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TRANSPORT IN RELATION TO EXPORTS

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In 1953, just before Federation, Rhodesia's exports were valued at £54 million and re-exports at £11 million, making a total in today's currency of $131 million. In 1964, which was the first year after Federation, when separate figures for Rhodesia became available once again, exports stood at $244 million and re-exports at $30 million. Since then the position has been as follows:

EXPORTS FROM RHODESIA
(In $ million)

Year	*Domestic Products (including gold)*	*Re-exports*	*Total*
1964	244	30	274
1965	292	31	323
1966	183	17	200
1967	183	12	195
1968	180	8	188
1969	225	7	232
1970	259	6	265
1971	284	6	290

From a transport point of view, one is more interested in volume than in value figures. Unfortunately, figures indicating overall volume are not published, because of the difficulty in adding up the different units of measure, such as tonnes, cubic metres, litres, running metres, etc. Many commodities can be found in the last published Trade Statistics without any figures at all for quantity. A clue to the volume figures may be found in the Unit Value Index which is shown in the Statistical Digest as follows:

UNIT VALUE OF EXPORTS

Year	*Index Number*
1964	100
1965	104
1966	94
1967	91
1968	93
1969	98
1970	102
1971	103

The trouble with all index numbers is that the relative importance—or "weight"—of the items included changes over time and in any case they constitute only a sample of the whole. The Rhodesian index number is computed according to Fishers Ideal Formula which is claimed to minimise the effect of changing weights. Even so it must be taken as only a rough guide. As the index has remained almost static since 1964 it seems reasonable to believe that the overall volume of Rhodesia's exports has varied in roughly the same manner as the value figures. In other words, the large fall in the three years after U.D.I., has now—assuming further progress since 1971—been made good.

In saying this, however, it must be noted that transport economists are more concerned with tonne-kilometres than with mere tonnes. Tonnes are of interest when studying performance over a particular section of a route but tonne-kilometres are more useful for most other comparisons. There can be little doubt that tonne-kilometres of exports have increased very substantially since 1965. It is well known for instance that large quantities of coal no longer move over the very short route from Wankie to the Victoria Falls Bridge. It is equally well known that numerous other commodities which used to move over longer-than-average routes are now moving over even longer routes. It is therefore clear that, although the extent cannot be quantified, one tonne of exports today means considerably more in terms of transport performance, than it did seven years ago.

Rhodesia's exports are moved by rail, road and air and virtually all are moved by Rhodesian carriers until they are past Rhodesian frontiers. The overwhelming proportion goes by rail. Exports to the north go in wagons pulled by Rhodesia Railways' locomotives to Livingstone in Zambia. To the south they are pulled into Mafeking in South Africa. To the east they are pulled into Machipanda and Malvernia in Mocambique. From these points the foreign locomotives take over. At Victoria Falls Bridge there is a "one-for-one" scheme in operation in terms of which the wagons which belong to the old Unitary Railway System and which are not susceptible to a hire charge arrangement, move freely as long as there is not an excessive balance on either side. At the borders with Mocambique and South Africa the normal arrangement exists whereby each railway pays a rent for any foreign vehicle on its lines. Normally there is a large number of South African wagons in Rhodesia and an appreciable number of Rhodesian wagons in Mocambique.

The Railways are also heavily involved in what economists call "invisible" exports, though to the Railways nothing could be more visible. These comprise two categories. First, there are the goods which move across Rhodesia between two neighbouring countries. The most profitable is Zambian copper but there is a heavy volume of other items such as wheat and fertilizer from Beira to Zambia and clinker and fertilizer from South Africa to Zambia. The second category of invisibles is the net earnings from the part of the Rhodesia Railways system which operates in Botswana. This includes goods of Botswana origin such as cattle (and soon will include copper and nickel), goods transitting Botswana, goods imported into Botswana and large numbers of passengers.

Very little of Rhodesia's exports moves by road. Understandably, in view of the losses made by railways in Southern Africa, the Governments protect their revenue, to varying degrees. Rhodesia is probably less stern in this respect than either South Africa, Zambia or Mocambique.

