Rail Services From A Customer & Railway Operator's Perspective

Field Research Study
November 2014

67 Fife Avenue
Harare, Zimbabwe

SOUTHERN AFRICAN RAILWAYS ASSOCIATION

"Together we are better"
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ANCRONYMS

APP       Active Power Project
BBR       Beitbridge Bulawayo Railways
BR        Botswana Railways
CFB       Caminhos de Ferro de Benguela
CFL       Caminhos de Ferro de Luanda
CFM       Caminhos de Ferro de Mocamedes
CFM       Caminhos de Ferro de Mozambique
CMG       Corridor Management Group
EU        European Union
ISO       International Standards Organisation
JOC       Joint Operation Centre
NRZ       National Railways of Zimbabwe
RA        Railway Administrations
RAHCO     Reli Asset Holding Company
SADC      Southern African Development Community
SARA      Southern African Railways Association
SNCC      Societe Nationale des Chemins de fer du Congo
SR        Swaziland Railways
TEU       Twenty-foot equivalent unit
TNHL      Transnamib Holdings Limited
TFR       Transnet Freight Rail
TAZARA    Tanzania Zambia Railway Authority
ZRL       Zambia Railways Limited
EXECUTIVE SUMMARY
The efficiency of transport logistics is a critical platform for supply chain integration, trade and economic growth and places growing importance on connectivity between production centres, transit hubs and consumption centres. Existing supply chain solutions in southern Africa are however characterised by operational inefficiency, high logistics costs and long transit times.

There is concern amongst SARA members, specifically the rail operators, that the distribution/share of transit rail traffic to/from the SADC hinterland through the ports, to/from overseas markets, is not being fairly shared between the rail systems of the region. Railways believe that they can offer convenient and relatively cheaper transportation services if they align themselves with the market.

Addressing operational and service deficiencies is only part of the solution in rehabilitating customer perception and restoring confidence to the rail sector. A more holistic strategy aligned with dynamic and emergent customer needs is required to effectively begin to affect supply chain patterns and client logistics strategies. The findings of this report highlight that the inability to put the clients needs at the focus of rail service strategies is glaring in its omission, and has contributed in the general dissatisfaction with rail service providers.

More importantly framing the competitive dynamics of regional surface transport as simply a modal choice between road and rail, fails to recognise the complexity of optimising service delivery around complex supply chains with often conflicting logistics requirements. A closer look at key client considerations uncovers a different view, which is not limited to modal choice but rather emphasises the logistics challenges characterised by a variety of determinants including:

- Service reliability
- Time sensitivity
- Cost efficiency
- Operational flexibility
- Security
1. INTRODUCTION

1.1 Background

The old adage that form follows function has played a significant role in framing the competitive dynamics of the transportation and logistics industry in the SADC region. Historically the comparative advantages of rail transport in moving heavy bulk cargo over long distances, led to major investment in rail and port systems. While rail friendly cargo from mining and agriculture customers remains a key pillar to the regions economy, the development of road networks better equipped to compete in the more time-sensitive transport markets has progressively impacted on the competitiveness of rail services.

Rail services in Southern Africa inspire general dissatisfaction with existing and potential clients alike. Customers bemoan poor service quality and operational performance, and increasingly perceive road haulage as a better transport option. Poor service reliability, long transit times and inadequate customer focus are commonly cited as challenges clients face in securing rail service. In addition rail services lack many modern amenities such as real-time tracking that are widely standardised across other transport modes.

Addressing operational and service deficiencies is only part of the solution in rehabilitating customer perception and restoring confidence to the rail sector. A more holistic strategy aligned with dynamic and emergent customer needs is required to effectively begin to affect supply chain patterns and client logistics strategies.

In 2001 SARA developed and ratified a SARA Marketing Policy (Annexure A.1) that gives direction on how SARA members should move transit traffic equitably along corridors. Item 3 of the SARA Marketing Policy stated how transit traffic would be distributed along corridors, based on the shortest geographical route principle, efficiency and customer choice but the key being the shortest route principle. It is against the backdrop of how the RAs are implementing the Marketing Policy as and when its suit them, which has brought a bone of contention among SARA members especially along the Plumtree and Beitbridge corridors.
1.2 Purpose

The comparative advantages of Southern Africa’s rail transportation systems vary both in terms of the level of infrastructure investment and service delivery. Against a backdrop of sustained regional growth, the long-term competitiveness of rail transport corridors is dependent on the ability of service providers to leverage unique inherent benefits, offering innovative and sustainable solutions that meet dynamic logistics and transportation needs.

When the Board formed the Rail Optimization Committee (Terms of Reference - Annexure A.2) it was not only to look at the shortest route principle but also on the loss of rail market share. The purpose of this submission is to inform the Southern African Railways Association (SARA) in identifying and characterising existing market needs, decision drivers in corridor and modal selection and key challenges experienced by customers seeking to move goods to and from the SADC hinterland through regional ports to overseas markets. In addition the report incorporates rail operator views on service provision, and it is envisioned that this document will provide a reference point, framing strategic decisions geared towards aligning railway industry players with the SADC’s freight and logistics market.

1.3 Problem Statement

There is concern amongst SARA members, specifically the rail operators (figure 1.1 shows key regional rail operators), that the distribution/share of transit rail traffic to/from the SADC hinterland through the ports, to/from overseas markets, is not being fairly shared between the rail systems of the region. Railways believe that they can offer convenient and relatively cheaper transportation services if they align themselves with the market.
The SARA Board wants to identify and address the underlying problem of lost rail market share so that the usage of rail transport systems in the region can be optimized for the benefit of all. The challenge focuses on the ability to articulate the role played by each corridor in an integrated transport system that facilitates logistics and supply chain optimisation. To this end the Board set up a Committee to spearhead a field research study to establish;

1. The customer’s perception on quality of services currently provided by railway operators
2. The challenges customers face when dealing with the railways leading to loss of market share to road
3. The distribution of market share between rail and road for both export and import international traffic
4. The business volume projections and the future demand for railway services
5. The RAs’ retrospective of competitiveness service delivery
6. The challenges encountered in pursuit of the service delivery.

In addition and arising from the findings of that research the committee is required to advise on, inter alia, the following issues:

1. Strategies to be adopted by the railways in order to improve rail competitiveness and increase market share in chosen markets, and
2. Equitable share of traffic between corridors, based on the assumption that some corridors remain underutilized i.e. there is excess rail capacity on all or some of the corridors.

1.4 The Champion
The Rail Optimisation Committee that was established in May 2013 by the SARA Board requested the service of a consultant to carry out a field research on the market demand and competitiveness of rail as surface transport in Southern Africa. SARA is a Not for Profit regional association consisting of railway organisations in the SADC region together with industry stakeholders and associates (customers, suppliers etc.). SARA seeks to promote the railway industry as a top performer and mode of choice in the surface transport sector.

A field research study was commissioned in response to growing concern among SARA members regarding the competitiveness of rail services to address transit and international traffic demand within the SADC region.

2. STUDY OBJECTIVES
The primary objective of this study is to establish equitable share of traffic between corridors according to acceptable economic viability and conditions of the route. The secondary objective is to equip SARA with an objective view relating to service performance and competitiveness, enabling stakeholders to develop robust and responsive strategies that will enhance the competitive position of the rail transport sector. This relies on, on-the-ground customer and operator perspectives to:

- Generate objective client-focused baseline information on regional freight and logistics within SADC
- Evaluate transportation and logistics competitive dynamics of surface modes serving hinterland markets within SADC
- Develop an overview of the challenges and limitations exacerbating the decline in rail market share
- Identify strategic opportunities to optimise performance and enhance the rail service offering.
3. RESEARCH HYPOTHESIS

The problem faced by regional railways (SARA Members) is loss of business/traffic to road due to lack of competitiveness in terms of total logistics service provision as perceived by its customers. This has resulted in rail market share shrinking from in excess of 80% in the mid-eighties, to current levels of below 10% of the traffic on offer.

In general the rail transport system currently operates well below the design capacity. All the regional transport routes or corridors outside South Africa essentially compete for the same traffic from the landlocked countries. Traffic includes exports and imports of mining, general and agricultural goods from and to Botswana, Zimbabwe, Zambia, Malawi and the Democratic Republic of Congo in the region of approximately 3 Mtpa (million tonnes per annum). Imports of manufactured goods, mainly from South Africa are estimated at around 6 Mtpa.

Addressing underlying problems affecting rail competitiveness would conceivably unlock latent rail demand to the extent that SARA members/corridors will battle to cope with the volumes on offer. Some of the problems attributable to underlying problems are limited investment and institutional framework a situation that needs urgent redress. In the medium term then and once service level issues are redressed priority should shift to ensuring that every available capacity on all the corridors is put to maximum use and the respective railways’ revenue performance will inevitably rebound.

The assumption to the foregoing which the research seeks to establish is that the customers in certain traffic categories have resorted to using road purely due to poor total transport and logistics service offering by the railways. As such this has impacted on customer confidence on rail sector. The research therefore seeks to establish the following:

i. The real reasons for loss of traffic by rail to road
ii. Whether customers will indeed revert to rail once those problems are fixed, and consider railways as the mode of choice
iii. To what extend will type of cargo and port play a role in the route choice
iv. What would be the natural role of the two modes of transport on the market i.e. rail and road
v. What do the railways believe are the real reasons for loss of market share
vi. Are railways willing and able to address the core problems as seen by customers

vii. If indeed the long-term challenge faced by SARA railways is capacity, is there a case for targeting specific types of international traffic in preference to others; if so to what benefit

viii. What other strategies do railways need to consider in order to cope with the projected growth in volumes over the next four years.

4. RESEARCH METHODOLOGY

The research method was determined by the Terms of Reference as given by the Rail Optimization Committee. The sample size was based on the north-south corridor covering DRC, Zambia, Zimbabwe, Botswana, Mozambique and South Africa. The north-south corridor included the following, Beitbridge, Beira, Limpopo, Ressano Garcia and Plumtree SARA corridors. The stratification was based on key rail friendly commodities looking at their historical, planned and speculative performance in relation to route / corridor choice.

The stratification was based on key rail friendly commodities looking at their historical, planned and speculative performance in relation to route / corridor choice

The research methodology used in gathering this data was a mixed method (qualitative and quantitative).

The approach used to gather the data initially was questionnaires. One was distributed by e-mail to RAs (Annexure A.3) to complete and the customer questionnaire (Annexure A.4) that was to be distributed to RAs’ top 5 customers. This was followed by face-to-face interviews with identified key customers within the sample size based on modified customer service questionnaire. The field research results were complemented by perusal of pertinent historical literature from internal and external sources

The premise is to establish innovative rail services aligned with logistical market needs which will enhance regional trade and transit traffic, offering a convenient and cost effective surface transport solution for regional supply chains.
5. **FINDINGS, ANALYSIS AND OUTCOMES**

The customers considered the consultant as neutral to whom they could open up of their experiences with the railways. During the face-to-face interviews the customers were candid in answering the questions and giving their honest opinion on services offered by railway. It was observed that no export or import trains run directly from or to DRC because most DRC traffic is transhipped in Zambia in the Copper-belt. The distributions of customers’ responses were as below:

- 6 from Zambia
- 1 from DRC
- 19 from Zimbabwe
- 13 from Mozambique
- 7 from South Africa
- 1 from Botswana
- 2 from Swaziland

Responses of the operator questionnaire were received from nine of the ten RAs namely BBR, BR, CFM, NRZ, SNCC, SR, TFR, TNHL and ZRL.

5.1 **Infrastructure Assessment**

**A. Spatial setting – SADC regional transport infrastructure**

The dominant corridors serving the SADC region are largely developed from legacy trade and transport routes linked to port infrastructure. Today port developments continue to play a critical role as gateways supporting both inbound and outbound logistics supply chains. Figure 2.1 indicates key transportation corridors across Southern Africa, together with the associated anchor ports.
The north-south corridor anchored at the Port of Durban dominates interregional trade linking Zambia, South-eastern Democratic Republic of Congo and Malawi with Botswana, Zimbabwe and South Africa. Its competitive position is enhanced by superior road infrastructure, lower port rates, connectivity and frequency of shipping service calls. The SARA Corridors are illustrated below including their distances.

Table 2.1; Corridor Distances

<table>
<thead>
<tr>
<th>CORRIDOR NAME</th>
<th>CORRIDOR MEMBERS</th>
<th>CORRIDOR EXTREME POINTS</th>
<th>MAIN SECTIONS OR RAs' NETWORKS LENGTHS [km]</th>
<th>CORRIDOR LENGTH [km]</th>
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<td>Beira</td>
<td>CFM/NRZ/ZRL/SNCC</td>
<td>Lubumbashi (DRC) to Beira (Mozambique)</td>
<td>DRC: 255, Zambia: 798, Mozambique: 329</td>
<td>2327</td>
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<td>Beitbridge</td>
<td>TFR/BBR/NRZ/ZRL/SNCC</td>
<td>Lubumbashi (DRC) to Durban (RSA)</td>
<td>Zimbabwe: 823, RSA: 1321</td>
<td>3197</td>
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<tr>
<td>Central</td>
<td>TRL</td>
<td>Kigoma to Dar es Salaam (both in Tanzania)</td>
<td>Zambia: 125, Tanzania: 1860</td>
<td>2240</td>
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<td>Dar es Salaam</td>
<td>TAZARA/ZRL/SNCC</td>
<td>Lubumbashi (DRC) to Dar es Salaam (Tanzania)</td>
<td>Tanzania: 1860</td>
<td>1250</td>
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<td>Goba</td>
<td>CFM/SR</td>
<td>Mpaka (Swaziland) to Maputo (Mozambique)</td>
<td>Swaziland: 151, Mozambique: 74</td>
<td>225</td>
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<td>Limpopo</td>
<td>CFM/NRZ/ZRL/SNCC</td>
<td>Lubumbashi (DRC) to Maputo (Mozambique)</td>
<td>Zimbabwe: 950, Mozambique: 530</td>
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<td>Lobito</td>
<td>CFB/SNCC/ZRL</td>
<td>Ndola (Zambia) to Lobito (Angola)</td>
<td>Zambia: 13, DRC: 902, Angola: 1206</td>
<td>2259</td>
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<td>Nacala</td>
<td>CFM/CEAR (Malawi: currently no SARA Member)</td>
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<td>Mozambique: 800</td>
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<td>Namibian</td>
<td>TNHL/TFR</td>
<td>Upington (RSA) to Walvis Bay (Namibia)</td>
<td>RSA: Namibia:</td>
<td>1149</td>
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<td>Plumtree</td>
<td>TFR/BR/NRZ/ZRL/SNCC</td>
<td>Lubumbashi (DRC) to Port Elizabeth (RSA)</td>
<td>Zimbabwe: 474, Botswana: 641, RSA: 1317</td>
<td>3485</td>
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<td>Ressano Garcia</td>
<td>CFM/TFR</td>
<td>Komatipoort (RSA) to Maputo (Mozambique)</td>
<td>Mozambique: 88, RSA: 13</td>
<td>101</td>
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<td>Richards Bay</td>
<td>TFR/SR</td>
<td>Komatipoort (RSA) to Richards Bay (RSA) via Golela (Swaziland)</td>
<td>Swaziland: 251, RSA: 195</td>
<td>446</td>
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In Beira, Beitbridge, Dar es Saalam, Limpopo and Plumtree corridor distances the SNCC distance is not included as it was observed that no export or import trains run directly from or to DRC as most DRC traffic is transhipped in Zambia in the Copperbelt. Through infrastructure development plan for Southern Africa two projects are underway to augment the regional economic and international trade and these are Trans-Kalahari and Lobito corridors.

The Trans-Kalahari corridor is 1,900km anchored at the port of Walvis Bay and links Namibia with Botswana and South Africa. The governments of Botswana and Namibia jointly developed the corridor, which consists of a tarred road as well a rail line from Walvis Bay to Gobabis. There are plans to extend the rail link along the full length of the corridor.

