

# SOUTHERN AFRICA TRADE HUB



## **Technical Report:** **SADC Railways Revitalization Policy Dialogue**

**Larry Phipps, Railway Consultant**

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PO Box 602090 • Plot 50668, Tholo Park, Fairgrounds • Gaborone, Botswana • Phone (267) 390 0884 • Fax (267) 390 1027 • [info@satradehub.org](mailto:info@satradehub.org)  
[www.satradehub.org](http://www.satradehub.org)



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## LIST OF ACRONYMS

BR	Botswana Railway
BBR	Beitbridge Bulawayo Railway
CCFB	Beira Railroad Corporation
CEAR	Central East African Railways
CFM	Portos e Caminhos de Ferro de Moçambique (in English Mozambique Ports and Railways)
DRC	Democratic Republic of the Congo
NRZ	National Railways of Zimbabwe
PSO	Public Service Obligation
RAHCO	Rail Assets Holding Company
RSZ	Railway Systems of Zambia
SADC	Southern African Development Community
TAZARA	Tanzania Zambia Railway Authority
TKM	Ton Kilometer
TRC	Tanzania Railway Corporation
TRL	Tanzania Railways Limited

## INTRODUCTION

The past decade has seen significant change in Southern Africa's railway operations. Following years of declining traffic, deterioration of infrastructure and equipment along with redundant labor forces, international donors and lenders pressured many of the state owned railways to move to privatization through concessioning. A number of concessions moved forward in Zimbabwe, Zambia, Malawi, Mozambique, Swaziland, and Tanzania. South Africa, Botswana and Namibia did not concession but moved to corporatize independent state owned enterprises that were charged with operation and maintenance of the countries railways.

As identified in Review of the Effectiveness of Rail Concessions in the SADC Region<sup>1</sup>: *“Following the concessioning of some railways in Southern Africa, a number of challenges seemed to have emerged, among them, declining performance in certain areas, declining state of infrastructure, massive retrenchments, reduced business cooperation amongst railways in certain areas, reduced frequencies of passenger services. However, the States subsidies to railways had been eliminated, thereby bringing about fiscal relief to the States concerned. As a result of the reduced capacity of such railways, some traditional rail traffic has since moved on to the road, causing immense damage to road pavements.”*

Since the review of railway concessions was made there have been many new developments. On both the concessioned and the state owned railways there has been a substantial decline in tonnage handled by the railways. The North South Corridor that once saw 6 million tons per year moving between DRC, the Copperbelt and South Africa, now moves less than 1 million tons. Most of the decrease has been a shift from rail to road; some of the decrease has been due to deliberate actions on part of the concessionaires to discourage low margin traffic; and in some cases by the lack of sufficient locomotives and wagons to move available traffic. Several concessions have seen concession partners withdraw and several concessions have been sold to new partners. The parastatal railways have moved aggressively to reduce redundant employees but they continue to see traffic levels decline; in the case of Botswana due to a nearby concession draining it of its traditional traffic base. In almost all cases, passenger service has deteriorated or ceased and Public Service Obligation (PSO) terms are a subject of dispute in regards to payment and service guarantees.

The early concessions sought to increase traditional traffic, reduce cost and increase tonnage transported. Beitbridge Bulawayo Railway (BBR) sought to create a shorter route and thus capture all inter-line traffic moving to/from Botswana and Zimbabwe/Zambia. The Nacala concession sought to increase traffic from the port of Nacala to Malawi. The Beira concession sought to move traffic to/from Beira/ Zimbabwe. The Railway Systems of Zambia (RSZ) concession sought to move finished copper from the Copperbelt. The Tanzania Railway Corporation (TRC) concession hoped to regain traffic lost to road, but did not participate in SADC intraregional traffic.

Now we see that the Nacala line will focus entirely on moving coal from the Moatize mines to Nacala and, if left unregulated, will neglect traffic between Malawi and Nacala. The Beira concession will focus entirely on the Sena line and the coal from Moatize and, if allowed, will not put assets towards the movement to/from Zimbabwe. RSZ has effectively

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<sup>1</sup> Review of the Effectiveness of Rail Concessions in the SADC Region, Larry Phipps, Short-term Consultant, August 2008

abandoned the major traffic base, the inter-mine business in the Copperbelt, and moves no intraregional traffic from the Copperbelt to Tanzania Zambia Railway Authority (TAZARA) at Kapiri Mposhi. BBR focuses only on maximizing its own length of haul with no regard to regional flows. TAZARA is in a state of flux. It has obtained a source of funding for improving the deteriorated track and obtaining much needed locomotives, but still experiences high redundancy and labor strife with frequent work stoppages that have caused its tonnage to shrink to half a million tons per annum. With 97% moving by road, almost no interregional copper moves via TAZARA. The TRC/ Tanzania Railways Limited (TRL) concession of the meter gauge railway to RITES has been cancelled and the government now seeks to re-privatize TRC and make a very significant upgrade and gauge change, this despite the fact that passenger traffic fell 46% and that freight tonnage is now only a quarter of a million tons per annum.

As the situation now stands, rail transport is losing traffic to road haulers and the road system is being damaged by the heavy haul trucks. Changes must be made to restore the railway system to an integrated system capable of competing with road haulers especially for international traffic.

## **1. CONCESSION BACKGROUND**

### **2.1 Mozambique**

The rail concessioning effort in Mozambique began in the 1990s. Mozambique's railway system is like that of many other African states, with rail lines running from coastal ports to the hinterland. In the case of Mozambique, the lines serving the principal ports of Maputo, Beira and Nacala do not interconnect between the southern, central and northern corridors. The concessioning of the Mozambique railways was separated into three corridor specific 'packages' comprising the north, central, and the south.