In terms of the Road Motor Transportation Act, road transport is regulated in Rhodesia according to the principle that what is best suited for rail transport should be reserved for the railways and the traffic best suited for road transport should be competed for by a limited number of carriers. In theory this means that road operators should deal with short distance and light traffic and the railways with long distance and bulky traffic. In practice, of course, there is no such clear dichotomy and there is considerable overlapping. Internally a lot of the high rated traffic has been won by road hauliers but in the field of exports the Railways still reign supreme. The rail route through Botswana provides ready access from Rhodesia to the Reef; indeed to all places in South Africa except the Northern Transvaal. Whilst there is a fair volume of road traffic to this area there is also a certain amount which goes by road to

Beit Bridge and from there by rail. A limited amount of exports goes by road from origin in Rhodesia to destinations beyond the Northern Transvaal. These are mainly special items such as perishables, fragile goods or household furniture.

Road transport also plays a part in the movement of transit traffic. This is routed mainly from South Africa via Beit Bridge to Zambia but there is also traffic to Malawi and Western Mocambique. In recent years the volume of this traffic had increased something like tenfold and whilst the flow was still small relative to the amount moved by rail it included a big proportion of traffic which is classified by the railways in their high tariff rates. Moreover, the very heavy lorries used by the (mainly) South African operators on this route were causing a degree of wear and tear on the roads which seemed out of proportion to the revenue which Rhodesia earned from these vehicles. For these reasons the issue of temporary permits was tightened up earlier this year and much of this traffic has now reverted to rail. Whilst the extra revenue will not make much of a dent in the Rhodesia Railways' deficit, which is forecast at $3 million for this year, it will bring a little grist to the mill. Transit traffic to Zambia by rail involves the co-operation of three railway systems and although the efficiency of the Zambian Railways has been much improved by its Canadian management team, there are still people who choose to consign their goods from the Reef to Salisbury by rail and from there by road over the Chirundu Bridge into Zambia.

Direct exports of Rhodesian products into Zambia are normally subject to embargo but there have been two notable exceptions. The first is coal, which over a period of two years was moved from Wankie to Livingstone by road to the tune of 0,8 million tonnes. The second was maize, of which 1,5 million bags were moved by Rhodesian and Zambian road hauliers to Lusaka, last year.

If traffic by road is small relative to rail traffic, freight traffic by air is minute. The total volume lifted out of all airports in 1971, including internal as well as external movements and also mail, was only 5 000 tonnes. In fairness it must be added that the value of such exports is out of all proportion to their weight. The speed and convenience of air transport is winning customers not only from the ranks of manufacturers of expensive and fragile equipment, but from exotic types like racehorse owners and orchid clubs and more mundane types such as wholesale butchers.

It is clear, therefore, that, by and large, the Railways constitute Rhodesia's export channel. By the same token it is true that the Railways are also the channel for imports—and no exports can be produced without imports. Equally it is clear that although there has been a switch of internal traffics to road, the railways are still carrying most of the long distance bulk tonnage and a good proportion of other traffics.

The distribution of rail traffic between the various categories is shown in the following table:

CATEGORIES OF RAIL TRAFFIC IN THE YEAR 1970/1

Category	*Net Tonnes Hauled* (Million)	*Proportion* %
Imports	1,75	16
Exports	2,29	21
Local	5,95	55
Transit	0,89	8
Total	10,88	100

The above total differs from that quoted in the Digest of Statistics owing to different treatment of non-revenue earning traffic and general goods. In terms of effort, the transit figures are understated, because every tonne travels at least 1 225 kilometres. A tonne of imports or exports might travel any distance from a few kilometres up to say, 1 390 kilometres, which is the distance from Lions Den to the South African border. Local traffics are relatively short; not many exceed 500 kilometres. Detailed comparisons with periods earlier than 1967 are not possible because of the *de facto* dissolution of the Unitary Railway system in that year. The overall growth in Rhodesia and Botswana is indicated by the following gross tonne-kilometre figures:

1964/5 — 12,6 billion
1971/2 — 15,3 billion

Owing to the importance of agriculture in the Rhodesian economy all surface transport facilities are fully utilised for a period of about five months beginning with May. During the rest of the year there may be problems on particular routes. Normally, however, from November to April all traffic on offer can be moved expeditiously. It is true that some traffic can be postponed from peak to trough season but this is no consolation to a farmer who wants his fertilizer before he plants his crop, or to a miner who has signed a contract to deliver ore during a certain period.