The Lobito corridor is 2,149km in length and it includes the Benguela rail, which is anchored at the port of Lobito. Both road and rail infrastructure along the corridor have planned rehabilitation schemes that will provide shorter hinterland distances from the Copperbelt and facilitate access to western market.

Alternate routes through Beira and Maputo in Mozambique, Walvis Bay in Namibia and Dar es Salaam in Tanzania, Lobito in Angola play an increasing role in regional trade. In many cases these options boast shorter hinterland distances from key production and urban nodes, however their primary status as feeder ports in some instances offers suboptimal shipping connectivity.

B. Hinterland connectivity and network coverage
The ability to meet the demands of regional growth and expanding populations across Southern Africa is linked to the development of pervasive transportation networks and adaptive multi-modal logistic solutions. The rapid pace of economic growth and urbanisation over the last decade has so far outpaced investment in infrastructure and this is particularly evident in the railway sector. From an operational point of view, with the exception of the South Africa’s dedicated bulk railway lines, the Southern African regional freight transport sector is characterised by long distances, relatively low volumes and therefore relatively high railway tariffs.
C. Road network density

Key urban centres in Southern Africa are connected by regional trunk road infrastructure. South Africa in particular has a high-density road network characterised by high quality inter-urban road links. Zimbabwe's urban centres are connected by moderate density road network, and its central location in SADC is critical to regional and international trade. In Mozambique road links provide connectivity between regional economic centres and gateway ports. Road links in Botswana, Namibia, Swaziland, Angola, Tanzania and Zambia are of relatively lower density connecting key urban and production centres, however significant investment has been earmarked particularly in Zambia, towards extending road quality and connectivity. In DRC more needs to be done in terms of Infrastructure development in this regard.

Figure 2.2 – Road (left) and rail (right) networks

D. Railway System

SADC railways have a unified cape gauge of 1067mm (TRL line has a gauge of 1000m) which enables network continuity and regional integration from South-eastern DRC and Tanzania (TAZARA line) to South Africa connecting 11 countries. Rail coverage is relatively low with the exception of South Africa, which has 40% of Africa's operating network and carries 70% of the continent's rail traffic. Railways in the region are mainly freight railways.
E. Comparison

The road network is more pervasive (see figure 2.2 - left) in comparison to rail and dominates the transport sector in most Southern African countries transporting 80%< of freight and passenger traffic. Greater density and broader network continuity across regional borders facilitates service flexibility, responsiveness and better point-to-point logistics solutions. These positive network effects coupled with a lack of appreciation of total logistics services and infrastructure have contributed declining rail traffic.

Few new railway lines have been constructed in recent years to expand capacity and augment connectivity. Capacity of the existing railway network specifically north of the Limpopo is artificially suppressed as a result of hot spots requiring rehabilitation and maintenance. Tactical interventions such as the introduction of modern signalling systems would further increase rail throughput delaying the need for capital intensive new line developments.

F. Port Infrastructure

The key ports and port clusters serving the Southern African hinterland offer a range of maritime services, serving as gateways to global markets for both import and export cargo. Maritime traffic is concentrated in the southeast at the Port of Durban, which plays a significant role in regional supply chains.

Key ports include;

- Tanzania ports (Dar es Salaam);
- Mozambique ports (Nacala, Beira, Maputo);
- Durban cluster (Durban and Richards Bay);
- South central cluster (Port Elizabeth, Ngqura);
- Cape Town cluster (Cape Town and Saldanha); and
- Namibia ports (Walvis Bay and Luderitz)
- Angola port (Lobito)
Mozambique

The Port of Maputo anchors three cross-border corridors:

- Ressano Garcia (Maputo) corridor links Mozambique to the Gauteng province in South Africa;
- Limpopo corridor providing links Zimbabwe, Botswana, Zambia and DRC.
- Goba corridor providing links Swaziland to Maputo port

The port of Beira serves the landlocked hinterlands of Zimbabwe, Zambia and DRC through the Beira corridor. In addition the Sena line provides links to northern Mozambique (Tete valley). The Port of Nacala serves both Malawi Zambia and the northern Mozambique provinces, providing access to maritime infrastructure through the Nacala corridor

South Africa

South Africa’s port clusters have established road and rail infrastructure providing hinterland connectivity. The North-South corridor extends Durban's hinterland to the Copperbelt in Zambia and the DRC.

Tanzania

The port of Dar es Salaam anchors two hinterland corridors:

- Central corridor provides access to Rwanda, Burundi and Uganda; and
- TAZARA railway corridor linking Zambia and DRC.
**Namibia**
Walvis Bay is Namibia’s main commercial port and anchors the Trans-Caprivi corridor, providing access into Northern Botswana and Zambia and possible connectivity to DRC.

**Angola**
The port of Lobito is the main gateway port for Angola with mainly rail connectivity to the DRC and to new mining developments in the Northwest of Zambia. The rail connectivity from both DRC and Zambia is yet to be developed to link with Angolan rail network.

5.2. Market Demand Assessment

A. Zambia key commodities assessment

For detailed information about Zambia market please refer to Annexure A.5 and A.6.

**Copper**
Copper is a high-value, low-volume commodity beneficiated and exported as copper concentrate or cathodes to increase the value to weight ratio.

**Production/Demand**
762Kt of copper was produced in 2013. Forecast annual production is expected to double over the next 5 years (1.5Mt) owing to new mining investments. This included First Quantum Mines new mine with a capacity of 300 Mt per annum, scheduled to come online in 2015. Figure 3.1 below illustrates copper mining activity concentrated along the Copperbelt in Zambia and the DRC. DRC produced 960Kt in 2013 however this is forecast to increase to 2Mtpa over the next 5 years.
Figure 3.1: Copper mining and exploration activity – Zambia and DRC

Tariffs and charges
Trucking is the primary mode for handling both concentrate and cathodic copper. Although security remains a key concern with road haulage, good transit time is achieved at competitive charges of US$95 per tonne.

Route Options
Competition of the copper belt trade shows significant overlap due to corridor connectivity and copper trade characteristics. The relatively high price of beneficiated copper is able to absorb logistics costs over relatively long distances.

Figure 3.2 Copper export route options
Figure 3.2 illustrates routing options for copper export to international markets. Durban is able to leverage the agglomeration of services and shipping connectivity to be competitive regardless of the extensive hinterland distances. Road dominates copper transport to the Port of Durban.

Export through Beira has the benefit of higher value back-haul cargo, which includes fertilizer, sulphur, re-agents and container cargo. The road rate of the aforesaid commodities of US$130/150 per tonne is acceptable to the customers. Export through the port of Dar es Salaam is hindered by poor service on the TAZARA railway line and significant port congestion.

**Fertilizer**

*Production/Demand*

Current fertilizer demand in Zambia amounts to 400Kt per annum and this is expected to rise to 500Kt in 2015 buoyed by as rapid growth in the agriculture sector. Imports are dominated by one customer, who accounts for over half of Zambia’s fertilizer import – 240Kt per year.

*Tariffs and charges*

Charges for trucking which is the primary mode of transportation are considered high at US$78/t (backhaul to Beira).

*Route options*

Imports are transported from Dar es Salaam, Beira and Durban however notable dissatisfaction has be voiced regarding port congestion at the Port of Dar es Salaam and poor service on the TAZARA line. Combined rail market share is estimated at roughly 20%.
Sulphur
Demand for sulphur is high and continues to grow as more mining capacity comes online.

Production/Demand
Zambian annual sulphur imports amount to roughly 240Kt. Coupled with sulphur imports earmarked for the DRC (+260Kt per annum) the combined annual demand for sulphur exceeds 500Kt, and high demand is expected to persist over the next two years until the commissioning of Sentinel smelter (expected 2015) which will commence production of sulphuric acid for First Quantum Mines.

Route considerations
Sulphur is considered a rail friendly commodity however it is transported as bulk by both road and rail. Most of the sulphur is consolidated at depots in Ndola and then trucked to final destination on the copper belt and DRC.
Sugar
Sugar is a moderate value commodity with wide ranging applications in the food and beverages industry.

Production/Demand
Zambia Sugar produces 420Kt of sugar per annum mainly for domestic consumption, and is the only player in a small export market exporting 150Kt annually. A forecast increase in total production to 500Kt in 2015 is likely to have a marginal impact on export volumes going forward.

Tariffs and charges
Charges for trucking which is the primary mode of transportation are considered high even with the backhaul to Beira.

Route Options
The final market destination for Zambia sugar exports is the European Union (EU). Both road and rail are used as follows:

- Beira – 100kt by road. Sugar is backhauled in trucks used for fertilizer imports; and
- Durban – 50kt using road and rail, 80/20 modal split respectively. Volumes are disproportionately skewed towards road haulage as a result of higher railage rates.

Figure 3.5 Sugar export route options
The rail and road through rates/charges for transportation of the above mentioned commodities in the Zambian market are illustrated in the table 3.1 below.

Table 3.1 Rates per commodity per corridor from and to Zambia

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Commodity</th>
<th>Rail $</th>
<th>Road $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durban</td>
<td>Sulphur</td>
<td>207t</td>
<td>210t</td>
</tr>
<tr>
<td></td>
<td>Sugar</td>
<td>102t</td>
<td>92/95t</td>
</tr>
<tr>
<td></td>
<td>Container</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Johannesburg</td>
<td>Fertilizer</td>
<td>135t</td>
<td>130t</td>
</tr>
<tr>
<td></td>
<td>Grain</td>
<td>160t</td>
<td>80/90t</td>
</tr>
<tr>
<td></td>
<td>Copper (40teu)</td>
<td>5400</td>
<td>4500</td>
</tr>
<tr>
<td>Dar es Salaam</td>
<td>Containers</td>
<td>5200</td>
<td>90/95 t</td>
</tr>
<tr>
<td>Mafeking</td>
<td>Wheat</td>
<td>120/t</td>
<td>145/180t</td>
</tr>
<tr>
<td>Beira</td>
<td>Sulphur</td>
<td>172t</td>
<td>150t</td>
</tr>
<tr>
<td></td>
<td>Sugar</td>
<td>95t</td>
<td>78t</td>
</tr>
<tr>
<td></td>
<td>Container</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fertilizer</td>
<td>110t</td>
<td>150t</td>
</tr>
<tr>
<td></td>
<td>Grain</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Copper (40teu)</td>
<td>5000</td>
<td>?</td>
</tr>
</tbody>
</table>

The Zambia and DRC Market Share

The distribution of market share in Zambia and DRC for the current traffic is illustrated on the table 3.2 below. Sugar is the only commodity with a high market share of 80%. Also shown in the same table is the projected traffic.

Table 3.2 Market share of Zambia & DRC key import and export commodities

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Handling</th>
<th>Tonnage (Current)</th>
<th>Road / Rail</th>
<th>Tonnage (Forecast)</th>
<th>Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper (Zambia)</td>
<td>Container / Bulk</td>
<td>762,000</td>
<td>Export 90/10</td>
<td>1,500,000</td>
<td>Beira / Durban</td>
</tr>
<tr>
<td>Copper (DRC)</td>
<td>Container / Bulk</td>
<td>960,000</td>
<td>Export 90/10</td>
<td>2,000,000</td>
<td>Beira / Durban</td>
</tr>
<tr>
<td>Sugar</td>
<td>Bulk</td>
<td>420,000</td>
<td>Export 20/80</td>
<td>500,000</td>
<td>Beira / Durban</td>
</tr>
<tr>
<td>Sulphur</td>
<td>Bulk</td>
<td>500,000</td>
<td>Import 80/20</td>
<td>600,000</td>
<td>Durban</td>
</tr>
<tr>
<td>Fertilizer</td>
<td>Bulk</td>
<td>400,000</td>
<td>Import 50/50</td>
<td>500,000</td>
<td>Beira / Durban / Dar es Salaam</td>
</tr>
</tbody>
</table>
B. Zimbabwe

For detailed information about Zimbabwean market please refer to Annexure A.7.

Coal

Coal is a high value, low volume commodity used in a variety of sectors including power generation, iron and steel production and cement manufacturing.

Production/Demand

Zimbabwe’s coal production is anchored on domestic thermal demand, supplying 85% of the Zimbabwean market. Coal reserves are estimated at 1.0bn tonnes and total inferred inventory coal resources are estimated at 2.1bn tonnes. Hwange Colliery is Zimbabwe’s major operating coalmine and has seen declining production from a peak of 5.9Mtpa. Production target for 2013 is 2.5Mtpa.

There are limited exports of coking coal to regional markets including Zambia (coking coal for copper smelting), DRC and South Africa.

Figure 3.6 Zimbabwe coal production – Planned (left) and Speculative (right)

Production expansion at Hwange is targeting export of up to 2Mtpa of coking coal. Other coal reserves have been identified however potential production volumes are unknown.
**Ferrochrome**
Ferrochrome is mined and processed in Zimbabwe but some exported as ore.

**Production/Demand**
Exports have declined from a peak of 300Kt to 130Kt in 2013 mainly due to adverse economic condition affecting operational liquidity. Investment is required to revitalise production, with available capacity for up to 540Ktpa. Ferrochrome export target is 90Kt in 2014 and this is forecast to increase to 120Kt over the next three years.

**Route options**
Ferrochrome exports are transported by rail and shipped through the port of Maputo.

**Tariffs/Charges**
The rate of ferrochrome is on rail is USD28.05t

**Tobacco**
Tobacco is considered a high-value cash crop and until recently Zimbabwe was one of the major global exporters.

**Production/Demand**
At peak Zimbabwe produces 236Kt of tobacco primarily for export (+96%). Current production level are estimated at 175Kt, however production is forecasted to increase as a result of an increasing number of farmers growing tobacco at the expense of other less profitable agricultural products.

**Tariffs/charges**
Rate for tobacco on transported to Maputo on rail wagons is USD104.18t.

**Route options**
Key export markets include Belgium, China and South Africa. Tobacco is containerised exported primarily through Beira and Durban. Both rail and road transport is used along the Durban route, however road transport is used to Beira.
Figure 3.7 Tobacco export route options

Sugar

Production/Demand
Zimbabwe produced 475Kt of sugar in 2013 reflecting growth in deliveries from private and third part farmers. One big customer plans to export 220Kt in 2014, increasing to 300Kt in the medium term.

Route options
Sugar is export by rail via the Maputo corridor.

Rates / Charges
The rate of transporting sugar on rail is USD22.09/t.

Cotton

Production/Demand
Cotton is one of the largest agriculture export commodities by tonnage. Key market players in the cotton production and export industry and their combined export throughput in 2013/2014 is 275Kt. Export volumes are forecast to increase to 350Kt in the medium term.

Route Options
Cotton is containerised and transported by road via Beira, Maputo and Durban to export markets. Very little, if any, is transported by rail.