#### **2.1.1 Nacala Corridor/Malawi**

The northern or Nacala concession was awarded to the concessionaire in Malawi, CEAR. That concession never grew rail traffic and was fraught with problems, not the least of which was the poor relationship between Central East African Railways (CEAR) and Portos e Caminhos de Ferro de Moçambique (CFM). CEAR was sold to private Mozambique investors and has subsequently added the Brazilian mining company Vale, as a partner. The railroad and the port of Nacala, in Mozambique's Nampula province, are to be refurbished with Brazilian help, in the biggest investment in Mozambique's transport sector to date.

The agreement signed in Nacala, which has Mozambique's most important deep water port, involves Brazilian multinational company Vale, the Mozambican consortium Insitec (representing the Nacala corridor) and the Maputo government, and follows a year of negotiations and represents an investment of US\$1.6 billion.

In Moatize, Tete province, Vale has the concession on a coal mine where it expects to mine 10 million tons per year in an initial stage. The problem comes with transporting the coal to the sea, as the Sena railroad, which links Moatize to the city of Beira, and the Nacala corridor, which links Moatize to Nacala (further north) do not have enough transport capacity. Under the proposed new connection from the Moatize to the Malawi railway near Blantyre the entire line to Nacala will be upgraded. This will enable general

freight from Malawi to make the trip to Nacala in far less than the weeks that it now takes. With capacity limited, it is important that general freight moving intra-regionally be accommodated on the rail corridor and that capacity constraints be shared by both coal shipments and by intraregional freight cargo.

### **2.1.2 Beira Corridor**

Unfortunately, the deterioration of Zimbabwe's economy severely reduced international exports from Zimbabwe passing through CFM and the ports of Mozambique. With the decrease in traffic to and from Zimbabwe, Mozambique's concession goals changed, in particular on the central corridor. The concession of the Beira corridor roughly coincided with the Moatize coal exploration and mining concession awarded to CVRD, the Brazilian mining concern. Thus, concession and the rebuilding of the Sena line provided new objectives, namely to attract extractive industries to provide jobs and infrastructure to those in the Beira catchments area, and to provide foreign exchange through mining the abundant mineral resources.

The Sena line is now in service and has a capacity of between 5 and 6 million tons annually. RITES/IRCON, the initial concessionaire, had disputes with CFM but those have apparently been resolved and RITES continues as the operating entity of CCFB. The portion of the corridor to Zimbabwe is in need of repair to enable resumption of intraregional traffic from Zimbabwe to Beira. Coal is now being mined and exports via Beira are scheduled to begin in September 2011.<sup>2</sup> The first coal shipments were made on August 8, 2011.

## **2.2 Tanzania**

### **2.2.1 TRC**

The concession of TRC, a meter gauge railway (as opposed to the Cape Gauge commonly used in the SADC region) in Tanzania was seen as a success with the awarding of the concession to RITES and Rail Assets Holding Company (RAHCO). The Tanzania Railway Company concession to Tanzania Railways Limited (TRL) was at first thought to be a success. The necessary enabling legislation was enacted, a regulator was established and a rail asset holding company was established. The concession process took many years and had some adverse impacts. The successful bidder was RITES, the national India railway operator and operates as Tanzania Railways Limited (TRL). It began operation October 5, 2007. The RITES involvement is similar to that in Mozambique, where long term India interest in extractive industries and access to raw materials, played a part in the motivation to become the concessionaire. After the concession was awarded, RITES as operator and majority owner of the concession, pressed forward with leasing second hand locomotives and wagons from the Indian railway. All managerial positions of importance were filled by Indian nationals and morale in both management and work force declined dramatically.

TRL concession has now been cancelled and the ownership portion of RITES has reverted to the government. Operations are currently in an interim stage, in transition between cessation of the concession agreement and new management through RAHCO, with TRL staff salaries being guaranteed by government, but TRL being responsible for all other

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<sup>2</sup> See Appendix 1 for the Government of Mozambique perspective.

operating costs. RAHCO has sought financial support through government for a total investment of US\$330 million in track repair and upgrades in the first five years. There appears to be no possibility for funding future TRL operations without the preparation of a detailed, realistic and credible business plan, which is focused on core business, linked to increasing freight traffic volumes. At the present time, TRL is unable to serve major new customers without additional up front funding to improve the performance of both infrastructure and equipment<sup>3</sup>. Most of the main route from Dar to Kigoma is 80# per yard welded rail laid in the 1990s. Approximately 150km of this main route remains at 56# per yard and were to be replaced, although that is now doubtful. Annual tonnage, at one time 1.5 million tons, has now fallen to less than a quarter of a million annual tons. The government recently announced plans to upgrade the entire line to a standard gauge at a capital cost of US\$1.6 billion. Even by changing to standard gauge it remains incompatible with the remainder of SADC's Cape Gauge railway system. This system is not an integral part of the remainder of the SADC railway system due to this gauge difference and its deteriorated condition does not impact the regions ability to increase intraregional trade.

### **2.2.2 TAZARA**

The Tanzania Zambia Railway Authority (TAZARA) is in a state of flux. The railway was built in 1974 and commissioned in 1976 with US\$500 million provided by China. It is jointly owned by Tanzania and Zambia. The railway line, covering 1,870 kilometers runs from Dar es Salaam in Tanzania to Kapiri Mposhi in Zambia, where most mining companies load their copper, cobalt and other minerals for export to Europe through the port of Dar es Salaam in neighboring Tanzania.

The Chinese debt has added barriers to any thought of concession. Recently the governments of Tanzania and Zambia have managed to secure an interest-free concession loan from the Chinese government amounting to US\$39 million to revive its operations. The loan, according to Premier Pinda, would purchase six new locomotives, 90 new wagons and spare parts, and renovate nine locomotive engines. TAZARA signed a contract with a Chinese company to manufacture and supply 90 container wagons worth CNY36 million (US\$5.7 million) to accelerate transportation of cargo including copper and other minerals. TAZARA has never had a major track infrastructure upgrade and at 35 years in service, it must be assumed that the line is in dire need of sleeper replacement.