The daily average bids from Rhodesian users for general purpose wagons in 1971/2 are listed below:

BIDS FOR G.P. WAGONS FOR LOADING IN RHODESIA

	Month	*Daily Average No. of wagons*
1971	July	690
	August	670
	September	640
	October	610
	November	600
	December	550
1972	January	570
	February	590
	March	590
	April	660
	May	700
	June	720
	July	720

To what extent are the Railways failing to move all the traffic on offer? Unfortunately, there is no simple answer to this question. One reason is that anyone who thinks he might not get all the wagons he wants is strongly tempted to overbid, whilst anyone who has been under-supplied with wagons in one week tends to increase his bid the following week to compensate for the shortage. This means that the difference between bids and actual loadings gives an inflated view of the true position. Another is that a single wagon load of a low value commodity may seem sufficiently important to an individual producer for him to write personal letters to the Ministers concerned, whereas in the national context the non-loading of several hundred wagons is what happens every public holiday. Moreover, rail tariffs for most export commodities are so low that genuine bids for wagons are higher than they would be if the true cost of movement had to be met by the customer concerned.

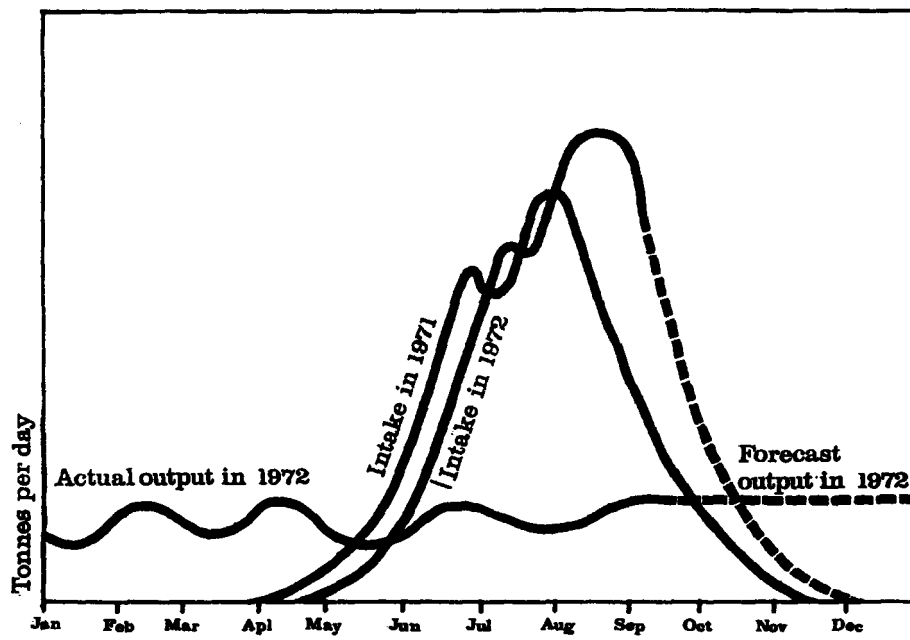
For the last six years the Rail Priorities Committee has attempted to deal with the problem of inadequate movement capacity, with the object of reducing the national effect to a minimum. The Committee is chaired by the Deputy General Manager of the Railways and includes representatives of various railway departments and five ministries—Finance, Commerce and Industry, Agriculture, Mines, and Transport and Power. It concerns itself only with loadings of general purpose wagons in Rhodesia and is therefore not concerned with imports, transit traffic or wagons for petroleum products, frozen goods or any other special purposes. It meets as often as required, usually fortnightly. Bids for wagons are collected weekly by the Ministry concerned from all major rail users and these are then totalled and compared with the number of wagons which the Railways' operating staff think they can move. Bids usually exceed the forecast availability and if the excess is greater than what the Committee believes to be the element of overbidding, it becomes necessary to make an allocation. In making its allocation the Committee aims to do what is best in the national interest and this may not coincide with what is best for the financial position of the Railways. Because of the importance of exports it might be thought that all the Committee need do is to cut internal traffics so that export commodities would always get all the wagons they want. Unfortunately, this is too simple, as a few examples will illustrate. The biggest single internal traffic is coal, which is almost the lowest-value commodity moved. Nevertheless, it enjoys high priority because every sector of the economy needs it and without it exports would soon be at a standstill. Chrome ore is produced both for export and for internal use. The latter enjoys a higher priority than the former because it is used to produce ferro-alloys which are more valuable than the raw mineral. Iron ore exports were cut off completely some years ago for much the same reason. Fertilizers earn very little revenue for the railways and much of the movement is short distance which could be undertaken by road. There are usually plenty of wagons for fertilizer on the Salisbury branch lines but few in the loaded direction on the main lines, because in the one case fertilizer complements maize traffic whereas in the other it competes with it. Some commodities of little economic importance get all the wagons they want because they use South African wagons which would otherwise be returned empty to home lines. These are but a few examples of the operational and other factors which sometimes make the Committee's allocations difficult to comprehend. To complicate the matter further, the actual movements effected by the Railways rarely match exactly the allocations made by the Committee.