Rates / Charges
The rate of the very little cotton transported on rail is USD46.62/t.
Rail Services from A Customer’s & Railway Operator Perspective

Figure 3.8 Cotton export route options

Rail Road rates/charges per tonne for Zimbabwe key commodities
The rail and road through rates/charges for transportation of the abovementioned commodities in the Zimbabwean market are illustrated in the table below.
<table>
<thead>
<tr>
<th>Commodity</th>
<th>Handling</th>
<th>Rail / Road</th>
<th>Tonnage (Current)</th>
<th>Export / Import</th>
<th>Tonnage (Forecast)</th>
<th>Port</th>
<th>Origin / Destination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugar</td>
<td>bulk</td>
<td>Rail</td>
<td>220,000</td>
<td>Rail 100</td>
<td>300,000</td>
<td>Maputo</td>
<td>EU</td>
</tr>
<tr>
<td>Cotton Lint</td>
<td>container</td>
<td>Road</td>
<td>274,000</td>
<td>Road 100</td>
<td>350,000</td>
<td>Beira/Maputo</td>
<td>China</td>
</tr>
<tr>
<td>Chrome</td>
<td>Bulk</td>
<td>Rail</td>
<td>90,000</td>
<td>Rail 100</td>
<td>120,000</td>
<td>Maputo</td>
<td>China</td>
</tr>
<tr>
<td>Tobacco</td>
<td>container</td>
<td>Road</td>
<td>2,400</td>
<td>export</td>
<td>4,000</td>
<td>Durban</td>
<td>EU</td>
</tr>
<tr>
<td>Tobacco</td>
<td>container</td>
<td>road</td>
<td>2,400</td>
<td>export</td>
<td>4,000</td>
<td>Beira</td>
<td>China</td>
</tr>
<tr>
<td>Tobacco</td>
<td>container</td>
<td>rail/road</td>
<td>5,000</td>
<td>export 50/50</td>
<td>10,000</td>
<td>Durban</td>
<td>EU</td>
</tr>
<tr>
<td>Wheat</td>
<td>Bulk</td>
<td>rail/road</td>
<td>60,000</td>
<td>import 80/20</td>
<td>100,000</td>
<td>Beira</td>
<td>Germany / Russia</td>
</tr>
<tr>
<td>Maize</td>
<td>Bulk</td>
<td>rail/road</td>
<td>2,000,000</td>
<td>import 50/50</td>
<td></td>
<td>Zambia/South Africa</td>
<td></td>
</tr>
<tr>
<td>Sulphur</td>
<td>Bulk</td>
<td>rail</td>
<td>12,000</td>
<td>import 50/50</td>
<td>Durban</td>
<td>RSA</td>
<td></td>
</tr>
<tr>
<td>sulphuric acid</td>
<td>tankcars</td>
<td>rail/road</td>
<td>12,700</td>
<td>import 70/30</td>
<td></td>
<td>Mozambique</td>
<td></td>
</tr>
<tr>
<td>Bauxite</td>
<td>Bulk</td>
<td>road</td>
<td>5,400</td>
<td>import 70/30</td>
<td></td>
<td>Mozambique</td>
<td></td>
</tr>
<tr>
<td>Phosphate rock</td>
<td>Bulk</td>
<td>rail/road</td>
<td>32,000</td>
<td>local 90/10</td>
<td></td>
<td>Nyazura</td>
<td></td>
</tr>
<tr>
<td>Gypsum</td>
<td>Bulk</td>
<td>rail/road</td>
<td>10,000</td>
<td>local/ export 30/70</td>
<td></td>
<td>Harare</td>
<td></td>
</tr>
<tr>
<td>A/Nitrate</td>
<td>Bulk</td>
<td>rail</td>
<td>50,000</td>
<td>import 30/70</td>
<td>Beira/Durban</td>
<td>RSA</td>
<td></td>
</tr>
<tr>
<td>Ammonia</td>
<td>tankcars</td>
<td>rail/road</td>
<td>5,000</td>
<td>import 50/50</td>
<td></td>
<td>RSA</td>
<td></td>
</tr>
<tr>
<td>MOP</td>
<td>Bulk</td>
<td>rail/road</td>
<td>4,000</td>
<td>import 50/50</td>
<td>Beira</td>
<td>India / China</td>
<td></td>
</tr>
<tr>
<td>SOP</td>
<td>Bulk</td>
<td>rail/road</td>
<td>4,000</td>
<td>import</td>
<td>Beira</td>
<td>India / China</td>
<td></td>
</tr>
<tr>
<td>MOP</td>
<td>Bulk</td>
<td>rail/road</td>
<td>4,000</td>
<td>import</td>
<td>Beira</td>
<td>India / China</td>
<td></td>
</tr>
<tr>
<td>SOP</td>
<td>Bulk</td>
<td>rail/road</td>
<td>4,000</td>
<td>import</td>
<td>Beira</td>
<td>India / China</td>
<td></td>
</tr>
<tr>
<td>Rice</td>
<td>Bulk</td>
<td>rail/road</td>
<td>4,000</td>
<td>import</td>
<td>Beira</td>
<td>Vietnam / Pakistan</td>
<td></td>
</tr>
<tr>
<td>Fertilizer</td>
<td>Bulk</td>
<td>rail</td>
<td>30,000</td>
<td>import</td>
<td>Durban</td>
<td>RSA</td>
<td></td>
</tr>
<tr>
<td>Granite</td>
<td>Bulk</td>
<td>rail</td>
<td>export 15 wagons / week</td>
<td>Beira</td>
<td></td>
<td>Italy</td>
<td></td>
</tr>
<tr>
<td>Containers</td>
<td>TEU</td>
<td>Rail/Road</td>
<td>6000</td>
<td></td>
<td>Beira/Durban</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bulk</td>
<td>Pipeline</td>
<td>Import/local</td>
<td></td>
<td>Beira/Chiredzi</td>
<td>Noczim except direct imports by Engen</td>
<td></td>
</tr>
</tbody>
</table>
Table 3.4 Rail/road rates per commodity per corridor of Zimbabwe key commodities

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Commodity</th>
<th>Rail $</th>
<th>Road $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limpopo</td>
<td>Ferrochrome</td>
<td>28.05t</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chrome ore</td>
<td>33.57t</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sugar</td>
<td>22.09t</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fertilizer</td>
<td>44.65t</td>
<td></td>
</tr>
<tr>
<td>Beira</td>
<td>Granite</td>
<td>54.44t</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tobacco in wagons</td>
<td>104.18t</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cotton</td>
<td>46.62t</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fuel</td>
<td>61.07t</td>
<td></td>
</tr>
<tr>
<td>Beira</td>
<td>Wheat</td>
<td>46.88t</td>
<td></td>
</tr>
<tr>
<td>Beira/Limpopo</td>
<td>Containers (light) 6m</td>
<td>800.40 pteu</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Containers (light) 12m</td>
<td>1648.80 pteu</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Containers (Heavy) 6m</td>
<td>1526.00 pteu</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Containers (Heavy) 12m</td>
<td>1832 pteu</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grain</td>
<td>56.82t</td>
<td></td>
</tr>
</tbody>
</table>

Rail freight price differentials

The table 3.5 below illustrates rail freight price differentials that usually influence a client's choice of route to the port. The commodity applied is 40' ISO containers used in general international traffic. Whichever way one looks at it, NRZ charges appear to be on the pricy side. The sea freight charges are based on the average of leading shipping lines. On the sea freight charges Beira is expensive but on the overall it is cheaper.

Table 3.5 Cost of containerized cargo per RA

<table>
<thead>
<tr>
<th>Destination Details</th>
<th>Port</th>
<th>NRZ Cost</th>
<th>CFM Cost</th>
<th>TFR Cost</th>
<th>Sea Freight</th>
<th>Total Cost</th>
<th>NRZ Cost (%)</th>
<th>NRZ Cost as % of Beira Route</th>
<th>CFM Cost (%)</th>
<th>TFR Cost (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harare - Ningbo (China)</td>
<td>Durban</td>
<td>$1,832</td>
<td>$1,820</td>
<td>$460.00</td>
<td>$4,112</td>
<td>69.03</td>
<td>44.55</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harare - Ningbo (China)</td>
<td>Beira</td>
<td>$624</td>
<td>$930</td>
<td>$1,100</td>
<td>$2,654</td>
<td>35.04</td>
<td>23.51</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harare - Ningbo (China)</td>
<td>Maputo</td>
<td>$1,648</td>
<td>$1,108</td>
<td>$460</td>
<td>$3,216</td>
<td>62.09</td>
<td>51.24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harare - Shanghai (China)</td>
<td>Durban</td>
<td>$1,832</td>
<td>$1,820</td>
<td>$460</td>
<td>$4,112</td>
<td>69.03</td>
<td>44.55</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harare - Shanghai (China)</td>
<td>Beira</td>
<td>$624</td>
<td>$930</td>
<td>$1,100</td>
<td>$2,654</td>
<td>35.04</td>
<td>23.51</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harare - Shanghai (China)</td>
<td>Maputo</td>
<td>$1,648</td>
<td>$1,108</td>
<td>$460</td>
<td>$3,216</td>
<td>62.09</td>
<td>51.24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harare - Xingang (China)</td>
<td>Durban</td>
<td>$1,832</td>
<td>$1,820</td>
<td>$460</td>
<td>$4,112</td>
<td>67.75</td>
<td>44.26</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harare - Xingang (China)</td>
<td>Beira</td>
<td>$624</td>
<td>$930</td>
<td>$1,150</td>
<td>$2,704.0</td>
<td>23.08</td>
<td>23.08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harare - Xingang (China)</td>
<td>Maputo</td>
<td>$1,648</td>
<td>$1,108</td>
<td>$520</td>
<td>$3,276</td>
<td>50.31</td>
<td>33.82</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Botswana

Production/Demand

Botswana has one of the largest untapped coal reserves in the world mainly in the south east of the country estimated at over 212 billion tonnes, 77% of which is speculative. There is potential to become a significant coal producer with an export industry of at least 36Mtpa, growing to as much as 115Mtpa.

Figure 3.9 Botswana coal production – Planned (left) and Speculative (right)

Morupule Colliery is Botswana’s only operational colliery however a number of projects are in various stages of development including the Mmamabula with an anticipated throughput of 16Mtpa. In 2012 Botswana started exporting Grade A washed coal to the SADC region (South Africa, Zimbabwe and Namibia)

Tariffs and charges

Transportation costs account for a substantial share of the delivered price of coal and in some instances up to 70%.

Route Options

A variety of route options have been proposed as export corridors for Botswana coal, and these range from expansion projects using existing infrastructure (Transnet coal-line extension and capacity enhancement) to new infrastructure projects that include the Trans-Kalahari rail line to Walvis Bay and a new railway line to a purpose built deep-sea port at Techobanine, Mozambique. More recently the development of a new port at Chongoene, Mozambique, together with proposed upgrades of the Limpopo corridor have also been sighted as a potential options for export coal from Botswana.
In November 2012 a trial run was conducted in partnership with African Energy, Morupule Coal Mine, Grindrod Mozambique Limitada and Vitol Coal South Africa, proving the feasibility of transporting 1300t of coal from Morupule, through Zimbabwe to the Maputo Coal Terminal.
Mozambique

Mozambique’s geostrategic location along southern Africa’s astern coastline has growing benefits to the region in light of increased trade with Asian markets. The port of Maputo is Mozambique’s largest port and benefits from being the closest port to the Gauteng industrial hub as well as the Mpumalanga and Limpopo mining and agricultural regions. It compliments South Africa’s ports in accommodating regional demand. Port operations include dry, bulk, containers, break bulk, liquid bulk and ship repair services. Development plans are being driven by growth in both container and dry bulk volumes. Growth is however contingent on the development of rail logistics solutions to meet freight demand.

*Figure 3.10 Port of Maputo Aerial view*

The Port of Beira is Mozambique’s second largest port plays a key role as a regional transit port with the multi-modal Beira corridor servicing Zambia, Zimbabwe, Malawi and the DRC. Operations include containers, break bulk cargo and liquid bulk. Developments include establishing a new coal terminal to accommodate an increase in coal exports from the Tete province. The port is an estuarial port with draft and navigational restriction that necessitate regular dredging. Cornelder de Mocambique – a joint venture between CFM and Cornelder holdings, manages Port operations.
Beira Corridor

For detailed report on the Beira Corridor refer to Annexure A.8

Market interviews conducted in Mozambique identified the following as primary commodities characterising regional transit trade along the Beira Corridor:

- Export: containers (copper, tobacco etc.), Granite, ferrochrome, timber primarily from Zimbabwe and Zambia.
- Import: sugar, fertilizer wheat and general cargo

The Sena railway line provides a link to Malawi and the emerging Tete province. The port is an estuarial port with draft and navigational restriction that necessitate regular dredging. Cornelder de Mocambique – a joint venture between CFM and Cornelder holdings, manages Port operations.

The responses provided during the interview process are qualitative in nature compared to the quantitative data presented above particularly in relation to sections on Zambia and Zimbabwe. As a result these responses do not intuitively fit within the report structure in whereby for each commodity identified the following information is included: Production/Demand volumes; Tariff and Charges; and Route Options.
Key findings show disparity in modal split for outbound (export) and inbound (import) traffic. The swing is significant with export dominated by road in some instances (90%:10%) and imports dominated by rail (85%:15%). This is not uniform across all organisations interviewed however it highlights the need for a larger comprehensive sample size to better characterise the nature of modal split along the Beira corridor.

Key customer considerations affecting modal choice include the ability to meet shipping targets and although tariffs are considered to be cheaper in some instances, the rail service responsiveness (transit times) are not competitive in relation to road haulage. Other key constraints attributed to the loss in rail market share include the absence of real-time tracking leading to poor communication with clients and stakeholders, In addition inadequate rolling stock and the lack of sufficient shunting locomotives at the port is noted as an inevitable cause to delays in port related operations.

The Port of Beira was historically designed for rail traffic and as such is not optimally suited for the current influx in road freight. Operationally there is an overwhelming preference for rail as a primary mode of transport servicing both inbound and outbound freight at the port. The port however undergoing expansion and there is an opportunity to strategically align hinterland rail development to optimise integration with port infrastructure. This would facilitate the development of holistic integrated logistics systems better suited to meet client needs.

**Ressano Garcia (Maputo) Corridor**

Market interviews identified the following primary commodities characterising regional transit trade along the Maputo Corridor:

- Export: containers (copper, tobacco etc.), Granite, ferrochrome, timber primarily from Zimbabwe and Zambia.
- Import: sugar, fertilizer wheat and general cargo

The Maputo corridor connects South Africa’s Gauteng Province to Mozambique’s port of Maputo, and provides an alternative trade route for South Africa’s Mpumalanga and Limpopo provinces. Coinciding infrastructure developments including the upgrade of the port of Maputo and development of the N4 highway from Pretoria to the Mozambican border at Lebombo – Ressano Garcia have enhanced the competitiveness of this particular trade route both in terms of freight cost and transit time.
Table 3.6 Profile of Maputo Corridor key import and export commodities

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Bulk/Containers</th>
<th>Current Tonnage/year</th>
<th>Export/Import</th>
<th>Forecast Tonnage/year</th>
<th>Destination / Original</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal Fines</td>
<td>Bulk</td>
<td>1,300,000</td>
<td>Export</td>
<td>3,800,000</td>
<td>India/EU/China/Southern Africa</td>
</tr>
<tr>
<td>Magnetite</td>
<td>Bulk</td>
<td>3,000,000</td>
<td>Export</td>
<td>2,000,000</td>
<td>India/EU/China/Southern Africa</td>
</tr>
<tr>
<td>Vehicles</td>
<td>Units</td>
<td>135,000</td>
<td>Import/Export</td>
<td>250,000 Units</td>
<td>Southern Africa/India/EU/China</td>
</tr>
<tr>
<td>Sized Coal</td>
<td>Bulk</td>
<td>400,000</td>
<td>Export</td>
<td>400,000</td>
<td>India/EU/China/Southern Africa</td>
</tr>
<tr>
<td>Chrome ore</td>
<td>Bulk</td>
<td>Nil</td>
<td>Export</td>
<td>180,000</td>
<td>India/EU/China/Southern Africa</td>
</tr>
<tr>
<td>Sugar</td>
<td>Bulk</td>
<td>51,000</td>
<td>Export</td>
<td>80,000</td>
<td>EU/South Africa</td>
</tr>
<tr>
<td>Ferrochrome</td>
<td>Bulk</td>
<td>484,000</td>
<td>export</td>
<td>648,000</td>
<td>India/EU/China/Southern Africa</td>
</tr>
<tr>
<td>Fuel</td>
<td>tankcars</td>
<td>25,000,000 L</td>
<td>Export</td>
<td>32,000,000 L</td>
<td>RSA/Maputo</td>
</tr>
</tbody>
</table>

Modal Split
Bulk cargo is primarily moved by rail transport with the exception of ferrochrome (15% by road), and sized coal, which is currently road, hauled. Road transport is considered to be more suitable for transporting vehicles (import and export) however this is largely due to operational inefficiencies experienced at intermodal terminals and freight exchanges. Road tankers are used for transporting fuel imports into South Africa (see Appendix A7 for a detailed break-down of key freight movements along the corridor).