TAZARA has obtained a source of funding for improving the deteriorated track conditions and obtaining much needed locomotives but still experiences high redundancy and labor strife with frequent work stoppages that have caused its tonnage to shrink to half a million tons annually. Almost no intra-regional copper moves via TAZARA with 97% moving by road. The lack of locomotives, along with frequent line interruptions from accidents or work stoppages, is a major cause of the failure to move copper from Kapiri Mposhi.

President Rupiah Banda and his Tanzanian counterpart Jakaya Kikwete, had earlier appealed to creditors to cancel TAZARA debts to rescue the railway firm from collapse. The two leaders further called on the board of directors to expedite the process of concessioning management and operations of the railway company to a competent railway enterprise from China.

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<sup>3</sup> Corridor Diagnostic Study of the Northern and Central Corridors of East Africa, April 2011

## 2.3 Zambia

Zambia Railway operated from the Zimbabwe border in the southeast of the country, north through Choma, Lusaka, Kabwe, Kapiri Mposhi, Ndola to the border with the Democratic Republic of Congo (DRC) at Sakania. It included branch lines that served the Copperbelt, and a branch that runs between Choma and Masuka, from which it hauled coal from Maamba to the smelters and refineries of the Copperbelt. The railway was concessioned in 2001 and now operates as Railway Systems of Zambia (RSZ).

The concession model was a vertically integrated, but fragmented into geographical and business segments as follows:

- i) Package A: short haul inter-mine Freight Services, encompassing lines running between mining towns: from Kitwe to Chingola, Chililabombwe, Mufulira, and from Ndola to Luanshya, with access rights on the mainline from Kitwe to Ndola.
- ii) Package B: long haul mainline freight services, encompassing the current mainline running from the Zimbabwe border to Kitwe, and from Ndola to Sakania to the border with the Democratic Republic of Congo, including the branch line from Choma to Masuku.

With the concession containing both the high tonnage, low revenue inter-mine ore movements and the more lucrative long haul intraregional freight cargo, there were competing demands for locomotive and wagon resources. RSZ chose to allocate its resources and efforts to the long haul traffic and *de facto* abandoned the inter-mine operations of the Package A concession. RSZ has indicated that its major reason for failure to move the inter-mine ore is due to theft of track components, such as fish plates, that render the track highly susceptible to derailments. This has resulted in almost all of the 800,000 tons previously moved by rail being diverted to road haulage, much to the detriment of the roads in the Copperbelt. This failure to service the inter-mine movements cries out for relief in the form of open access.

The concession has been highly criticized with some of the criticism justified and some unwarranted. RSZ has relieved the government of the financial burden related to operating the railway: *“Since commencement in December 2003, not only was the Government of Zambia not required to take any of the financial burden related to operating the railways, but RSZ has invested approximately USD 50 million into its network and paid an additional USD 40 million to state in the form of taxes, levies, duties etc.”*

Without rehashing all of the conflicting positions of the RSZ and the Government, it is safe to say that a major portion of the rail tonnage in Zambia was effectively abandoned and that the goals of intra-regional rail cooperation were not met. The interregional rail cooperation is seen by RSZ as *“constantly find[ing] ourselves required to compensate and subsidize our neighboring railways by injecting equipment and keeping costly systems at these administrations in order to give reasonable service to customers. In addition, these other railways have their own priorities and constraints which also affect services. This is almost creating an impossible working environment as well as increasing costs and affecting our competitiveness.”*

The third package in the concession covered passenger train operations and has also been a major source of contention. Government ownership and maintenance of the track infrastructure, along with open access to passenger train operators (even if on a PSO basis) would reduce the criticism and would provide better service to the local populace.



## 2.4 Zimbabwe

The concessionaire of a major portion of the National Railways of Zimbabwe (NRZ) is Beitbridge Bulawayo Railway (BBR). A new 317km rail link between Bulawayo in Zimbabwe and Beitbridge in South Africa, was built by BBR, a consortium comprising mainly South African investors, which has a 30-year build, operate, and transfer concession from the Zimbabwean government for the US\$85 million project. The concession was bilaterally negotiated and not subject to competitive bidding. A major provision of the concession is that all traffic from NRZ and points north in Zambia and DRC must be routed via BBR. BBR obtained operating rights over NRZ between Bulawayo and Livingstone in a haulage type arrangement and uses NRZ crews to man the trains to Livingstone. There it connects with RSZ, in which BBR's parent has an ownership interest.

Since its inception BBR has paid in excess of US\$30 million to NRZ in trackage rights fees and concession fees. BBR provides equipment for many of the freight flows across Zimbabwe and RSZ. This equipment contribution has allowed NRZ to utilize its equipment to service other freight flows.

BBR cites a number of factors that have led to the decline in tonnage moving over the North-South Corridor: (i) Zambia has become self-sufficient in terms of grain production and imports from South Africa are no longer needed, (ii) additional smelting and refining capacity has been added in the Copperbelt resulting in the copper production no longer moving as concentrates (33% copper) but instead as anodes and cathodes (99.9% copper) from the Copperbelt to Durban, and (iii) these cathodes are readily transported by road, whereas concentrates required special equipment and were better suited for rail.

BBR sees many of its interactions with NRZ as similar, though smaller in scale, with the open access issue considered for the entire region: (i) NRZ passenger trains operate over BBR, (ii) BBR trains operate over NRZ to Victoria Falls, (iii) BBR rolling stock is used by NRZ, (iv) BBR buys services from NRZ at Bulawayo and Beitbridge, (v) BBR and NRZ jointly procure spare parts for use by BBR and NRZ, (vi) communications on both the BBR and that part of NRZ over which BBR operates were upgraded. Like many other railways in the region, BBR cites the difficulties and delays in clearing customs at border crossings. Road haulers are cleared far more quickly than are freight trains.