Will the Railways ever meet the peak demand?

The answer to this question is no. For two reasons. First, because there would probably be a national disadvantage if virtually worthless materials could be turned into profitable propositions merely because the apparent, but not the real cost of moving them is so low. An example of this is a type of slag which was railed several hundred miles to be used as road metal. The producer did not like this traffic being stopped during the peak period. It is quite reasonable for the railways to carry commodities at rates which merely cover running costs during the trough period, but it does not make sense to buy equipment, largely in foreign currency, to move such goods during the peak. Second, if the Treasury had to find the money to move everything precisely when everyone wanted it moved, there would be no money for any other development. The impossibility of moving the maize crop—to take the worst example—is illustrated in the following chart, which is a copy (minus the figures) of one prepared for a committee which deals with maize movements.

The intake into the Grain Marketing Board Depots is largely by road and the output for consumption and export is almost entirely by rail. The solid lines are actuals and the dotted lines are forecasts.

INTAKE AND OUTPUT OF MAIZE



Although it would be unreasonable to aim at meeting every demand it is indisputable that some traffic which would be economic to the country as a whole is not being carried. It is Government's aim to bridge this gap. The procedure adopted is broadly as follows. Every year, a forecast is made of the traffics, by commodity and route, for the next four years. From these forecasts an estimate is made of the equipment and construction work required to meet the increases in traffic and to replace time expired assets. These items are then costed and listed in a development plan which covers a period of three years.

This plan, which is in considerable detail, is submitted to Treasury along with the plans of all Ministries and statutory bodies, and then goes through a process of revision to bring it within the total which Treasury believe they can afford. From the final version a very short document called the Capital Budget is prepared, which is laid before Parliament and constitutes the Railways' authority to commit expenditure on capital works.

In the three financial years ending June, 1967, the Unitary Railway System received no funds from either the Rhodesian or Zambian Government and in the three years to 1970 the new Rhodesia Railways received only $6 million a year. With this sort of money it was difficult to maintain let alone expand the physical structure, which at June, 1970, had a book value in Rhodesia and Botswana of $140 million. Since then, the Railways have fared better, their share of Government's loan vote rising from $10 million in 1971 to $20 million in 1972 and to $28 million in the current financial year. This latter figure is

more than a third of Government's total loan funds. The Railways' Budget also includes $6 million from own resources and external finance. Whilst the figures for last year and this year appear large it must be borne in mind that an appreciable proportion of the expenditure is for replacement of assets and not for expansion of services. Since Treasury can never find all the money which the Railways consider is necessary to move all the traffic by the most efficient means, the Railways' movement capacity has for years been one step behind the demand. For the remainder of the current triennial planning period the funds allotted to the railways are relatively generous in comparison with previous allocations, so there is an excellent prospect of the physical equipment being adequate to meet all requirements fairly soon. Not perhaps as efficiently as the Railways would prefer, but adequate, none the less. Some people have said that there is not a great deal to be seen for the money spent recently. This is true and is an inevitable consequence of what might be termed the long pipeline through which goods have to pass. Some of them, of course, are not intended to be seen.

Unfortunately, physical equipment is not the only thing required. Railways use large amounts of labour of varying skills and even the most advanced equipment can only marginally reduce the labour quotient. Our Railways, with some 20 000 employees, are the largest employer in the country outside the Government itself. Moreover, the proportion of skilled jobs—where the employment is predominantly European—is exceptionally high. There are about 8 000 such jobs on the Railways. In the whole Government service the comparative figures are 17 000 skilled, out of a total of 48 000. The multitude of problems arising from the conflict between the necessity of crewing the trains and the desirability of not disturbing traditional job opportunities have been discussed at length recently. This is not the place for further discussion, but it will be apparent that such problems are of considerable relevance to the subject of this paper.