Limpopo Corridor
For detailed report on the limpopo Corridor refer to Annexure A.8

Market interviews identified the following primary commodities characterising regional transit trade along the Limpopo Corridor:

- Export: Ferrochrome, sugar and general cargo (containers) from Zimbabwe.
- Import: Fertilizer, wheat and general cargo (containers)

The Limpopo corridor connects Zimbabwe, Zambia and Botswana to Mozambique’s port of Maputo. There is no Major highway connection along the corridor route and
as such all cargo traffic opts for rail as their sole mode of transport (see Annexure A7 for a detailed break-down of key freight movements along the corridor).

**Table 3.7 Profile of Limpopo Corridor key import and export commodities**

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Bulk/Containers</th>
<th>Current Tonnage/year</th>
<th>Export/Import</th>
<th>Forecast Tonnage/year</th>
<th>Destination / Original</th>
</tr>
</thead>
<tbody>
<tr>
<td>ferrochrome</td>
<td>bulk</td>
<td>121,000</td>
<td>export</td>
<td>162,000</td>
<td>EU/China/Zimbabwe</td>
</tr>
<tr>
<td>sugar</td>
<td>bulk</td>
<td>226,000</td>
<td>Export</td>
<td>280,000</td>
<td>EU/Zimbabwe</td>
</tr>
<tr>
<td>Wheat</td>
<td>bulk</td>
<td>55,000</td>
<td>import</td>
<td>60,000</td>
<td>EU/Brasil/China/Zimbabwe</td>
</tr>
<tr>
<td>Fertiliser</td>
<td>bulk</td>
<td>10,300</td>
<td>Import</td>
<td>60,000</td>
<td></td>
</tr>
<tr>
<td>General</td>
<td>containers</td>
<td>132 Units</td>
<td>Import/export</td>
<td>200 Units</td>
<td>Zimbabwe/EU/China</td>
</tr>
<tr>
<td>General</td>
<td>containers</td>
<td>-</td>
<td>import</td>
<td>500 Units</td>
<td>Zimbabwe/EU/China</td>
</tr>
<tr>
<td>Fuel</td>
<td>tankcars</td>
<td>120,000,000 L</td>
<td>Import</td>
<td>170,000,000 L</td>
<td>Zimbabwe/Botswana/Middle East</td>
</tr>
</tbody>
</table>
South Africa

Market interviews conducted in South Africa identified the following as primary commodities characterising regional transit trade: containers, fuel, sulphur, fertilizer and general cargo.

For detailed report on the South Africa market refer to Annexure A.9

The Port of Durban is the dominant gateway port for interregional trade, servicing Botswana, Zambia, Zimbabwe, Malawi, Mozambique and the DRC.

Figure 3.12 Port of Durban Aerial view

The responses provided during the interview process are qualitative in nature compared to the quantitative data presented above particularly in relation to sections on Zambia and Zimbabwe. As a result these responses do not intuitively fit within the report structure in whereby for each commodity identified the following information is included: Production/Demand volumes; Tariff and Charges; and Route Options.

Key findings support the view that road transport is increasingly the mode of choice – 75:25 modal split indicatively in favour of road. In South Africa the decline of rail market share is largely attributed to inefficiencies attributed to Transnet's monopoly position coupled with high tariffs and capacity constraints. Although the legacy rail network is well integrated with port infrastructure and industrial clusters, there is a perception among customers that rail services and proposed future investments are primarily geared towards bulk industries (mining) characterised by large clients with significant bargaining power and regular freight loads. Against this backdrop road
services are considered to be more flexible and better suited to meet a wider variety of transport needs.

Transnet identifies some inefficiency within its operations however internally the decline in market share is largely attributed to capacity constraints forcing freight to road. As such Transnet’s strategy to reverse modal shift involves investment in rolling stock to increase rail availability coupled with a corridor-based approach with multimodal terminals providing an interface between road and rail.
5.3 Analysis of Customer responses to questionnaires

The analysis below was based on the responses from the customer service questionnaire distributed by the railway operators to their top 5 customers. The detailed analysis report is attached as Annexure A.10. Included in the report is the current market share and traffic projection for the next 4 years.

Resources available for the current traffic

Most customers did not indicate the resources they require from railways to move the current traffic but indicated that their demands were not met when required. The customers also indicated that railways do not supply the type of wagons required for specific commodity. Railways were considered inefficient even when service agreements were signed. Trucks were considered to be always available and flexible.

Rating of Rail Services

Unavailability of rail resources when required left customers with no choice but to opt for road. Most customers highlighted long transit times that negatively affected the whole supply chain. The train schedules in terms of exports were indicated as not synchronized with shipping times and the tariffs were considered to be high. Furthermore rail services were considered to be inflexible. It was highlighted that rail service costing did not include road services at terminal and the sea freight leg for overseas shipment.

Road is considered to offer a one stop shop, hence it was faster, more predictable and flexible. While railway logistics were theoretically the mode of choice in terms of seamless services across borders, bulk movement and safety, reality on the ground was different because of poor transit times. Of specific concern was customer care where rail personnel were considered to lack knowledge of the whole supply chain logistics and customer queries were not attended timely and adequately.
**Determinants of mode of choice**

The customers indicated that their choice of transport mode is influenced by transit times, predictability, flexibility and arrival of cargo at the port in time for shipment. Other factors that the customers consider choosing the traffic export route are:

- Main determinant factor is the cost effectiveness of the route i.e. from production (source) to consumption (market destination)
- The capacity of the port in terms of handling equipment, berthing constraints, shipping lines’ choice of port of call.
- Existence or otherwise of non-physical barriers at the ports e.g. cumbersome documentation, rigid working hours, and the attitude of customs officials when processing export documentation e.g. non weekend working, delays in document processing, customs delays at certain ports.
- Shortest geographical route: to port and to market destination
- Port capacity both in terms of cargo handling and calling vessels.

**Customer relationship**

Customer care from railways as a service provider is below standard. The following were highlighted: bureaucracy, poor customer care in terms of communication skills, professionalism of marketing personal, lack of appreciation and knowledge of total logistics solutions. Customers complained that railways do not consider their preferred type of rolling stock as they end up supplied with the alternative. These points were not only mentioned but were emphasized by all customers.

**Summary of Findings: Salient point from customer views**

The following conclusions consist of a summary of the above corridor findings:

- SARA member organizations share common resources within defined corridors: Rail and road network systems connecting to common regional ports. Therefore there should be no perceived competition, instead there is co-opetition (collaboration and competition), because they all serve the same purpose to facilitate inter-regional and international trade;
- Most customers are using road more than rail out of necessity because of poor service provision and operation performance. The majority of key customers interviewed in both Zambia and Zimbabwe support this;
- Poor performance by the railways is the root cause for the loss of market share, rather than the lack of cargo to move on rail. As a result of years of lost customer confidence, it is not guaranteed that even if the railways were to make good their hot buttons or hot spots, cargo will come on rail;
• Railway operations and services are inconsistent, are based on “hit or miss” strategies;
  o Lack of timeous provision of appropriate wagons and locomotive power on demand;
  o Long transit times taken from point A to point B, regardless of distance travelled
• A dearth of “one stop shop” and seamless service, and customer are forced to deal with different and non-collaborating entities. There is no single “authority” to provide customers with what they need;
• Some railways senior executives are never visible to their customers, leaving the burden to their middle –to- lower level managers to “deal with it”, yet most of these managers are not empowered to make on the spot decisions, e.g. To the contrary, on the customer’s side decisions are made at the point of contact, be it lower, middle or top management;
• Lack of collaboration with customers who have rail infrastructure sites or depots and rail friendly cargo to consolidate consignments into block trains, which would avoid the necessity of breaking trains in sections throughout the route. This results in customer cargo getting delayed and/or lost in transit;
• Lack of cargo real-time tracking systems to ensure customers are continuously and consistently informed of the whereabouts of their cargo while en-route from origin to destination. Most customers feel that once their cargo is handed over to the railways, it goes “into a black box”; which is not the case with road transport operators;
• Railway services are characterised by high rates and demurrage charges, both of which have the negative impact of “pushing” clients and their cargo to road;
• Failure by the railways to set own minimum service standards which they should adhere to;

Additional evaluation of customer perception
Due to lack of information from the two groups (railway operators and customers), the Optimization Committee found it necessary to source additional data for a consistent analysis and, further for trustable recommendations. Table 4.1 below consolidates these findings expressed by customer when presented with a series of questions related to the performance of regional rail services. Appendix A.4 & A.5 provide detailed findings captured from interviews with clients.
The table further highlights key themes influencing logistics strategies for a range of industries and commodity classes. Although performances across different routes and corridors differ, what is clear is the widespread dissatisfaction with rail services.

**Table 4.1 Aggregate evaluation of railway service provision**

<table>
<thead>
<tr>
<th>Service related questions</th>
<th>Client Perception</th>
</tr>
</thead>
</table>

### i. Factors driving decline in rail market share

- **Service reliability**
  - Inconsistency of service

- **Service quality**
  - Loss of skills in key managerial and service position
  - Minimal consideration for client service requirements
  - Limited and out-dated market intelligence
  - Poorly aligned services relative to market demands
  - Freight rates are not commensurate with service provided

- **Competition through substitution**
  - Road haulage is a close substitute to rail
  - Multiple players and intense competition in the trucking industry

- **Service efficiency and time responsiveness**
  - Long and unpredictable transit times
  - Poor operational performance

#### Lack of investment

- Poorly maintained aging infrastructure
- Deplete rolling stock (locomotives and wagons)
- Collapsed signalling systems

### ii. Key determinants in route selection

- **Competitive pricing and cost effectiveness**
  - Aggregate logistics costs (Origin–destination)

- **Distance (shortest route) and transit time**

- **Maritime services**
  - Port connectivity
  - Frequency of shipping calls
  - Shipping lines

- **Port capacity and handling capabilities**
  - Availability of handling equipment
### Service related questions

<table>
<thead>
<tr>
<th>Customer Perception</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Navigation and berthing constraints</td>
</tr>
<tr>
<td>• Operational inefficiencies</td>
</tr>
<tr>
<td>o Onerous and cumbersome processes and documentation</td>
</tr>
<tr>
<td>o Customs and trade facilitation</td>
</tr>
<tr>
<td>o Restrictions on working hours</td>
</tr>
<tr>
<td>o Document processing delays</td>
</tr>
</tbody>
</table>

### iii. Customer appetite to consider rail as mode of choice once shortcomings have been addressed

- Complete loss of confidence in rail operations
- Evidence of a sustainable recovery strategy
- Requirement for improved marketing and commercial understanding

### iv. Changes required to attract customers to use rail

- Cultural change and revamped operational strategies
  - Client focus
  - Appropriate resources geared towards meeting client needs
- Value added services
  - Facilitate one-stop-shop pricing strategy
  - Contiguous rail operational authority
- Investment in infrastructure and services
  - Infrastructure rehabilitation and modernisation
  - Modernisation of rolling stock
- Operational improvement
  - Improvement in transit time and wagon turn-around times
  - Service flexibility
- Consideration of strategic partnerships with other stakeholders
  (e.g. private terminal providers, clearing agents, funding agencies)

### 5.4 Analysis of responses from Railway Operators per corridor

The rail operator analysis was based on the responses to the questionnaire distributed by the Committee (Annexure A.3). Responses to the railway operator questionnaire were received from nine of the ten RAs. The detailed report is attached as Annexure 6. The following was highlighted.
**Beira**
Commodities on the corridor are granite, fertilizer, grain, tobacco and containers among others.

**Beitbridge**
Commodities on this corridor are containerised general cargo, copper, sulphur, fertilizer, grain, sugar and Fuel.

**Dar es Salaam**
Commodities on this corridor are copper, sulphur, fertilizer, diesel and steel.

**Goba**
Main Commodities are hematite and sugar

**Limpopo**
Commodities are raw sugar, diesel, ferro-chrome, wheat, anhydrous ammonia.

**Namibian**
Commodities on this corridor are Containerised cargo, maize and Ammonium nitrate.

**Plumtree**
Main commodities carried are fuel, salt, soda ash, containerised cargo and coal.

**Ressano Garcia**
Main commodities on Ressano Garcia are magnetite, coal, containerised cargo, rock phosphate, maize and fertilizer.

**Richards Bay**
Coal is the main commodity on this corridor.

**Nacala**
Main commodities carried are fertilizer, containers and tobacco.

The railways acknowledged that some of the following; aging rolling stock, bad track condition, poor signalling and telecommunication, security and vandalism of railway equipment affect their service delivery. These contribute to increased time at interchange and the total transit time. Most RAs do not have service level agreements with their customers. Most railways in the region are operating <= 25% of their line capacity. Collaboration with road is at minimal level except where there is
consolidation of traffic especially in Zambia for DRC traffic. Very few CMGs are functional thereby affecting the seamless service to be offered along corridors. The railways hardly use the backhaul strategy that road utilises to get more business at very low rates. The railways incur more cost of hauling empty wagons hence the passing own of this cost to customers resulting in uncompetitive rates on the loaded direction.

5.5 Outcome of the research findings in relation to the shortest route Principle

The findings of this research clearly confirm the observation that traffic is available and customers are willing to move their cargo predominantly by rail provided service standards and landed cost to market are competitive. This is supported by the verbatim evidence of large volume of exports but it is clearly an imperative given that Regional exports still consist of semi-processed mining and agricultural products. Volume growth in bulk commodities such as coal, copper, Ferro chrome, sugar and tobacco, to name a few, and their increasing demand on the international market point to the inevitability of pressure on rail to put its act together and reform.

This is underscored by the heavy rail-based investments in new corridors, supported by international finance, witnessed in recent years. These new corridors namely the Lobito, Trans-Kalahari and the Nacala corridors are projects spearheaded under SADC and also on bilateral country trade agreements.

It is against this background there is widespread acknowledgement of the high cost to the society of road transport resulting in direct fiscal pressures for road repairs and maintenance, and the indirect cost due to road carnages and environmental damage.

The outcome from the findings is that SARA members will be under increasing pressure from their government and industry to become relevant and play their central role in serving the region at the right cost and at competitive service levels.
6. RE-IMAGING RAIL SERVICE DELIVERY

Client focused service delivery strategy

The inability to put the clients needs at the focus of rail service strategies is glaring in its omission, and this is widely echoed throughout the study findings. More importantly framing the competitive dynamics of regional surface transport as simply a modal choice between road and rail, fails to recognise the complexity of optimising service delivery around complex supply chains with often conflicting logistics requirements. A closer look at key client considerations uncovers a different view, which is not limited to modal choice but rather emphasises the logistics challenges characterised by a variety of determinants including:

- Service reliability
- Time sensitivity
- Cost efficiency
- Operational flexibility
- Security

Client focused service delivery affords a holistic view aimed at meeting a customer requirements. This ensures that the rail service offering is aligned with market needs, and is designed to meet, not dictate stakeholder expectations.

**Figure 6.1 Client focus – Client logistics requirements analysis**

The adoption of a holistic client focused view translates into inherently different approaches to service delivery, ensuring critical and desired performance objectives are defined. Figure 5.1 illustrates a process aimed at putting client requirements at the centre of service design within a railway context. Critically the process identifies...
key input characteristics driving demand, and this is paramount in building a baseline of smart market information and data on which to base service and operational parameters.

**Supply chain systems view**

The dominance of road haulage in comparison to rail is not limited to southern Africa. Developed countries similarly rely extensively on road transport as the primary means of transporting freight (70% of US freight is road hauled) however broader integration of different transport modes (road, rail, rivers and canals) leverages the attributes of each modal option, to provide efficient and effective integrated transport systems.

Figure 2.2 in Section 2 illustrates difference in road and rail network density when considered as stand-alone solutions. Transport density overall is enhanced when the two modes are viewed in tandem. Multi-modal concepts however leverage the competitive advantages of each mode – rails long-haul economics and roads versatility and point-to-point connectivity – providing optimised transportation and logistics solutions for regional supply chains. Cooperative competition fostered along multimodal corridors has clear benefits including improved coordination and planning between modes, enabling the improved optimisation of infrastructure and capacity. Services are therefore delivered on a best-fit principle without cannibalising market share at the expense of a particular mode or route.