## 2. DISCUSSION OF NEW GUIDELINES

The purpose of this discussion is to establish the guidelines covering the objectives, priorities and broad lines of measures envisaged in the area of the southern African rail transport network. Railroads included are those in the SADC area. These guidelines will include:

- (1) rail infrastructure ownership, both by private concessionaires where appropriate, and state owned infrastructure in other cases and establish the party responsible for track maintenance and upgrade, and propose methods of establishing track user fees intended to cover track and infrastructure maintenance and upgrade;
- (2) establish the rules covering open access to all qualified operators to the use of all intraregional main lines for both freight and passenger trains and provide for open access to intraregional tracks and support facilities where operators, concessionaires or parastatal railways, have failed to provide adequate service;

(3) examine possibilities of pooling equipment – both wagons and locomotives – including a rail leasing company owned by the SADC States and;

(4) establish minimum standards of passenger service and set full compensation parameters to operators of PSO passenger trains.

Each of the guidelines referred to here, shall constitute a general reference framework intended to encourage the Member States in carrying out projects of common interest, the purpose of which is to ensure the cohesion, interconnection and interoperability of the SADC railway transport network, as well as access to that network. These guidelines are also intended to facilitate the involvement of the private sector, giving due recognition to the rights of existing concessionaires.

By implementing these changes, the railway system can recapture freight lost to the road haulers. With separation of infrastructure and allowing open access the following can occur:

- Scheduling trains across the SADC region and thereby improving predictability.
- Leveling the level playing with road making the competition fairer.
- Enhanced road safety due to fewer road trucks on long trips.
- Reduced road infrastructure maintenance due to reduced heavy trucks on SADC roads.
- Reduced transport environmental impact as rail is more environmentally friendly.

### **3. SEPARATING RAIL INFRASTRUCTURE FROM OPERATIONS**

Separating rail infrastructure from operations, with Rail Funds and Rail Agencies established in each country is needed to provide the kind of track that will allow safe and efficient rail freight and passenger operations, on those routes where passenger service is warranted. The experience with several of the concessions has demonstrated that the traffic volumes and revenues do not generate sufficient funds to upgrade the deteriorated infrastructure. Some of the parastatal railways have good track infrastructure, namely Botswana Railway, the newly rebuilt Sena line of the Beira Corridor, most of South Africa's mainline freight corridors, but most of the core routes of SADC are in need of upgrade. One only need look at the ongoing dispute between RSZ and the Zambia government, the service interruptions of TAZARA or the slow orders of NRZ, to see that track conditions are inadequate to allow rail to regain market share from the road haulers.

Separating track ownership from operations will be different in many of the member states. With the parastatals the issue does not present as many hurdles as with those states that have concessionaires with contracts granting sole use of the railway to the concessionaire. In these cases the concessionaire might be inclined to give up the exclusivity clause in exchange for being relieved of the maintenance and upgrade burden, and in some cases of being relieved of the passenger burden. This will be discussed in the Public Service Obligation of this report.

The Australian railway system has similarities with SADC. The railway system was promoted and operated independently at a state level where the primary focus was on internal operations and there were considerable technical and operating differences between rail systems. Now the national government has encouraged liberalization of the rail system. Some states have vertically integrated systems, others have split the state

railways into separate units and in some case the railways have been sold to the private sector. All states have now been obliged to split their railways into infrastructure, passenger and freight business units. Open access is required.

The mechanism for government ownership of the rail infrastructure must be studied in each country. With government ownership goes the responsibility to adequately upgrade and then maintain the railway and governments must be able and willing to accept that responsibility, just as they do with road maintenance. Concession provisions governing cancellation, liquidated damages, and unamortized capital investment are unique to each country and concession and will affect the type of ownership change required. It might be that there are some railways where ownership could remain with the railways with the owners being reimbursed through track usage fees paid by rail operators using those routes, but that will be determined by further study. The newly constructed Sena line and the planned construction of a new connection from Tete to the Nacala corridor might have ownership remaining with the concessionaires as most of the traffic will be coal trains.

#### **4.1 Track Usage Fees**

The proper track usage fees will similarly need to be studied by an independent study group to ensure fair and equitable fees are assessed. One operator cannot be discriminated against and at the same time the usage fees must be sufficient to allow ongoing maintenance and upgrade to rail infrastructure and provide ongoing contributions to the Rail Agencies Fund. Also not all tracks must be maintained to the same standard. Where passenger trains operate a higher standard is needed, but on lighter density freight lines tracks must be suitable for purpose and that would require less upgrade and less maintenance than the higher density line, and therefore lesser usage fees. Similarly on those routes with high tons and ton kilometres (tkms), a usage fee per tkm would be less. For example, the portion of track usage of a 5 million ton coal hauling route consumed by a daily freight train would be proportional to the coal.

A world Bank study of the usage fees in Europe states: *“Track access charges can represent up to 30 or 35% of the total production cost of rail freight services. They are therefore an important item in the competitiveness of railway undertakings. The design of the charging scheme is crucial both for efficient use of the infrastructure and for ensuring fair and non-discriminatory access to the network. Track access pricing cannot be left to the market, since in Europe at least there are no functioning markets for the provision of rail infrastructure. In fact, most national rail networks, apart from some minor exceptions, are natural monopolies. Monopoly suppliers have a natural tendency to set prices too high. In rail that would mean fewer trains using the tracks than is economically justifiable. In order to ensure that the monopolist does not abuse his monopolistic position and to provide him with clear signals as to how to develop the network to accommodate demand for capacity, public authorities have to regulate infrastructure charging to ensure an efficient use of the infrastructure. Public authorities also have to make sure that the design of the charging scheme does not implicitly discriminate against certain groups of railway undertakings, for instance smaller ones or newcomers.”*

##### **4.4.1 Determining Proper Fee**

Going forward, a study group should evaluate all routes and make recommendations of

- Nature of route

- Passenger
- Freight
- Annual tons
- Present track condition
  - Rail weight, age, joints
  - Sleeper age, type, fastener, number defective per kilometer
  - Bridges, capacity and condition
- Signal system
  - Type
  - condition
- Estimated capital required to make suitable for purpose

Based upon this evaluation, a second phase of the study would make recommendations of the suitable level of track usage fees per passenger train km, and per freight tkm. SARA might be the lead agency in hosting the study and making recommendations to SADC.