Certain aspects of the Railways' development plans have had wide publicity recently, but in view of their importance, directly or indirectly, to the nation's export trade, a few of them should be mentioned here. The first is new methods of train formation. Until the advent of Dr. Beeching it was usually accepted that the unit of rail movement was the wagon. After being loaded at a siding or a goods shed each wagon would be moved to a marshalling yard where it would be classified and made up into a train proceeding to the next marshalling yard en route to its destination. Most wagons would be shunted into and out of several marshalling yards before being sent to the eventual siding or shed. Marshalling yards are extremely expensive installations and the coupling, uncoupling and shunting of wagons is a time consuming process. Automated yards, such as the one planned for Dabuka, will speed up the process but the modern attitude is that the use of marshalling yards should be reduced by treating the train—not the wagon—as the unit of transport. There are various methods of achieving this. One is the freightliner which is a permanently coupled train of flat cars which shuttles between two specially equipped terminals handling nothing but I.S.O. containers. Another is the merry-go-round train which is a series of specially designed permanently coupled wagons which go round a circle at origin and at destination. The locomotives do not have to be detached as they are always at the front and the wagons are either hoppers which discharge from underneath or they can be tipped while coupled. Another is the company train which has wagons designed to suit the particular product, for example, steel plate or motor cars, and painted in the company's livery.

These, too, move from factory to destination without being sorted in marshalling yards. Another is the block train which consists of general purpose wagons sufficient in number to make up a train which can go from origin to destination and climb the worst gradient without change of composition.

Although unit trains normally return empty, the speed of movement and turn round is claimed to ensure greater and more efficient utilisation than the almost random movement of individual wagons. Our Railways have plans for operating trains on the unit principle, including the now well known proposal to move Wankie coal by the merry-go-round system. This would have not merely the advantages of any unit train, but would also profit from the fact that thousands of empty wagons already move to Wankie every month and these movements would be reduced accordingly.

Electrification would have a direct bearing on export routes even though it would be applied initially only to the Gwelo-Salisbury line. This is the only section in the whole system where the traffic in the loaded direction approaches the figure of 20 000 trailing tonnes per day, at which the experts consider electric traction begins to have the edge over diesel. As the density of traffic increases beyond this figure so does the operating cost advantage. Unfortunately, the capital costs of conversion are enormous, even in Rhodesia where the cost of raising road bridges to accommodate the catenaries is a negligible factor.

Perhaps it should be mentioned that the other main scheme of rationalisation associated with the name of Beeching is not contemplated in Rhodesia. In the United Kingdom there were far too many lines for the traffic available and it made sense to eliminate the least economic ones. In Rhodesia this is not the case; indeed several new lines, which would benefit our export trade, will eventually have to be built. These include Rutenga to Beit Bridge and Lions Den to Karoi. An unfortunate feature about the latter is that as the main traffic will be maize the construction of such a line is contingent not only on meeting the capital cost but on meeting the operating losses as well. This situation will persist as long as rail tariffs are constructed on the principle of the user's alleged ability to pay.

In conclusion, I would refer to two external matters which could have a bearing on Rhodesia's export transport. One is the completion of the Cabora Bassa project and the possible utilisation of the River Zambesi as a transport artery. Barge transport is usually very cheap, though it could never be cheap enough to offset the cost of road movement from, say, Salisbury to Tete. If, however, some reasonably economic method of lifting barges over the dam wall could be devised there might be scope for moving minerals and grain produced in the extreme north of Rhodesia to the western end of the Cabora Bassa Lake and thence to a transhipment port at the mouth of the Zambesi. But this is looking far ahead.

The final matter is more immediate. This is the Tanzam Link. Zambia has an unassailable right to choose whatever export and import route suits her best, even if the decision does not make economic sense. For our part we have always been ready to carry a balanced traffic of high rated and low rated goods. What we would not like to see is all the high rated traffic creamed off whilst the low rated traffic continues to transit Rhodesia. There will therefore be no change in our present policy which is to surcharge low rated traffic when high rated traffic falls off. The level of surcharges needed to compensate for the kind of imbalance which the Tanzam Link might produce, could well be much higher than at present, however.

Whilst a sudden and complete cessation of transit traffic would release more capacity on our railways than is at present deficient during peak months, the forecast growth of Rhodesian traffics is such that the slack would be taken up very quickly. Indeed the reduction in capital requirements would be of such short duration that it would hardly bring a smile to the Minister of Finance's face.

Ministry of Transport and Power,
Salisbury.

26th September, 1972.