**Alternative logistics strategies enabling multi-modal coordination**

Transport integration can be accelerated through the development of an integrated regional system of multi-modal logistics hubs that provide interfaces for consolidation and distribution of freight. The attraction of these facilities can be further enhanced by the provision of value added logistics services such as integrated customs processing and clearance, as well as access to third party logistics providers (3PLs).

A hybrid approach involving the development of de-centralised logistics hubs servicing regional economic centres connected through prioritised dedicated multi-modal economic corridors, would go a long way towards transforming the competitive fortunes of railway services. Larger centralised terminals with regional coverage, optimised for regional distribution, could further enhance logistics. On the surface these may appear radical however freight villages and inland port networks facilitated
through private and public partnerships, have transformed supply chains in various economies and rail services play a pivotal role.

Logistics hubs are traditionally anchored to a maritime port via a dedicated high capacity transport corridor, extending the ports reach inland. This leverages one of the key competitive advantages of railway transport i.e the ability to rapidly discharge cargo from the port precinct alleviating congestion caused by road trucks. Consequently the development of inland logistics hubs pushes railways to the forefront, providing high capacity dedicated links between regional ports and inland hubs and terminals.

*Figure 6.2 Alternative Freight distribution concepts*

The benefits of developing logistics hubs include:

- Reduced congestion at ports through dedicated connections to inland consolidation and distribution areas;
- Trade facilitation through strategic investment in multi-modal transport assets;
- Economies of scale through centralised consolidation and distribution;
• Promotion of value added services; and
• Platform for Integrating and optimising maritime and inland freight transport systems.

**Figure 6.3 Conceptual view of logistics hubs in southern Africa**

There is a strategic opportunity for SARA to be actively involved in outlining a holistic development framework through private and public engagement, leading to the development of a regional system of logistics hubs that strategically optimises the role played by rail service providers in domestic and regional transit freight movement. Integration with highway infrastructure at logistics hubs and terminals will encourage the utilisation of trucks for inbound logistics, as well as distribution to dispersed locations over shorter distances. This leverages the competitive advantages offered by both road and rail services. Figure 5.3 conceptually illustrates a regional network of logistics hubs linked to port systems on the eastern and western coastline. Logistics hubs would also encourage consolidation of cargo providing scale economies while simultaneously allowing the running of optimum block trains between key nodes in the system.

**Functional specialisation**

There is scope for freight specialisation targeting specific key clients seeking to transport rail friendly commodities with customised services that leverage the competitive advantages of railways. This may effectively simplify rail operator’s services allowing then to achieve consistency and higher levels of customer satisfaction. Service differentiation also discourages customers from making decision
purely on the basis of cost. The dominance of the north-south corridor is largely driven by Durban’s shipping connectivity, allowing the hinterland corridor to remain competitive regardless of the long surface distance. Transnet’s coal (Ermelo-Richards Bay) and iron-ore (Sishen-Saldanha) lines offer specialised services optimised for specific commodities and as such are able to provide clients with a distinct service offering.

**Implementation of the SARA Marketing Policy**

There is need to revisit the SARA Marketing Policy with emphases on item 2 and 3 as these could be one of the reasons for perceived loss of market share to road. The revenue sharing section in the Policy is silent on asset owner. Customers are not given the right to alternative route option resulting in customers opting for road transport.
7. CONCLUSION AND RECOMMENDATIONS

Conclusion

During interviews the customers were asking the following questions;

i. Who is SARA, what does it stands for and since it was established, what has it accomplished to help RAs to maintain, retain or increase their market share? Unless SARA is there for the purpose of “Holding meetings about meetings”

ii. What has the railways to offer to show to customers why they should shift from road to rail

iii. With current capacity and resources the railways are failing to efficiently move the traffic offered to them

Therefore answering of the abovementioned questions would assist RAs in identify their shortcomings in providing railway services to their customers.

Service availability and reliability enable businesses to strategize, plan and optimise logistic supply chains thereby enabling businesses to eke out greater efficiencies resulting in reducing waiting times, and limited storage and inventory costs. There is a concerted view that efficient planning would dramatically improve regional rail services, facilitating responsive service provision that considers market demand, client production cycles, and seasonality. Most customer experiences portray railway service providers as dismissive and inadequately engaged with the market at both strategic and operational levels. Customer needs are poorly understood and consequently services provided do not competitively respond to the logistics challenges. Customers consider railways as focusing only on transportation instead of providing total logistics solution.

The lack of investment in core infrastructure both in terms of maintenance and modernisation, disincentives private sector investment in rail friendly consolidation and distribution facilities. Similarly the absence of service level agreements that contractually stipulate acceptable service levels, and mechanisms for recourse in the event of breach does not instil confidence leaving customers exposed to bearing the costs of delays and inefficiencies. Overall customers expressed the need for a
systemic review of rail strategies, coupled with concerted and deliberate market engagement, allowing service providers to better position rail services in a dynamic market.

Rail trials demonstrating transit time and service capabilities have been conducted aimed at courting market interest, however this has not been supported by broader transformative actions by rail service providers. As a result customers have reservations about the sustainability of touted benefits. There are no guarantees to a swift change in market perception and customers continue to prefer service levels provided by road hauliers. Customers however do recognise the need for robust alternative surface transport to road dominance and this presents unanticipated avenue for the rail sector to strategically re-invent itself and align with regional logistics supply chain needs. Greater competition from rail would also stimulate multi-modal transport integration and service innovation, enabling regional products and services to competitively reach global markets.

Customers are highly concerned with the level of contact and professionalism of railway personnel. This is evidenced by the lack of visibility of rail executive management in interaction with customers. Railways are said to have nothing to offer in terms of customer service, except high rates and demurrage charges, both of which have the negative impact of “pushing” clients and their cargo to road. Failure by the railways to set own minimum service standards they can adhere to. There are customers who are rail friendly but are always let down by the railway authorities themselves. As a result these customers take their business to road, because in their justified opinion, the railways are their own enemies, as they “throw” away business to the competition, resulting in perceived loss of market share

Some railways senior executives are never visible to their customers, leaving the burden to their middle –to- lower level managers to “deal with it”, yet most of these managers are not empowered to make on the spot decisions, e.g. if a customer asks for a special or negotiated rate for definite and sizable rail friendly commodity, this has to be decided by some member or members of EXCO, which takes time to give the necessary feedback to the client to enable informed decisions to be made. To the contrary, on the customer’s side decisions are made at the point of contact, be it lower, middle or top management.
Lack of cargo real-time tracking systems to ensure customers are continuously and consistently informed of the whereabouts of their cargo while en-route from origin to destination. Most customers feel that once their cargo is handed over to the railways, it goes “into a black box”; which is not the case with road transport operators.

**Recommendations**

The recommendations below are based on organizational strategy, for competitive advantage and define organizational strategy as the process by which organization leverage their valuable resources towards the right activities to achieve competitive advantage, improve performance and create value within a competitive environment. Based on the views and opinions gleaned from most customers on the ground, the following minimum suggestions are recommended:

1. **Value Addition**
   i. In order to attract and retain reasonable market share of rail friendly cargo, there is need for a change of mind set and/or paradigm shift, in Rail authorities’ approach to doing business, by avoiding being an extension of the government, and start running their business on the basis of the value preposition where performance is measured in terms of unique service offering, cost effectiveness, efficiency, customer satisfaction etc which will impact on overall business improvement and the bottom line.

2. **Improving rail competitiveness**
   i. With the resources currently available, and in order to provide meaningful service to customers, and improve competitiveness in order to attract back to rail some lost clients, railways should set minimum service standards which they must adhere to, such as:
      - Resource allocation, transit time, and other services that guarantee the quality of the output
      - Each customer’s consignment should be treated as a project and must be implemented according to:
         - Agreed scope
         - Schedule and deliverables with gate reviews
         - Budget (within cost)
         - Quality of delivery within constrains
   ii. It should be remembered that, if the minimum service standard is not met then market confidence is lost

3. **Culture of Service Excellence**
   i. Take ownership – avoid excuses and culture of blame.
   ii. Ratify all initiatives and policies and procedures agreed upon
   iii. Joint market of services in a corridor by targeting major customers with rail friendly in a corridor to build and instil customer confident
   iv. Adopt and implement the commercial information management system developed by SARA
   v. Consider customer consultative forums at organisational and/or corridor level

4. **Regaining of the lost market share**
Option 1

Establishment of a company to manage international traffic

i. It is proposed that a structure to manage international traffic be established under SARA’s strategic guidance. The advantage of such a set up would be to encourage the Railways to act together as opposed to competing with each other.

ii. For such a structure to be able to compete effectively to regain traffic lost to road it must, of necessity, be able to focus and respond to market needs in terms of cost and service levels on one-stop-shop basis, with minimum bureaucracy at a profit (a market driven organisation).

iii. Formation of a company or a Business Development Unit (BDU) under the Board or Secretariat to handle all international cargo and to which all SARA members have a shareholding; the basis of which can be determined as a separate exercise.

iv. Such a company of BDU would operate on performance-basis through working agreements with member railways, leased resources i.e. equipment, facilities and operating personnel to avoid duplication of investment.

v. Return to members will be a dividend to shareholders regardless of which route traffic is directed.

Option 2

Establishment of an Inter Railway Business Unit under SARA Board or Secretariat

i. International traffic must be handled under one Unit, there must be one central coordinating center for this traffic stream. This will be a one stop shop/service. This Unit will engage each railway along the corridors and put together one commercial/transport agreement to the customer.

ii. This concept relates to other ideas about forming a company owned by all the railways and mandated to handle international traffic.

iii. The non-functional of CMGs would be addressed.

iv. This will foster an integrated planning approach.

v. Resource sharing along corridors for targeted traffic would be strengthened.

5. Route Choice

i. It should be noted that customers’ corridor route choice is determined by the provision of a total logistics solution, based on through-corridor efficiency, and among other things i.e. resource availability, storage and handling facilities, operations capability, communication, safety and landed cost of goods (in short a seamless, efficient and cost effective service provision);

ii. Clearly the real issue that will preoccupy SARA in the medium to long term has to be one of inadequate capacity hence the need to ensure that ALL corridors are capacitated to play their meaningful role.

iii. What this means in the short term is that the organisation can ill afford to precipitate any shrinkage in capacity on some corridors through artificial conditions not based of competitive cost and quality service; all that it does is to force customers to abandon rail altogether to the detriment of exporters and, ultimately, the economies they seek to benefit.

iv. The issue of the shortest route will be affected once the new routes, (Lobito, Nacala and TransKalahari) become operational.
v. The SARA Marketing Policy needs to be reviewed in line with the TOR of the Company or Business Unit

6. Capacity building

i. Consider offering continuous professional development programmes in marketing, customers services, communication skills, etc to key staff

ii. Identify skills shortage and offer training at Regional level

iii. SARA should seek to improve dialogue with customers on international traffic by encouraging rail authorities to engage key stakeholders/customers at their regional policy forum to hear from their clients, so as to understand their needs in advance of any strategic plans and service offering

iv. In order for the railways to attract and recapture some lost market share, they must be prepared to enter into strategic partnerships with other stakeholders like clearing agents, freight forwarders, container terminal depot operators (for consolidation of cargo), willing investors, revenue authorities; and be willing to enter into Service Level Agreements with major customers.

v. SARA and RAs to jointly lobby Governments to implement the Pemba resolution and the Brazzaville Declaration

i. It is recommended that it be based on the following service level requirements process, as shown in Figure 7.1 below:

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**Figure 7.1 Service Level Requirements Process (Paulk et al, (1993); CMM Maturity Levels)**

- Negotiated agreement to capture and instill confidence of the client
- Disciplined process, by establishing guidelines for managing sustainable service offering
- Standard, consistent process, by establishing a formal communicated and documented modus operandi set
- Are measurable, achievable, which will help to set an improved ability to predict sustainable performance, based on agreed cost and schedule compliance
- Continuously improving process by managing the service level offering the “standard operating procedure”, focused on overall continuous improvement to maintain
MARKETING POLICY

1. GENERAL

1.1 Background to the policy

This is a formal policy document governing the interaction between the Southern African Railways on the marketing of rail services.

1.2 Objectives of policy

The marketing policy sets out:

- A common understanding and agreement on underlying marketing principles;
- Ways in which marketing process should take place in order to ensure increased rail market share, competitiveness and long term viability by providing one-stop, cost effective, seamless, predictable service to users of International goods transport throughout all the railways of the SARA region and beyond.

1.3 Scope

This policy applies to the market of all international rail service, for goods and passengers traffic, consigned on more than one railway in the Southern African region and the adjacent one metre gauge rail network.

1.4 General policy, specific implementation

This policy is to be used:

- To review and align the marketing/commercial aspects of Business Agreements negotiated specifically between the railways.
- To implement improved marketing processes within corridors.
2. **REVENUE SHARING PRINCIPLES (APPLICABLE PER CORRIDOR ONLY)**

Railways could determine railage deemed appropriate or market related on traffic destined to or traversing their railway lines. In the event where quoted rates given at the prerogative of the railways were not acceptable to customers and/or in terms of the agreement between the railways involved, the following alternatives could apply:

### 2.1 Equity in allocating railage income

#### 2.1.1 Definition

A non-differentiated through rate, from origin to destination, shared pro-rata between the railways effecting the service, based on agreed work performance factors, after taking into consideration relevant compensation for railways executing terminal services.

#### 2.1.2 Application

Railage income is shared between railways, allocating 2.5% each to the origin and destination railways, and 95% between all the participating railways based on their respective net ton-kilometres for the traffic conveyed.

Problems and issues noted with regard to the application of the equity principle are appended as Annexure A to this document.

#### 2.1.3 Background to principle

In order to ensure that traffic is considered by rail, it is imperative that railage should be either market related, considering world market prices, or competitive taking into account competition from alternative modes of transport.

#### 2.1.4 Force of this principle

This principle where applied should override the use of the Official Tariff Books.

#### 2.1.5 Rates increases

For existing business allocated on the basis of the equity principle, when increases are agreed with customers, allocation of the revised railage income is maintained on the basis of the equity principle. No one railway may increase its share unilaterally.

### 2.2 Haulage

In order to support the objective of increased rail market share, a railway may be compensated on a fixed basis for the hauling of traffic on behalf of another railway or authorized agent. In such event
railage collected from the customer, from origin to destination, is retained by the originating railway.

2.2.1 Application

Fixed compensation to a railway for services rendered would be subject to mutual agreement between the relevant railways.

2.3 Wheelage

Contributing to a seamless, predictable service, and addressing the needs of customers, trains of the originating railway may be consigned via or to the lines of another railway, utilizing the rolling stock of such originating railway. The intermediate or destination railway is compensated on a fixed basis an access fee and relevant services rendered. Railage collected from the customer, from origin to destination, is retained by the originating railway.

2.3.1 Application

Wheelage to a railway for services rendered would be subject to mutual agreement between the railways involved.

3. ROUTING OF INTERNATIONAL TRAFFIC (APPLICABLE PER CORRIDOR ONLY)

In order to address the needs of customers and the interests of railways, unless otherwise agreed to by the railways involved, international traffic would be quoted and routed based on the shortest geographical rail route from origin to destination, subject to customer preference, route efficiency, cost, safety, and any governmental or inter-railway agreements that may be in force. Implementation of the principle would have to be on a corridor-by-corridor basis in view of varying prevailing circumstances in the different corridors.

4. RATES QUOTATIONS

4.1 Time Frame

Requests for rate quotations on new business must be given to the requesting railway by all the affected railways within 48 hours from receiving the enquiry. Enquiries and responses can be by phone, fax, e-mail or other medium. In exceptional circumstances, should extensive negotiations with a customer be required, the time frame for such a quotation would be effected in accordance with the agreement of the customer concerned.

4.2 Consultations

In order to support responses to the customer for new business within the time frame, consultation between the railways is encouraged.

4.3 No part quotations

Serving the interest of all railways, a railway should not quote on part of the journey, which can be totally completed by rail. Where the customer could transship the traffic at an earlier or later point so as to avoid using the rail...
services for another carrier, the railway receiving the enquiry provides a quote for the complete journey by the rail. Exceptional circumstances would be agreed upon between the railways.