#### **4.4.2 Regulatory Bodies**

The infrastructure package introduces the concept of a regulatory body. The aim is to offer railway operators a safeguard against any anti-competitive practices that might constitute a barrier to entering the railway market. Another objective is to monitor competition in the railway market and take appropriate action to correct any undesirable developments in those markets. Along with that, the goal of the railway regulatory body should be to increase railway market share versus the road haulers. A regulatory body should be independent of market operators like infrastructure managers and railway operators, enjoy the input of member states and have as its main purpose the restoration of a competitive railway system serving all of SADC.

#### **4.4.3 Determining the Regulator Role**

Based upon the 1992 SADC Model Legislative Provisions (MLP) for railway concessions, several countries established regulators by statute while others simply assigned the duties to a ministry employee. Going forward, study groups should evaluate the current regulatory frameworks and seek to amend them to make them more consistent throughout the region. The MLP provides guidelines to assist in this study.

The appropriate regulatory model should meet the following criteria:

- Practical to implement including legal, political, social and economic aspects to be applied in each Member State.
- Contribute to increasing rail market share and reducing the roadway movement of freight that is suited to rail, i.e. heavy bulk cargo.
- Maintain socially needed services, such as the non-profitable inter-mine shunting movements, passenger service to remote areas not well served by roadway.
- Result in rate competition and thus lower freight rates.

- Expedite cross border movements and facilitate rapid interchange of freight between rail operators.
- Minimize public funding.
- Assure access to the rail system for those commodities and at the locations where extractive industries would otherwise be denied rail service, such as could be the case for small coal mining operations exporting from Tete, or for coal needed for copper processing such as from Maamba to the Copperbelt.

#### **4. ROLLING STOCK POOLED ASSETS/LEASING COMPANY**

As open access matures in the region and the freight market share increases, availability of equipment to move the freight should be less of an issue. Without open access we have seen that TAZARA has been unable to move Copperbelt copper for lack of locomotives. With interoperability standards established within SADC, the use of functionally suited second hand locomotives will become common. This has been the experience in Europe where a second hand reconditioning industry is emerging. Further, the ability to use a common locomotive on all SADC railways will encourage leasing companies to enter the market because, if the original lease should fail, there is a ready market for others to take on the lease. In Europe this has seen the EMD Class 66 diesel electric become almost a standard of freight operators, with 600 of these locomotives now owned by over a dozen leasing companies.<sup>4</sup>

The same situation exists for freight and passenger wagons. With open access, an increase in leasing companies should occur.

Pooling of railcars affords railroads the flexibility to respond to changing market conditions and enables them to meet demand without needing to invest in redundant equipment. A regional railcar/locomotive leasing company can make the rolling stock investment on the industry's behalf. Unlike cars owned by the individual railroads, the leasing company railcars do not have to be returned empty to the owning railroad after being unloaded by another railroad. Instead, the railcars can be reloaded and transported to any other destination by any railroad.

An example of an industry owned leasing company providing equipment to multiple railways is TTX, a US leasing company that furnishes 200,000 railcars to the US railways. TTX is owned by North America's leading railroads, providing railcars on a usage basis thereby allowing railroads to conserve their capital for other critical infrastructure needs. More important, however, TTX railcars free-run between railroads providing a fungible asset that minimizes total empty miles further lowering costs for the industry.<sup>5</sup>

In the SADC region, a leasing company owned by the region's railways will improve equipment utilization, reduce empty railcar movements and provide adequate wagons to meet demand. The leasing company would be designed as an operating company and act as lessor of the equipment. It would initially be made up of 100 percent government ownership, with the potential for private investment in the future. The leasing company

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<sup>4</sup> Study on Regulatory Options on Further Market Opening in Rail Passenger Transport, Everis Strategic Development & Consulting, 2010.

<sup>5</sup> TTX website

would engage in operational leases only, resulting in the ownership of the rail asset remaining with the leasing company at the end of the lease.

The guidelines for rate setting would take into account full cost recovery of the equipment *plus* the leasing company's general administrative and overhead costs (not to exceed a set percent of the lease rate). The computation of full cost recovery could be based on the initial capital investment on the equipment including cost and insurance plus a small annual return on investment and depreciation and equipment maintenance cost. With lease rates properly set the leasing company would continually have funds available for replenishing the equipment supply.

Another option would be to attract an established leasing company to the region. To do so would require a thorough study of the type of wagons and locomotive in need, utilization rates, turn times and loads per year by wagon type. With more and more traffic being containerized, a fleet of container wagons available to all railroads in the region would do much to improve railway market share.

## **5. OPEN ACCESS**

'Open Access' is a regional regulatory scheme wherein a railway of one member state is allowed to operate, under pre-set conditions, over the trackage of a railway of another member state or over the trackage of another concession. In the case of SADC region, this conceivably would allow a single operator to move traffic for its own account from the Copperbelt to Durban or from the DRC to Dar es Salaam. It would also allow a private operator, such as a copper miner, to operate ore trains from mine mouth to concentrators or other processing points within the Copperbelt, independent of the RSZ concession which has thus far failed to provide equipment and crews to service the mines.

