100 l.
6 axles - 22 wheels
Semi-trailer

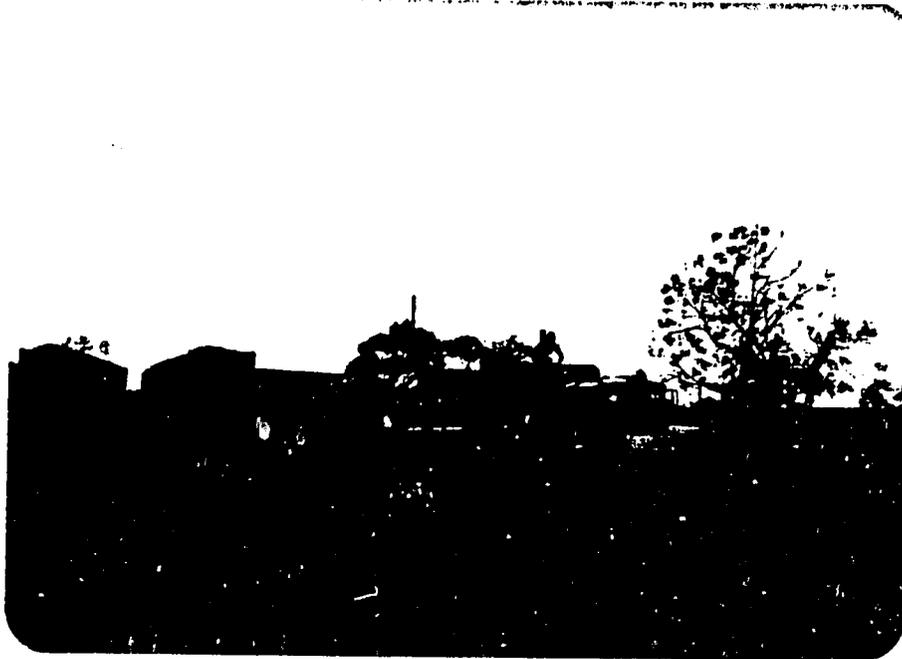
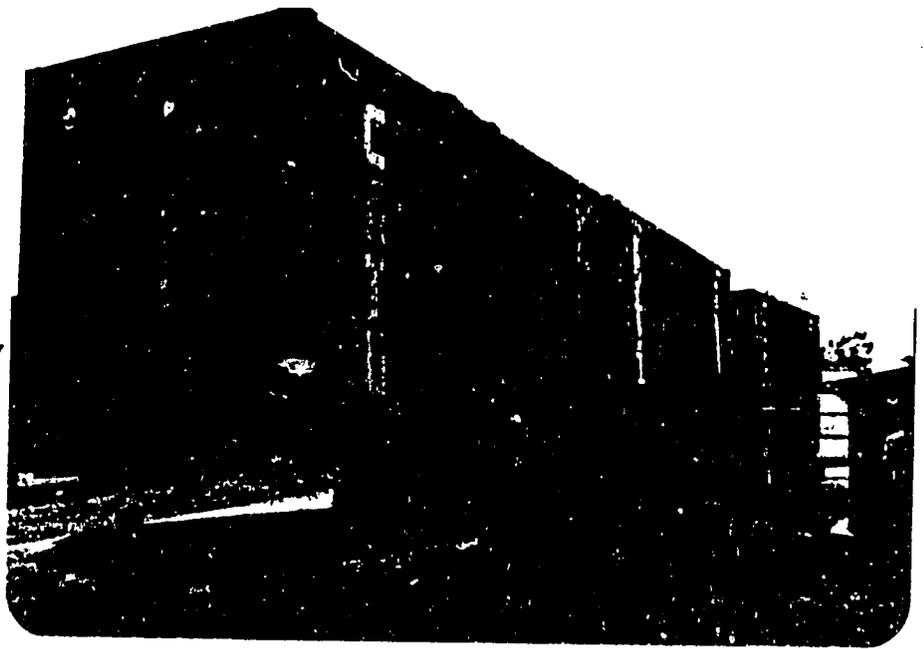


7 tanks - 49000 l.
8 axles - 30 wheels
Semi-trailer plus
trailer



130

Semi-trailer and
trailer with
3 T.E.U. capacity



MACK semi-trailer
6 axles - 22 wheels
carrying 30 tonnes
of maize

Semi-trailer trans-
porting tallow