4.4 Rail consultation and other logistics providers

Where a request for a part quotation is received from a rail consultant or other logistics provider, and in extreme circumstances one has to be provided, the quotation is never lower than is offered to the designated railway.

5. ONE STOP SERVICE (ONE RATE, ONE INVOICE, ONE PAYMENT. IE. COLLECTION OF EACH OTHER’S REVENUE)

One railway is designated to be the point of contact with the customer, normally the first railway receiving the enquiry from the customer. There is one contract between the designated railway and the customer, covering the services of all participating railways, including the collection of revenue. Each corridor would have to agree on which member could best perform this function, together with guidelines and mechanisms to control default on remittances to the other railways. The designated railway issues one consignment note and invoice for the complete through railage income, and collects all the income on behalf of all railways. The split of income between the railways is not shown to the customer.

6. CUSTOMER CARE FEEDBACK AND INFORMATION

Customer care reports are prepared after specific visits and summarised at least once every quarter by the customer-contact railway, and also provided promptly to other railways participating in the corridor. Feedback from the customer on rate quotations would be provided by the other railways.

7. VISITS TO CUSTOMERS IN OTHER COUNTRIES

Visits to customers in other countries by any staff from another railway should be well coordinated with the local railway. Normally both the designated and the visiting railway see the customer, unless otherwise agreed. Each such visit, if not accompanied by the designated railway, is reported on by the visitor to the customer-contact railway.

8. STRATEGIC ALLIANCES

To be able the provision of extended services, e.g. freight logistics solutions, railways may enter into strategic alliances with other service providers.

9. JOINT PROMOTIONS

Joint promotions (e.g. stands at trade fairs and exhibitions) should be attended where possible by all participating railways. If a railway does not attend, it can supply promotional materials relevant to the event taking place.

10. MARKET RESEARCH AND INTELLIGENCE

Railways rely heavily on accurate information to develop specific marketing strategies. Sufficient resources shall be dedicated by each railway to gather
market information in support of marketing efforts. Such information shall be extended to other railways.

Trade fairs and other opportunities to gather market intelligence should be monitored by the local railway and advised to other railways.

11. TRAINING IN MARKETING

In order to support their mutual objectives, the railways shall establish uniform and consistent curriculum for training staff in the marketing of their services.

12. CLIENT PAIRING

Marketing efforts in each railway specifically focuses on opportunities for back-loading in order to achieve more competitive rates through increased asset utilisation.

13. EQUIPMENT HIRE

Application of equipment hire would be done in accordance with and in support of the objective of this policy.

14. PRACTICAL IMPLEMENTATION

14.1 Implementation of this policy

Each railway implements and maintains up-to-date its processes and systems in support of the policy objectives. All other railway agreements should be in conformity with this policy.

14.2 Effectiveness and performance measures

Corridor Management Group coordinators shall include in their analyses of corridor performance, measures being undertaken to ensure effective implementation of the Marketing Policy (e.g. relevant back-loading percentages, effects on market competitiveness, speed of responses to customers, traffic gained/lost and reasons etc.) to determine whether the objectives of the policy are being achieved.

15. MARKETING POLICY MAINTENANCE

15.1 Revision of this policy

This policy will be revised annually or as and when necessary. The foregoing notwithstanding, any railway may propose amendments. Supporting motivation should accompany the request to be considered appropriately by SARA and its relevant committees.

**************************
ANNEX A

1. **EQUITY APPLICATION**

   In applying an equity principle, alternative modus operandi could be considered as follows:

   1.1 Determine a market related rate for the throughout distance, irrespective of cost structures of different Railways. The market related rate is afforded to Railways in accordance with the marketing policy i.e. after considering compensation to Railways doing Terminal services, the balance is afforded on the basis of a Railway's work performance (example net ton km).

   1.2 Equity rate for the total distance is market related, but a standard minimum charge, regarded as a “best practice rate “ for the region should at least be honored in the quotation by a Railway of railage for a throughout journey.

   1.3 Equity rate is market related, but considering that railways may have different cost structures, any railway not agreeable to the Equity rate on this basis may submit annually its minimum rate per commodity per corridor, in order to facilitate quotation by a railway of railage from origin to destination. However, in order to ensure that this is done in a consistent manner, a standard model is used to determine:

   (a) the **appropriate costs**: and

   (b) the **quantum** of such costs in each Railway which would serve as that Railway's “minimum rate per commodity per corridor” and which could then be used for the purpose of quotation for a throughout journey.

2. **THE EQUITY PRINCIPLE : FACTORS TO BE CONSIDERED**

   2.1 Cost differentiation

   - Impact of distance (longer distance implies relative lower operating cost)
   - Topography (necessitating different train composition)
   - Corridors
   - Fleet differentiation
   - Inflation rate in different countries (not necessarily off-set by weakening exchange rates)
   - Capacity utilisation (excess vs shortage )

   2.2 Subsidies being received from Government for services rendered

   2.3 Statutory requirements and national policy

   2.4 Privatisation

   2.5 Mutual trust

   2.6 Marketing capacity/capability of all Railways

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## Ratification

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Annexure A.2

1. Terms of Reference of the Rail Optimization Committee

   a. Establish Regional transport demand patents in order to:
      i. Determine rail market share by route etc
      ii. Understand the key drivers of modal choice, by customers, between road and rail
      iii. Establish why rail demand trends are on the slide, and
      iv. Determine priority actions needed to reverse the trend and grow rail market share

   b. Establish current status of the various SARA rail corridors, their utilisation levels, efficiencies and challenges both from a market and railway perspective

   c. Establish the basis of current traffic routing over the major corridors and rail systems

   d. Evaluate whether the SARA Marketing Policy achieved the objectives for which it was developed considering that it has been in place for over 10 years now but has, to date had little or no real impact in reversing this negative trend. If need be review to update it in pursuit of expanding railway market share, and

   e. Recommend solutions for the short, medium and long term.

2. Terms of Reference for the Consultant

1. Problem Statement

There is concern amongst SARA members, specifically the rail operators, that the distribution/share of transit rail traffic to/from the SADC hinterland through the ports, to/from overseas markets, is not being fairly shared between the rail systems of the region. Railways believe that they can offer convenient and relatively cheaper transportation services if they align themselves with the market.

In seeking to resolve the problem of service realignment the SARA Board simultaneously wants to identify and address the underlying problem of lost rail
market share so that the usage of rail transport systems in the region can be optimized for the benefit of all. It is in this regard that a questionnaire was developed for customers to give feedback and their views on quality of services currently provided by railway operators, and give projections of future demand for railway services and the challenges they face when dealing with the railways.

2. RESEARCH HYPOTHESIS

The assumption is that customers are using road more than rail. Based on this assumption will:

- ix. Cargo come on rail when railways fixes the constrains in their service provision
- x. The modes of transport continue competing i.e. road and rail

3. OBJECTIVES OF CARRYING A FIELD STUDY

The purpose of carrying out a field study is to identify the underlying problem of why railways lost market share and how the railways can optimize railway services. The objectives of carrying out the field study are:

- 3.1 To gather data that will be used to determine the market share of specific commodities as given in table 1 on different SARA corridors
- 3.2 Reasons of modal spilt
- 3.3 To identify strategic issues that RAs could adopt to improve the railway services within the resources currently available
- 3.4 To draw up of a final report for the Rail Optimisation Committee that highlights strategic issues for gaining market share

4. SCOPE OF WORK

SARA requires the service of a Consultant to gather data in Democratic Republic of Congo, Zambia and Zimbabwe;

- 4.1 To streamline the customer questionnaire designed by the Committee and make it focused
- 4.2 Gather data from selected customers, sector association, shipping agencies and freight forwarders in different countries on the specific
commodity in terms of modal choice, port of choice, complains against rail. The data collected to included the past 3 years and projection for the next three years.

4.3 Determine who is controlling the specific commodity
4.4 Determine the characteristics of each commodity for example seasonal, packaging, type wagons etc
4.5 Verify and validate the data gathered through the railway operator questionnaire on the business volumes being moved of the specific commodity
4.6 Report on the outcome of the study
4.7 Work with the Secretariat to produce the final report of the Committee to the Board
4.8 The spatial context of the study is given below:

Table 1: Spatial context of data collection

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Mt per annum – Imports Road/Rail</th>
<th>Mt per annum – Exports Road/Rail</th>
<th>Country</th>
<th>Customer</th>
<th>Corridor</th>
<th>Rail market share</th>
<th>Remarks</th>
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<tr>
<td>Copper</td>
<td>ZM &amp; DRC</td>
<td>3 largest copper mines like KCM, CBS, Freight Forwarders, Chamber of Mines in Zambia and 1 or 2 DRC customer</td>
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<tr>
<td>Sugar</td>
<td>ZW &amp; ZM</td>
<td>Tongaat – Zim&amp;Mazambuka in Zambia</td>
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<td>Sulphur</td>
<td>ZM &amp; DRC</td>
<td>3 largest Copper mines</td>
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<td>Ferrochrome</td>
<td>ZW</td>
<td>Chinese exporters/ other exporters</td>
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<td>Zambia Grain</td>
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<td>Grain Board and other biggest exporters/importers</td>
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<td>Tobacco</td>
<td>ZW</td>
<td>ZTA, ZLT, Tri-bag, China exporters</td>
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<td>Fertilizer</td>
<td>ZM &amp; ZW</td>
<td>At least three biggest clients for Zam&amp;Zim</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel</td>
<td>SA, ZM &amp; ZW</td>
<td>4 biggest importers including the mines for Zim and Zam</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5 DELIVERABLES

The Consultant/s will be required to produce a complete report on behalf of the Committee.

6 TERMS OF REFERENCE

6.1 To Conduct a research that addresses the stated objectives
6.2 Clearly outline the underlying assumptions of the hypothesis
6.3 Collect high level of quality data as stated in the scope of work
6.4 Consider the analysis already done for general customer and rail operator
6.5 To obtain government’s position on railway services in the three countries
6.6 To indicate other sources of secondary data
6.7 Determine the current market share of the specific commodity
6.8 Determine customer’s preference of mode of choice and reasons
6.9 Determine customer’s port preference and route
6.10 Determine production levels and business growth of the specific commodity per country
6.11 Determine if there is scope to increase the rail market share
6.12 Determine the modal split of copper in terms of route
6.13 To also consider Botswana and Tanzania as options of cargo routing
6.14 To identify strategic issues to improve the rail market share

7 EXPECTED OUTCOME

The Consultant shall produce the following;

7.1 A come up with a report on the outcome of the research
7.2 Any recommendations for further studies or initiatives for railways to increase the market
7.3 Produce the final report for the Committee

8 SCHEDULE

The project is expected to be complete within eighteen days. Consultant shall provide progress reports summarizing progress in this work, outlining problems, and constraints encountered and presenting issues for the Committee’s decision as required.
7.1 Produce the initial draft report of the study 7 days after the notice to proceed with the above scope of work

7.2 Produce the final draft report 2 day after the submission of comments by Committee members

7.3 To integrate the input from the Secretariat and the final study report to produce the final Rail optimization report 7 days after the final study report submission

7.4 Present the report to the Committee for final approval 2 days after the submission of the final report
Annexure A.3

Rail Operator Questionnaire

OBJECTIVE
In an effort to boost railway market share through improved service delivery to customers, the SARA Board appointed a Committee (Railway Optimization Committee). The Committee is tasked with investigating causes of the decline in railway market share and come up with recommendations to regain lost market share on all corridors. The Committee therefore wishes to collect corridor baseline information from railway operators and customers to enable it to generate appropriate recommendations based on facts. Questionnaires for Operators and Customers are different. It is expected that recommendations to be generated will contribute towards resolving the continuous decline in railway market share.

CONFIDENTILITY
Information submitted by railway operators shall be treated as strictly confidential and will only be used by the Committee to carry out the exercise as assigned by the SARA Board. Under no circumstances will the name of the operator be mentioned as the results will be presented in a generalized format.

INSTRUCTIONS
1. Complete a separate questionnaire for each corridor.

2. Completed questionnaire should be emailed to the SARA Executive Director on bdzawanda@sararail.org by the 27th of August.

3. Any queries pertaining to this questionnaire should be directed to the SARA Executive Director.

List of Railway Corridors
i. Beira Corridor
ii. Beitbridge Corridor
iii. Dar es Salaam Corridor
iv. Limpopo Corridor
v. Lobito Corridor
vi. Maputo Corridor
vii. Nacala Corridor
viii. Plumtree Corridor
ix. Richards Bay Corridor
x. TransNamib Corridor
xi. TRC Corridor

1. Country ............................

2. Railway Operator ............................

3. Corridor .................................
4. Corridor members...........................................................................

   Origin .............................................. Destination ..............................................

5. Date of interview ..............................................

6. Interviewer ..............................................................

7. Name of Interviewee and Title................................................

8. Operational Issues
   a. Which are the major commodities (top 5) on the corridor for both road and rail?
   b. List the top 5 major customers on the corridor
      i. .................................................. ii. .................................................. iii........................................
      iv. .................................................. v. ..................................................
   c. What is the potential business volume on the corridor?
      (i) Import
      (ii) Export
   d. What is the current business volume (all commodities) by rail?
      (i) Import
      (ii) Export
   e. What is the state of competition from road on the corridor? - Comment
   f. Are there any collaborative opportunities between road and rail on the corridor in terms of intermodal operations?
   g. Is there balance of traffic in both directions (Return load/Backhaul)?
      Y/N
      If Yes state traffic direction
   h. What are the challenges confronting the railways on the corridor?
   i. How long is the corridor section on your network in kilometres?
j. What is the design capacity of your portion of the corridor (given in i above) in terms of trains per day in both directions?

k. What proportion of design capacity is being utilised?

l. What are the contributory factors?

m. How many interchange points does the corridor have? State their location.

n. What interchange arrangements are in place?
   (i) Single/Joint inspections
   (ii) Loco through working
   (iii) Crew through working

o. Do you have service level agreements with
   (i) Contiguous railways?
   (ii) Some customers

p. Do you believe that its necessary to have service level agreements among neighbouring railways? Please explain.

q. Is there a through working timetable for international traffic/trains to destination?

r. Do you have an organisational cargo tracking information system? Y/N

   If Yes give brief description and state whether it is linked to customers.

s. Is capacity adequate? (i) Locos Y/N (ii) Wagons Y/N (iii) Track Y/N

   Comment

t. Are the Corridor Management Groups (CMGs) functional? If not what are the reasons? Comment.

9. Marketing and Commercial Issues

a. How do you determine your tariffs?
   (i) Cost-plus
   (ii) Market based
   (iii) Marginal costing
(iv) Any other ...........................................................

Comment:

b. What factors do you consider to arrive at tariffs for various commodities for international traffic in particular?

c. Are your tariffs predetermined? (tariff schedule/negotiated)

d. Do you have service level agreements with some customers? Y/N

If Yes how have they affected service delivery?

e. Is your quotation system centralised? Y/N.

How long does it take for your organisation to provide quotations on international traffic?

f. How long does it take to get quotations from other corridor members?

g. Are you able to quote through rates to customers (One Stop Service)?

h. To what extent do you engage in joint marketing of railway services on the corridor?

i. What in your view are the strengths and weaknesses of the current SARA Marketing Policy?

   (i) Strengths

   (ii) Weaknesses

j. How can the current SARA marketing strategy be improved to promote growth in railway market share?

k. What measures should be taken to improve railway competitiveness?

l. Are there any challenges beyond the railways on the corridor? How in your view should they be addressed if any?
Annexure A.4

Customer service delivery questionnaire

A. BRIEF BACKGROUND

Railways recognise the critical role they play through providing transportation services to the economy. A number of factors have mitigated against the railways’ ability to effectively play this role resulting in the provision of inadequate services to customers. These include inadequate capacity, cumbersome commercial procedures and failure to optimise on available resources in some cases. This undesirable situation calls upon the railways to review their operating procedures and resource requirement planning for them to be responsive to market needs. Railways believe that they can offer convenient and relatively cheaper transportation services if they align themselves with the market. It is in this regard that it has become necessary to carry out a survey which will form the basis of service realignment. We therefore request your company, as one of the major railway users to submit your input to the railway service realignment process by completing the questionnaire below.