One must distinguish between open access to markets and open access to track usage. In the SADC case, open access must be access to the track infrastructure. Access to markets is of no use without the ability to operated tenant trains to provide needed services. In some concessions with vertical integration (i.e. the concessionaire both operates trains and leases and maintains the infrastructure) the concessionaire might impede entry to preserve market share or to preserve line capacity. In such cases there must be structural regulation with the separation of infrastructure and operations. The regulation would also cover access to tracks, passing loops, fueling and servicing facilities, and limited access to workshops for minor repairs.

Open access freight services across the networks will become possible, provided that all the issues relating to the technical feasibility of such a journey have been resolved, for instance by using a locomotive capable of operating under the various signaling systems and provided that the railway operator has obtained the necessary safety certificates, including having operating personnel qualified on the rules of each railway over which the trains will pass. This will allow an operator to assemble a train in South Africa, pass via a variety of routes, pass through traditional points of interchange, over the lines of another member state's railway and deliver the train to its intended destination. Other issues will still need to be resolved, for example crew change points in another country, whether the operator staffs his own trains or whether the incumbent railway provides "haulage" for the open access operator. Haulage is the arrangement used by BBR to transport its trains from Bulawayo to Victoria, wherein BBR trains are manned by NRZ crews at BBR expense.

The right of access alone does not guarantee that a railway operator wishing to operate on foreign rail infrastructure will be able to compete with the incumbent railway operators on a level playing field. To be effective, the operator of the open access train must obtain the train path that it needs to satisfy the expectations of the customer. In other words, for a passenger train operation, a pre-established timetable and operating schedule must be set, advertised and respected by the owning railway. Both the tenant open access train and the incumbent owning railway must pay the same infrastructure charge for track usage. The open access train must have nondiscriminatory access to essential service facilities, for instance, for refueling servicing and repairs. In the course of the operation the open access train is entitled to equal dispatch and priority with trains of the incumbent of the same class.

A central condition for non-discrimination is that all essential functions, such as the allocation of infrastructure capacity and the setting of track access charges, should be carried out by an infrastructure manager or another body which does not operate rail transport services. Otherwise, a conflict of economic interests would be unavoidable, a situation which would be detrimental to competing railway undertakings. The independent railway regulator's office, where established, might be best suited to ensure fair track usage charges and non-discrimination in dispatch or priority.

## 6.1 Why Open Access

Justification for open access varies based upon the operating characteristics and behaviors, actual or expected, of the incumbent railways. SADC railways display a number of behaviors that could be cured or improved by open access.

Perhaps the earliest concession provision that now calls for open access is the history of the BBR concession. Those familiar with the BBR concession know that the concession was a bilateral negotiation that provided for a build-operate-transfer concession to construct a new connection between Beitbridge and the end of a NRZ branch line running from Bulawayo. The branch line was upgraded as a part of the concession. This new line shortened the distance from South Africa. origins to points in and beyond Zimbabwe as compared with the historic route of via Botswana Rail (BR) to Plumtree and NRZ. Based upon long standing principles of interline operation, the shortest distance route was to be used. This resulted in an immediate loss of all transit traffic that was being routed via Mafikeng-Botswana Rail to Plumtree and onwards via NRZ because the new route via Beitbridge was shorter. Furthermore a concession provision requires that all NRZ traffic and traffic from Zambia and DRC be routed over BBR.

Open access would allow Botswana Railway to solicit traffic to be routed over BR. The train could be assembled in South Africa and then moved by BR from point of assembly via Mafikeng, onwards over BR to Plumtree and then via open access by BR utilizing open access to operate over NRZ and RSZ to destination. In addition to providing customers a choice of routes for better service and reduced transit times, it would also allow BR to compete in the pricing arena. With rail freight rates in the SADC region averaging three to four times what would be expected in other countries, this pricing competition can improve trade both within and beyond the SADC region. This condition was anticipated in the Model Legislative Provisions developed to guide the concession process. To wit: *"Where there are multiple service providers functioning on different routes, there is likely to be a need for certain ground rules ensuring that the network as a whole remains integrated and functions in a single logistical chain. Provisions regarding inter-switching between*

*networks become relevant in this scenario. Where multiple service providers function along the same route, market forces should generally ensure the optimal conditions of competition exist. However, collusive practices (e.g. tariff fixing) between service providers are also a potential reality in this scenario and rules are therefore necessary to ensure that competitive conditions persist.”* The requirement that all NRZ traffic be moved via BBR is one example of the collusive practice that this MLP provision sought to avoid.

A second example of the need for open access also involves the former Zambia Railway, now operated as the RSZ concession. As noted earlier, a major portion of Zambia Railways activities, in terms of rail tonnage and service relates to the copper industry. Ores from the copper mines were moved by rail to processing facilities, such as concentrators, not located at mine mouth. From 1994 to 1998 total tonnage dropped from 2.5 million tons to 1.6 million tons. At the time world copper prices were very low, and Zambia was going through the privatisation of the copper industry. At that time, the inter-mine local movements accounted for 56% of total tonnage. Following concession the inter-mine local tonnage dropped dramatically as RSZ failed to provide equipment for the inter-mine shunting movements. The world copper market has rebounded, prices are firm and the movement of inter-mine ores has doubtless increased. However, most all of that tonnage moves by road. With open access, a private equity railway, or a mine owned railway, would move all of this tonnage, probably well over one million tons via rail, thus removing all of this tonnage from the roadways in the Copperbelt.

Open access to freight operators might also be required to provide service on several of the Mozambique concessions. The mine operator rail concession holder will be focused on moving coal trains and in similar situations around the world the freight customer is neglected. In a similar circumstance in Australia, one mining group launched a bid to have the Mt Newman line owned by BHP Billiton "declared" for third party access. The owner of the line claimed that they formed an integral part of the production process, and so should not be subject to open access requirements. Regulators found otherwise and the petitioning railway was granted access for a fee. This type of access might be required to give adequate port access to the several mines in the Tete basin.

### **6.1.1 Ancillary Services**

When a railway operator performs rail transport services it requires access to a range of services and the use of appropriate facilities such as refuelling facilities, freight terminals and maintenance facilities. Many of these facilities and services are owned and/or operated by railway operators. These operators may not always welcome competitors who wish to use their facilities, in particular when these services are already heavily or fully used, nor have any reason to allow their use at a reasonable price, due to a possible quasi-monopolistic position.

### **6.1.2 Capacity Constraints and Equal Dispatch**

One of the basic ingredients of a competitive rail service is a good quality train path. The regulatory framework must therefore ensure that any potential discrimination against railway operators trying to obtain such a train path, is reduced to a minimum. The allocation process and its underlying principles must be transparent and fair. They should take into account the interests of all parties involved in a balanced way. In practical terms, it should not therefore be possible to refuse a capacity request on the grounds that there is



no more capacity available because the incumbent railway has reserved all the preferred train paths.

## **6. RAIL NETWORK**

### **7.1 Characteristics**

1. The rail network shall comprise the entire SADC rail network, including branch lines, yards, stations, and repair and support facilities.
2. Essential requirements and technical specifications for interoperability applicable to the conventional rail lines shall be defined for the SADC region, giving due weight to differences in signalling systems and establishing a common set of operating rules systems.
3. The rail network shall include the infrastructures and the facilities which enable rail and road to be integrated, including intermodal transfer facilities.
4. The rail network shall fulfil at least one of the following functions:
  - (a) play an important role in long-distance passenger traffic;
  - (c) permit access to regional and local rail networks;
  - (d) facilitate freight transport by means of the identification and development of trunk routes dedicated to freight or routes on which freight trains have priority;
  - (e) play an important role in combined transport;
- (f) permit interconnection to ports and allowing open access to the port facilities
  - (g) provide service in areas where operators/concessionaires have failed to furnish equipment, crews or adequate infrastructure to move available freight traffic.

## **7. PUBLIC SERVICE OBLIGATIONS**

In railway transport, a public service obligation or PSO is an arrangement in which a governing body or other authority offers an auction for subsidies, permit the winning company a monopoly to operate a specified service of public transport for a specified period of time for the given subsidy. This is done in cases where there is not enough revenue for routes to be profitable in a free market, but where there is a socially desirable advantage in this transport being available. In many cases the introduction of PSO has been a way to privatize former government owned transport. The infrastructure is often separated from the operation, and may be owned by the governing body or by a third party. The authority may also maintain the ownership of the vehicles, such as ferries or rolling stock.<sup>6</sup> Traditionally, public transport has been operated through a company wholly owned by the state with a monopoly, like a national railway company.

The authority issuing the auction may be a ministry of transport state, or other regional authority. To be the auctioning part the authority must have some vested interest in subsidizing the transport in addition to the authority to ban other interests from operating competing services on parts or all of the system.

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<sup>6</sup> Wikipedia Public Service Obligation

In the SADC region, there are few opportunities to operate a passenger train profitably. There may be some limited high revenue tourist trains, but these are not necessary for the public good. All of the other passenger trains in each state cannot operate at a profit if costs of the operation and infrastructure are considered. In some cases, the parastatal railways simply cross subsidize the passenger operation by burdening the freight rates. This might be one of the causes of the SADC rail freight rates per tkm being among the highest in the world.

In some of the concessions that have been awarded there are provisions for PSO, such as in the case with RSZ. The contract for the passenger operation is not clearly written and has been a source of disagreement since the beginning of the concession. The passenger concession was for seven years and provided a US\$7 million subsidy to operate the trains. Disputes have been ongoing due to the condition of the equipment transferred at concession, reduced train speeds, reduced schedules and poor cleanliness of coaches. In any future PSO concessions, all requirements must be clearly stated and mutually understood. The concession must specify a number of terms of the service, such as frequency, size of coaches, number of coaches per train, timing of service, the maximum permitted fare paid by some or all the available seats and/or other specifications related to service and quality.

PSO concessions can be directly awarded or competitively bid. When directly awarded they generally go to the national railway and run the risk of the subsidy being higher than justified. There is also the risk of quality of service being lower and with less emphasis on incentive payments for exceeding service standards, such as on time performance standards. Where the PSO is tendered for bids, the tenderer can set conditions for routes, timetables, and quality thresholds, type of rolling stock, age and condition of equipment, cleanliness and on time performance. In many cases the SADC passenger operators may use equipment already on hand and if that is the case, the bidder must have a clear understanding of upgrades to the equipment expected under the contract.

The length of the contract is variable. Sharing of fare box revenue may be a consideration. With the government satisfying a social need, the government will insist on controlling fares, at least of the lowest class tickets while allowing the operator to charge more for higher classes. Political support is required for any PSO. Every state wants passenger service, but that service must be paid for, in good years and in lean years. The main advantages of PSO contracts are that they:

- Ensure passenger train service that meets at least a minimal level of service;
- with competitive bidding, may reduce the cost of providing the service;
- provide stability for the duration of the contract;
- are indifferent to infrastructure charges where the state owns the infrastructure.

## **8. CHALLENGES AND OBSTACLES TO BE FACED**

Each of the issues discussed in this paper require further study. Track conditions vary widely by country and by ownership type and responsibility for upgrade and maintenance. Concession provisions are unique for each concession and each country has their own regulatory regime. Separating infrastructure from operations will place a greater burden on some countries. Providing open access will be welcomed in some states and will be

jealously guarded in others. Attracting leasing companies will require a definition of the market potential for new/leased equipment.