B. CONFIDENTIALITY

Information submitted by railway operators shall be treated as strictly confidential and will only be used by the Committee to carry out the exercise as assigned by the SARA Board. Under no circumstances will the name of the operator be mentioned as the results will be presented in a generalized format.

C. INSTRUCTIONS

4. Complete a separate questionnaire for each corridor.

5. Completed questionnaires should be emailed to the Acting SARA Executive Director on vkaluila@sararail.org by the 20th September 2014.

6. Any queries pertaining to this questionnaire should be directed to the SARA Acting Executive Director

10. Country ..............................

11. Corridor.................................

12. Date of interview .....................

13. Interviewer ..............................

14. Customer Name.........................

15. Name of interviewee and Title........

16. Do you own or have right of use to a private siding or private sidings?
   Yes/No
17. If “Yes” in 7 above what is the wagon holding capacity of the siding (s)?

18. Indicate the products you transport and their monthly tonnage

   a. ........................ ........................

   b. ........................ ........................

   c. ........................ ........................

   d. ........................ ........................

   e. ........................ ........................

19. Complete the following table

<table>
<thead>
<tr>
<th></th>
<th>Rail</th>
<th>Road</th>
<th>Total</th>
<th>Origin</th>
<th>Destination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Export</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Import</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

20. List the products in 9 above by monthly tonnage & their transportation requirements (in tonnes) by mode (Road and Rail)

<table>
<thead>
<tr>
<th>Product</th>
<th>Monthly Tonnage</th>
<th>Transport Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Rail</td>
</tr>
<tr>
<td>a.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

21. What type of resources do you require from railways?
   i. Locomotives ii. Wagons iii. Tarpaulins iv. All

22. Indicate in terms of monthly requirements your wagon needs

<table>
<thead>
<tr>
<th>Wagon Type</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Sided Iron</td>
<td></td>
</tr>
<tr>
<td>Drop Sided Iron</td>
<td></td>
</tr>
<tr>
<td>Flatbed</td>
<td></td>
</tr>
</tbody>
</table>
K – closed
Tanker
Other ............................

23. Do you get adequate supply of resources from railways when you make requests?

Locomotives  Y/N
Wagons  Y/N
Tarpaulins  Y/N

Please comment
............................................................................................................................
............................................................................................................................
............................................................................................................................
............................................................................................................................

24. Are there adequate handling facilities for loading and offloading for

(i)  Rail

(ii)  Road

25. Can you make a 5 year projection of your production and transportation requirements in the table below

<table>
<thead>
<tr>
<th>Product</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exp</td>
<td>Imp</td>
<td>Exp</td>
<td>Imp</td>
<td>Exp</td>
</tr>
<tr>
<td></td>
<td>ort</td>
<td>ort</td>
<td>ort</td>
<td>ort</td>
<td>ort</td>
</tr>
</tbody>
</table>

Any comments/assumptions on the projections
............................................................................................................................
............................................................................................................................
............................................................................................................................
............................................................................................................................

Rail Services from A Customer’s & Railway Operator Perspective 78
26. How do you rate railways services against other transport modes you use in terms of:

<table>
<thead>
<tr>
<th>Excellent</th>
<th>Good</th>
<th>Poor</th>
<th>Fair</th>
<th>Very Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tariffs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capacity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predictability</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Convenience</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Any other additional issues you may need railways to attend to
...............................................................................................................................
...............................................................................................................................

27. Can you rank the variables in 17 above according to their importance to you?

28. What factors do you consider when making a choice between using road and rail?
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

29. Are there any potential benefits of using railway transport? Y/N

If Yes list them
........................................................................................................................................
........................................................................................................................................

30. Are there benefits in using road?

If Yes list them
........................................................................................................................................
........................................................................................................................................

31. Do you experience any frustrations when using or trying to access railway services? Y/N

If Yes list them
32. What in your view should railways change in order to improve service delivery?

33. Any other pertinent comments/information you may wish to provide?
13th November 2014

Mr. Jackson Sikamo - President, Zambia Chamber of Mines

MISSION STATEMENT

“advancing the interests of our members, local communities, the country and all stakeholders while promoting sustainable and responsible mining”
TYPICAL PRODUCTION PROFILE

- **Mine Exploration**: 7-10 years
- **Mine Development**: 5-10 years
- **Mine Operation**: 2-20 years
- **Mine Closure**: 2-10 years


Copper production

**Share of global production (Percentage.)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Zambia copper production</th>
<th>Zambia percentage share of global copper production</th>
</tr>
</thead>
<tbody>
<tr>
<td>1963</td>
<td>16%</td>
<td></td>
</tr>
<tr>
<td>1967</td>
<td>14%</td>
<td></td>
</tr>
<tr>
<td>1971</td>
<td>12%</td>
<td></td>
</tr>
<tr>
<td>1975</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>1979</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>1983</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td>1987</td>
<td>4%</td>
<td></td>
</tr>
<tr>
<td>1991</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>1995</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>4%</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>6%</td>
<td></td>
</tr>
</tbody>
</table>

**Copper production (Tonnes.)**

- **Private ownership**
- **National ownership**
- **Private ownership**

MAJOR INVESTMENT PROJECTS 2000 TO DATE (US$12.4BN)

<table>
<thead>
<tr>
<th>Project</th>
<th>Mopani</th>
<th>KCM</th>
<th>Lubambe</th>
<th>FQM</th>
<th>Lumwana</th>
<th>Kansanshi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>US$2.24bn</td>
<td>US$2.9bn</td>
<td>US$0.49bn</td>
<td>US$2.23bn</td>
<td>US$2bn</td>
<td>US$2.54bn</td>
</tr>
</tbody>
</table>

EMPLOYMENT STATUS

<table>
<thead>
<tr>
<th>Project</th>
<th>DIRECT EMPLOYEES</th>
<th>CONTRACTED LABOUR</th>
<th>OTHER(specify)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mopani</td>
<td>10,000</td>
<td>10,000</td>
<td></td>
</tr>
<tr>
<td>Konkola</td>
<td>7,000</td>
<td>9,000</td>
<td></td>
</tr>
<tr>
<td>Lubambe</td>
<td>1,882</td>
<td>2,054</td>
<td></td>
</tr>
<tr>
<td>Kansanshi</td>
<td>4,781</td>
<td>3,731</td>
<td>5407 (on the expansion projects)</td>
</tr>
<tr>
<td>Albidon</td>
<td>63 (due to care and maintenance of mine)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lubambe</td>
<td>1,200</td>
<td>1,000</td>
<td></td>
</tr>
<tr>
<td>Chibuluma</td>
<td>602</td>
<td>345</td>
<td></td>
</tr>
<tr>
<td>Chambishi Metals</td>
<td>741</td>
<td>147</td>
<td></td>
</tr>
<tr>
<td>Chambishi Copper Smelter</td>
<td>1,600</td>
<td>400</td>
<td></td>
</tr>
<tr>
<td>NFCA</td>
<td>1,064</td>
<td>1,219</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>28,870</td>
<td>27,896</td>
<td>5407</td>
</tr>
<tr>
<td>GRAND TOTAL</td>
<td></td>
<td></td>
<td>62,173</td>
</tr>
</tbody>
</table>
# EMPLOYMENT

<table>
<thead>
<tr>
<th>Type of Employment</th>
<th>Copperbelt</th>
<th>North-Western</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct employment, mining companies</td>
<td>16,800</td>
<td>3500</td>
<td>20,300</td>
</tr>
<tr>
<td>Direct employment, contractors</td>
<td>23,800</td>
<td>12,100</td>
<td>35,900</td>
</tr>
<tr>
<td>Indirect employment, service providers</td>
<td>1,200</td>
<td>2,000</td>
<td>3,200</td>
</tr>
<tr>
<td>Indirect employment, goods providers</td>
<td>4,200</td>
<td>-</td>
<td>4,200</td>
</tr>
<tr>
<td>Indirect employment, social spending</td>
<td>6,500</td>
<td>3,100</td>
<td>9,600</td>
</tr>
<tr>
<td>Induced employment</td>
<td>53,000</td>
<td>21,500</td>
<td>74,500</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>105,500</strong></td>
<td><strong>42,200</strong></td>
<td><strong>147,700</strong></td>
</tr>
<tr>
<td>Of which indirect and induced</td>
<td>64,900</td>
<td>26,600</td>
<td>91,500</td>
</tr>
<tr>
<td>Implied multiplier</td>
<td>2.60</td>
<td>2.71</td>
<td>2.63</td>
</tr>
<tr>
<td>Total as share of total employment</td>
<td>15.9%</td>
<td>14.8</td>
<td></td>
</tr>
</tbody>
</table>

Source: Company data and OPM’s calculations

## EMPLOYMENT CREATION (EXPATRIATE RATIO)

![Graph showing employment creation](image)

MINING’S CONTRIBUTION TO GOVERNMENT TAX REVENUES

Government revenue
(Kw million)

Source: Zambia Revenue Authority, 2014—includes revised data and latest 2013. This data is not in report

CONTRIBUTION OF THE MINING SECTOR TO GOVERNMENT REVENUE

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>K1.7 TRILLION</td>
</tr>
<tr>
<td>2009</td>
<td>K2.5 TRILLION</td>
</tr>
<tr>
<td>2010</td>
<td>K3.7 TRILLION</td>
</tr>
<tr>
<td>2011</td>
<td>K7.7 BILLION</td>
</tr>
</tbody>
</table>

(Rebased)

Source: Zambia Extractive Industries Transparency Initiative (ZEITI), Ministry of Mines, Energy and Water Development
Overview: Macroeconomic contributions of mining

<table>
<thead>
<tr>
<th>Category</th>
<th>Zambia 2012</th>
<th>Typical share in low and middle income mineral-driven countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign Direct Investment</td>
<td>86%</td>
<td>&gt; 60 – 90%</td>
</tr>
<tr>
<td>Exports</td>
<td>80%</td>
<td>&gt; 30 – 60%</td>
</tr>
<tr>
<td>Government Revenue</td>
<td>&gt;25%</td>
<td>&gt; 3 – 20%</td>
</tr>
<tr>
<td>Gross Domestic Product</td>
<td>&gt;10%</td>
<td>&gt; 3 – 10%</td>
</tr>
<tr>
<td>Direct Employment</td>
<td>1.7%</td>
<td>&gt; 1%</td>
</tr>
</tbody>
</table>

Source: ICMM MPD Toolkit analysis

Social Investment Between Provinces

(2012 data from the four mining companies)

Source: Mining company data and authors’ calculations
Changing mining policies – additional development risk

Cost competitiveness vs. effective tax rate

Source: Wood Mackenzie
Annexure A.6

Zambia market study survey data

Ground truth market survey as seen by the major rail customers.

Copper

Source: Mr Jackson Musimo 13/11/2014
Position: President of Zambia Chamber of Mines, and General Manager Chibuluma Mines, Metorex Group

Reality Tree:

- Zambia produced 762K/tons in 2013 and the definitive forecast of growth to 1.5m/t/year in within the next 5 years., supported by new mining investments, with one new mine Sentinel a part of First Quantum Mines, coming on line in mid 2015, with a capacity of 300K/t/year
- Miners would be comfortable with a rate of $100 per ton to Beira, conditional to a 10 day transit time, availability of appropriate wagons or containers, sustainable service, safety of cargo, continuous communication/feedback, port capacity, including handling, storage and calling vessels
- Road transport is currently charging $95/ton and their transit time is good, although security remains of concern.
- Beira has the benefit of return lords in terms of Zambian fertilizer, sulphur, Gen. container cargo, and re-agents, for which customers are prepared to pay up to $130/150 per ton.
- Beira also has the benefit of the poor service offering by Tazara and their disappointment with the congestion at Dar port.
- Railway operators should plan their resource availability and service offering long term in line with miners' long term production plans which normally runs between 2 to 20 years of life production per the mine’s life cycle.
- Mine prefer to deal with only one authority with decision making power, able to provide a seamless service.; Production to Final market destination.

Sugar

Source: Zambia Sugar: Richard Chiponda, Logistics Manager, Mazabuka 5/11/2014

Ground Truth:

- ZS is the only player in the sugar export market in the country. Total production currently 420kt/ta, planned 500kt/ta from 2015 to 2017
- Of total production 150Kt/ta goes to the EU market via Durban and Beira, with 100Kt going via Beira by road because of availability of trucks ex fertilizer imports, which are backhauled at US$78/t.
- 50Kt goes to Durban by both road and rail 80/20% split respectively because of rail higher rates
- Rate transit times, rates and service inconsistency are an issue.
Fertilizer
Source:
Mr Kwazi-Operations Director Nyiombo Investments, Lusaka, 6/11/2014
Vans Mupeta-Marketing Manager Nitrogen Chemicals Zambia Kafue, 10/11/2014

Zambia consumes 350k to 400kt annually and expected to rise to 500Ktpa from 2015-2017, due to growth of the Agriculture sector. Key players are: Nyiombo Investments accounting for 240ktpa of total market, the balance being shared by: NCZ (Nitrogen Chemicals Zambia); Greenbelt Fertilizers, Profert, Omnia. Zambia Fertilizers, and Export Traders. Currently comes via Dar, Beira and Durban. However customers are not happy with the Dar route due to Tazara operations constraints and Dar port Congestion. While there are transit time concerns on the Beira route the best trail are achieving currently is 20 to 25 % of market share.

Sulphur
Source:
Chris Chipimo MD Bridge Shipping, Ndola Zambia,
Priscilla Phiri Depot Manager SAMFUEL – handles Sulphur for Transchem in Ndola, for FQM (First Quantum Mine).

Ground Truth:
The combined demand for Sulphur is 200k to240Ktpa for both Zambia and DRC; product is moved in bags and/or bulk. This is a rail friendly product and rail is the customer-preferred mode. However, rail service offering leaves a lot to be desired: shortages of appropriate wagons (closed), lack of shunts when required to clear loads, while clients get charged demurrage, lack of communication, long transit time, etc.. Rail used to carry 60 to 70% of available cargo, but due to poor service offering, shortage of wagons etc., this share is gradually going down and currently stands at 50/50.
The major players in this market are: Transchem who supply First Quantum Mines (the biggest Consumer), and Tradimex who supply the DRC. Most of the Sulphur is moved to depots in Ndola and then Road hauled to final destination. Sulphur demand is expected to remain high for the next 2 years until Sentinel Smelter comes alive, expected 2015 and start producing own sulphuric acid and for the First Quantum mines.

Conclusions – Major stakeholders views:
• Clients do not see the need to invest in their loading and unloading facilities;
• Customers do not feel motivated to promptly release wagons upon loading and unloading;
• The railways don’t have enough client preferred specialized wagons such as covered( K) or flat or DSI;
• Some of the high cost of rail operations are due to inefficiencies;
• It is not possible for railways to satisfy the needs of all the clients – especially those with non-rail friendly cargo;
• Most clients have reduced on their inventory levels and are not stocking as much as they used to do in the past, and are more and more relying on on/in time delivery from service providers;
In most dealings with clients there are no service level agreements offered by railways to clients;

Some clients are not happy at all about the current climes and demurrage handling and settlement procedures;

Clients are usually not part of some critical railway meetings/ or where strategic logistics requirements issues are discussed;

Some clients feel that once their cargo is handed over to the railways, it goes into a “Black Box”; and

The non-flexible and uncompetitive approach to pricing is making the railways unattractive.