### **9.1 Separating Infrastructure**

- Convincing governments of the need to re-invest in railway infrastructure
- Convincing donors and lenders of the improvements expected.
  - The old models were plagued by overstaffing and redundancy.
  - Both concessions and parastatals have rationalized staff size.
- Convincing concessionaires that state-funded upgrade and maintenance will not impede the operation.
- Convincing legislatures of the need to level the playing field with road haulers.
- Determine the level of upgrade required for each line segment.

### **9.2 Allowing Open Access**

- Examining each concession contract to determine if exclusivity is provided.
- Exploring cancellation provisions:
  - Have minimum standards been met?
  - Are liquidated damages called for?
  - What are the levels of unamortized capital to be reimbursed to concessionaire?
- Has the government provided exclusive routing guarantees?
- Do interline connections still exist and are they well maintained?

### **9.3 Developing Pooled Rolling Stock Company**

- Establishing common standards.
- Establishing forecast equipment needs by wagon type.
  - Assume through routing of trains over the network.
  - Assume wagon turnaround times.
- Establish locomotive needs for through international trains.
- Seek internationally well-established leasing company for a public private partnership for supplying rail equipment for Southern Africa.

### **9.4 Public Service Obligations**

- Develop inventory of all current passenger train operations.
  - Classes of coaches, age and condition.

- Type of locomotives.
  - Fare per tkm.
  - Government supplied service of concession.
- Evaluate performance.
  - On time percentage.
  - Average train speed.
  - Evaluate track conditions for ride quality.
- Set standards for operating cost subsidy by route.
  - Per train km.

## APPENDIX 1: TRANSPORT MINISTER EXPLAINS SENA LINE CRISIS

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Maputo: The Mozambican government has, since early 2008, been warning the Indian consortium, RICON, which manages the Beira rail system in the centre of the country, that it must improve its performance - but to little effect, Transport Minister Paulo Zucula said on Wednesday.

Addressing deputies of the Mozambican parliament, the Assembly of the Republic, in response to a question raised by the opposition Mozambique Democratic Movement (MDM), Zucula recalled that the Sena line, from Beira to the Moatize coal basin in Tete province, was destroyed during the war of destabilization. It was paralyzed as from 1983.

The government started to rebuild the line with its own funds in 2002, but since it did not have enough money to complete the job, it put management of the whole Beira rail system (the Sena line and the Beira-Zimbabwe line) out to tender.

There were five bids, and assessment of them resulted in awarding the contract to the Indian companies RITES and Ircon International, who then formed the consortium RICON. Zucula pointed out that the tender was supervised by the World Bank, and the results were approved by the Bank.

The Beira Railroad Company (CCFB) was then set up, with 51 per cent of the shares held by RICON and 49 per cent by Mozambique's publicly owned port and rail company, CFM. The concession contract stipulated that the entire system should be rehabilitated by January 2009, and that RICON would not only manage CCFB, but would be the main contractor on rebuilding the Sena line and its bridges.

As time passed, Zucula said, "it was noted that the performance of RICON left much to be desired. The most visible expressions were lack of maintenance of the line to Zimbabwe, delays in the calendar, failure to observe technical standards, and lack of dialogue between the concessionary company and the users in order to agree transport tariffs".

RICON was warned about these matters both by CFM, and by the independent engineer hired to assess progress. In 2008, the government intervened to demand urgent corrections to work on the Sena line. It also agreed to extend RICON's deadline by a further six months, since RICON argued that some of the delays were caused by severe flooding in the Zambezi valley in 2007 and early 2008.

But the poor performance continued, and in July 2008 President Armando Guebuza sent a special envoy to alert the Indian government, and warn that it might be necessary remove the management of CCFB from RICON (both RITES and Ircon International are owned by the Indian government).

After this, Zucula said, there were some minor improvements in management, but the main technical problems continued - notably defects in the concrete sleepers, in the drainage system and in the bridges.

In late 2009, RICON's contract to manage CCFB expired, with the Sena line still far from complete. The government tried to switch the management of CCFB to CFM, but RICON used its majority on the CCFB board to block this.

When Guebuza made a state visit to India in 2010, he discussed the transfer of management power from RICON to CFM. The Indian government agreed, said Zucula, but RICON still resisted.

Finally, in December 2010 the Mozambican government decided to rescind the contract with RICON. The contract does not end at once - RICON still had a last chance of correcting all the problems on the Sena line within 90 days (i.e. by 24 March this year). If it fails to do so, "the Concession is withdrawn, and RICON's financial contribution is returned to it ", said Zucula.

There seems little chance that RICON can hold onto the concession. RICON announced that it had completed work on the line on 31 January. But the CFM chairperson Rosario Mualeia decided to inspect the line personally, and in early February declared "not a single kilometre can meet the standards laid down in the contract".

The Sena line must be working properly by the second half of this year so that the first exports of coal mined at Moatize by the Brazilian company Vale and Riversdale of Australia can be transported to Beira.

Zucula pledged that "the government already has an alternative plan so that the line will be ready to carry the coal".

- Source:
  - [Agencia de Informacao de Mocambique](#)

## APPENDIX 2

This study was principally based upon desk top research of material publically available. It draws heavily upon several World Bank and other studies and those have been noted where indicated. Facts given are from interviews and research of available documents. Where conclusions are drawn, they are based upon the consultants judgment and understanding of the facts available. Where opinions are given, they are those of the consultant. The following provided much of the information contained here.

- Study on Regulatory Options on further Market Opening in Rail Passenger Transport, Everis Strategic Development & Consulting, 2010.
- Baseline Survey to Launch a Transport Observatory along the Central & Dar Es Salaam
- Corridors in East Africa, Aurecon May 2011.
- **The new framework for access to the railway infrastructure in the EU Ensuring non-discrimination and high quality international rail services**, Jan Scherp Principal Administrator at the European Commission, Brussels.
- Review of the Effectiveness of Rail Concessions in the SADC Region, Larry Phipps, August 2008.