Recommendations:

- The railways must incentivize clients to invest in their handling facilities and hence improve on wagon turnaround times;
- Clients must be rewarded for the quick release of wagons as opposed to using demurrage as source of revenue, which is counter productive;
- The railways must consider going into partnerships with investors willing to collaborate with them in the provision of wagons and locomotives as well as consolidation points to facilitate a one stop shop concept;
- Railways must become more operationally efficient in order to lower their costs and become more price competitive;
- Railways must focus on increasing their market share by concentrating on rail friendly cargo such as, Sulphur, Sugar, Fertilizer, Copper, containers, cement and grains;
- Railways must improve on transit times, as clients have reduced on their inventory holding levels, Some are relying on JIT;
- Rail must consider seriously going into service level agreements with key customers, which will help to rebuild confidence in their service offering and measure their performance and increase market share;
- The railways must shift burden of settling claims to insurance companies by taking insurance, like road does;
- Railways must continually strive to understand the customers’ needs by inviting clients some corridor clients to their EXCO or Board meetings. Brief presentations by clients would help to make decision makers understand the client’s requirements to enable the authorities to plan accordingly;
- Railways must ensure that clients are kept informed about the movement of their cargo en-route from origin to destination, just like freight forwarders do; and
- Railways must adhere to the SARA Joint Marketing Policy of through pricing in order to be flexible and competitive.
Key Questions:

If the railways were your business what would you do?

Why rail market share has gone done/perceived rail failures or constrains according to key customers/stakeholders/

- Stiff road competition
  - Too many players i.e. registered vehicles;
  - Price differentiation e.g. to Beira: Rail $55/tone, Road $62/tone = $5 - $7 difference; and
  - Efficiency of service offering, rail transit too long, and road only 24 hours – Harare –Beira.
- Dilapidated infrastructure – depleted locomotive/wagon fleet; collapsed signalling system; almost non-existent management information systems (ICT) that has compromised the level of service offered to clients;
- Freight rates that are not commensurate with level of service offered.
- Long and unpredictable rail transit times;
- Economic meltdown in all aspects of industry i.e agriculture, mining, and manufacturing that has led to the decline in the level of both imports and exports. Cuts across the whole of the Zimbabwean industry;
- Under capitalisation of the railway system as a whole;
- Political interference/control from the government in all aspects of railway administration. This portrays an atmosphere of uncertainty on the future of the railways;
- Ineffective marketing strategies
  - Young graduates using text book methods;
  - No practical relevant experience;
  - Take it or leave it attitude or mentality; and
  - Unnecessary non-physical barriers.
- Absence of experienced, dedicated managerial expertise as most of them have inappropriate/inadequate railway administration qualifications. This has been exacerbated by the wholesale migration of both managerial and technical personnel to other countries in pursuit of greener pastures; and
- Demoralised workforce due to low salaries and inordinate delays in payment of the salaries.

What do customers want done by rail operators, to give them appetite to use railways again?
A total revamping of railway operations by way of fine tuning their operational strategies and culture in general, in order to meet movement deadlines expected by their customers

- No hit and miss strategy or procedures: road can meet movement deadlines to meet shipping requirements as expected by their customers, while rail cannot in most cases;
- Rate/tariffs should be commensurate to service offered; and
- Resources should be geared to the needs of the customers because this is where the constraints are and not on the cargo per se.

Complete rehabilitation of railway infrastructure vis-a-vis signalling system, actual track, workshops and freight terminals: consolidation required and is necessary at one centralised place;

Introduce dynamic and proactive marketing methods as opposed to the hitherto textbook approach currently experienced;

Expeditiously facilitate the much talked about ‘one stop shop/pricing strategy’ under one operations authority amongst all the contiguous railways in the region;

Immediate acquisition of suitable locomotives and appropriate rolling stock: through collaboration with funding or investment partners;

Improvement in transit and wagon turn-around times. This sometimes is counterproductive e.g. if a wagon takes 60 days to turnaround Harare – Beira – Harare it means that the wagon is used 6 times a year i.e. 60 x 6 = 360 days. The situation becomes worse if more wagons are involved. This is inefficiency at its (best);

Consider application of attractive, promotional and competitive rates that should be commensurate with the level of service provided.

Intensify manpower training in order to enhance the levels of service offered to customers;

Consider entering into strategic partnerships with other stake holders like clearing agents, container handlers and ZIMRA, investment/funding partners to provide a one stop shop under one authority that would provide all the services required and expected by the customers including own shunting locos, staff, ICT etc.

Consider application of tariff incentives in all instances that involve large volumes of cargo;

Avoid using demurrage as a revenue generation tool. Maximum flexibility should always be exercised when dealing with customers. It is observed that the railways use demurrage as a source of revenue yet it is not part of their core business thus punishing customers while covering themselves against unnecessarily long transit times taken with customer cargo, by saying that (we do not guarantee transit times);

- This is being inflexible like the railway permanent way itself;
- The railways put a durawall around themselves by providing service which is not tailored to customer needs; and
- An example of the demurrage saga is given of a Marondera (75km ex Harare) siding situation where the shunting is provided from Harare as and when the railways feels it fit to do so and in the meantime the
customer is being punished by being charged demurrage for the railways’ non provision of shunting services. This is typical on NRZ lines.

If railway shortcomings, constrains or hot buttons were fixed, and a seamless, efficient and sustainable service offering were provided, would customers go back to using rail as their transport mode of choice? Customers heads of argument:

- A general question was raised by some customers on the role and effect of SARA on rail service provision along the different corridors
- Not guaranteed unless and until such time as the railways are able to match the service levels provided by road, because:
  - There has been total loss of confidence in railway operations;
  - It is possible that rail can perform as much as or better than road e.g. Manyame Milling Company in Marondera made a trial run of a 20 wagon train of wheat operated by CFM all the way from Beira to Marondera, whereby that train performed faster than road. Yet the railways does not make this sustainable;
  - Need for one operating authority instead of a multitude of non collaborative authorities;
  - The railways take clients/customers for granted by not considering that the customer’s needs are not the railway’s need except where they should meet in terms of:
    - Shorter/faster transit times;
    - Efficient operations e.g. like ZIMRA revenue collection system which is Real Time i.e. as it happens;
    - Use of appropriate ICT processing system of documents and not manually as is in most cases; and
    - Must be in a position to have revamped their systems to meet modern transportation and logistics trends.
- Carry out vigorous and sustained marketing.

What determines customers’ choice of traffic export route choice?

- Main determinant factor is the cost effectiveness of the route i.e. from production (source) to consumption (market destination)
- The capacity of the port in terms of handling equipment, berthing constraints, shipping lines’ choice of port of call.
- Existence or otherwise of non-physical barriers at the ports e.g. cumbersome documentation, rigid working hours, and the attitude of customs officials when processing export documentation e.g. non weekend working, delays in document processing, customs delays at certain ports.
- Shortest geographical route: to port and to market destination
- Port capacity both in terms of cargo handling and calling vessels.
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<th>Company name</th>
<th>Location</th>
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<th>E-mail</th>
<th>Commodity</th>
<th>Bulk / Container</th>
<th>Rail / Road</th>
<th>Current Annual Tonnage</th>
<th>Export / Import</th>
<th>Forecast Annual Tonnage</th>
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<td>Chiredzi</td>
<td>Mr. Frampton</td>
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<td>knowledge.sa mhungu@sabl echemicals.co.zw</td>
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<td>Rail</td>
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### Notes:

a) Sino-Zim owns 3 strategic business units: Sino Cotton, Sino Cement and Sino Chrome;
b) Ferrochrome/chrome ore production forecast increase is incremental due to increased output at Lalapanzi mine;
c) Most companies in Zimbabwe could not reveal historical performance because it was erratic, however they optimistic that the future is promising and therefore production could increase substantially. But are suspicious of giving away straight estimates;
d) Maize is imported by a number of players: Manyame Milling, National Foods, Victoria Foods

e) All commodity forecast projections are averaged between 10% and 100% in some instances in the next 3 years

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<th>Fuel</th>
<th>Distorted by blending</th>
<th>Bulk</th>
<th>Pipeline</th>
<th>Import/local</th>
<th>Beira / Chiredzi</th>
<th>Noczim except direct imports by</th>
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Cost analysis – Rail freight (40’ ISO containers – 2 TEUs)

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<tr>
<th>Journey Details</th>
<th>Port</th>
<th>NRZ Cost</th>
<th>CFM Cost</th>
<th>TFR Cost</th>
<th>Sea Freight</th>
<th>Total Cost</th>
<th>NRZ Cost (%)</th>
<th>NRZ Cost as % of Beira Route</th>
<th>CFM Cost (%)</th>
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<td>Durban</td>
<td>$1,832.00</td>
<td>$1,820.00</td>
<td>$460.00</td>
<td>$4,112.00</td>
<td>44.55</td>
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Notes
a) The above table illustrates rail freight price differentials that usually influence a client's choice of route to the port.
b) The commodity applied is 40' ISO containers used in general international traffic.
c) Whichever way one looks at it, NRZ charges appear to be on the pricy side.
d) The sea freight charges are based on the average of leading shipping lines.
Annexure A.8

Mozambique (Beira & Limpopo) market study survey data

The interviews identified the following as primary commodities characterising regional transit trade:
Export: containers (copper, tobacco etc.), Granite, ferrochrome, timber primarily from Zimbabwe and Zambia.
Import: sugar, fertilizer, wheat and general cargo

The Port of Beira is Mozambique’s second largest port and plays a key role as a regional transit port with the multi-modal Beira corridor servicing Zambia, Zimbabwe and the DRC. The Sena railway line provides a link to Malawi and the emerging Tete province. The port is an estuarial port with draft and navigational restriction that necessitate regular dredging. Port operations are managed by Cornelder de Mocambique – a joint venture between CFM and Cornelder holdings.

The responses provided during the interview process are qualitative in nature compared to the quantitative data gleamed during earlier interviews in other countries (Zimbabwe and Zambia). As a result these responses do not intuitively fit within the report structure in which for each commodity identified the following information is included: Production/Demand volumes; Tariff and Charges; and Route Options.

The table below highlights key findings, which show disparity in modal split for outbound (export) and inbound (import) traffic. The swing is significant with export dominated by road in some instances (90%:10%) and imports dominated by rail (85%:15%). This is not uniform across all organisations interviewed however it highlights the need for a larger comprehensive sample size to better characterise the nature of modal split along the Beira corridor. Key customer considerations affecting modal choice include the ability to meet shipping targets and although tariffs are considered to be cheaper in some instances, the rail service responsiveness (transit times) are not competitive in relation to road haulage. Other key constraints attributed to the loss in rail market share include the absence of real-time tracking leading to poor communication with clients and stakeholders, inadequate rolling stock and the lack of sufficient shunting locomotives at the port, inevitably causing delays to port related operations.

The Port of Beira was historically designed for rail traffic and as such is not optimally suited for the current influx in road freight. Operationally there is an overwhelming preference for rail as the dominant mode for both inflow and discharge of the port. The port is currently undergoing expansion and there is an opportunity to strategically align hinterland rail development to optimise integration with port infrastructure. This would facilitate the development of holistic logistics system better suited to meet client needs.

- Corridor Route: Beira Corridor, serving the hinterland: Zimbabwe, Zambia and DRC (Congo), as well as Malawi
- Port: Beira
- Commodities: Containers (copper, tobacco etc), Fertilizer, Wheat, Granite, Sugar (Containers and Granite are mainly for exports from Zambia and Zimbabwe, while the other cargo is for imports for Zimbabwe, Zambia, DRC and Malawi)
- Mode of transport: Rail and road
Customers and their views

There are six (including the port operator) major customers at Beira. Here are their views and perception about rail service:

<table>
<thead>
<tr>
<th>Customer</th>
<th>Person Interviewed</th>
<th>Date Interviewed</th>
<th>Contact Details</th>
<th>Commodities handled</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manica Mozambique</td>
<td>Nicolau Caco Maquina (Commercial manager)</td>
<td>18/12/2014</td>
<td>+258 8250179 50</td>
<td>Containers, ferts, sugar, wheat, ferrochrome</td>
<td>Mainly in transit from and to Zimbabwe and Zambia, No tonnages given because the GM was on leave, Modal split 85% Rail, 15% road for imports, 90% Road and 10% rail for exports, Reason for modal split is that although rail rates are cheaper than road, exports have shipping targets to meet, which rail cannot, as they take too long transit time. ie 14 days from Harare and up to 25 days from Zambia. Hence road is favoured 90%. As for exports, because there are no strict deadlines, rail is favoured 85%. However, the shortage of appropriate wagons is another rail constraint, resulting in the choice of road. Another issue is lack of communication with clients by rail officials, customers in Beira have to rely on their customers in Zimbabwe and Zambia for any cargo movement information</td>
</tr>
<tr>
<td>MGS – Moz Global Services</td>
<td>Mavo Eddiss on-CEO</td>
<td>19/12/2014</td>
<td>+258 8260315 42 Email:</td>
<td>Ferts, containers, ferrochrome, sugar, wheat, tallow, timber</td>
<td>Mostly transit from to Zambia and Zimbabwe. Modal split: Mainly by rail 88% especially exports to overseas markets because of shipping deadlines, Modal choice is determined by customer in origination and</td>
</tr>
</tbody>
</table>
Problems with rail service is three fold-poor transit times, complete lack of communication with customer, and shortage of wagons for loading imported cargo, resulting in customer incurring shipping demurrage charges and/or storage at the port.

Tonnages handled could not be provided as computers were down, however, they promise to provide the figures end of December when back from holiday.

MSC - Mediterranean Shipping (Moz) - Timoteo Samunda (Branch manager) 22/12/2014 +258 843800006, email: tsamunda@msc.co.mz

Containers only Both exports and imports containers are handled.

Could not give total containers handled to/from other countries except that 1752 containers units were handled for Zimbabwe only during period January to November 2014.

Modal split is 30% rail and 70% road. Reason is poor transit time, shortage of wagons and adequate shunting especially when ships have docked, resulting in delays to ships departure which affects other maritime operations elsewhere, as well as demurrage to customers. It must be note that shipping lines are not in the business of demurrage charges, but providing international shipping service and connectivity.

Mocargo Mozambique N/A No information could be obtained as directors had gone on holiday.

SDS AMI N/A Directors on holiday.. No information could be obtained.
Cornelder Views: Verbatim:

OrlandoGuilherme Belo, Operations Director for Cornelder de Mocambique, a 67%:33% JV between the Dutch company Cornelder Holdings and CFM, that manages the port of Beira. Again, Eng. Belo welcomed the survey being carried out while expressing the now familiar scepticism that he had received many proposals to improve the rail networks before (he has been at the port for 25 years). He said the Government had made a big mistake in awarding a concession of the Sena line (Beira to Tete Province) to the Indian company Rites as this was when things started to deteriorate on the rail network. He advised that Beira was designed for rail traffic and in the early days 95% of the cargo passing through the port came or went by rail; he would therefore much prefer to have increased rail bound freight as this is much easier to handle. Four years ago the port handled 45 roadtruck movements per day and this has now increased to 800 movements a day. However, the port is not suited to this road traffic, there is no safe place for the trucks to park outside the port so they all remain inside creating terrible congestion and hampering operations. This being said, the port is expanding, two new gantries were added last year to make a total of four, the container terminal is being doubled in size (the work underway) and there will be 600 metres of new quays for general cargo. With regular dredging the port, in theory, could take a panamax vessel but it usually handles regular container ships of up to 200 metres carrying around 5,000 TEU’s. He would be able to handle any cargo on offer very efficiently; if it was all copper and destined for the same ship it would be stored in one secure block to make for quick and easy loading. In addition, by keeping customers advised of the imports Beira was handling he could help ensure full back loads by rail and rail would know which agents to approach to secure the contracts. He agreed with the view that customers should acquire own shunt locomotive as this would avoid having to wait for CFM to position the train (they are currently using main line locos to shunt wagons!) which would be the only delaying factor in accessing the port. Customers are welcome on a tour of the port to see for themselves how it operates and the services provided, including and it appeared to be a very well-run and secure operation.

1.2 General Customers' Comments;
- Poor transit times on rail
- Complete lack of communication on cargo whereabouts-wagons/cargo cannot be traced
- Shortage of appropriate wagons when ships dock, thus delaying ship discharge
- Switching cargo or containers to other wagons without advising customers or freights agents, several times these charges cause damage to cargo on arrival at destination, and the blame is put on the customer or their agents
- Urgent need for collaboration and co-operation between customers( freights agents, railway operator ( CFM) and Cornelder)
Annexure A. 9

South Africa market study survey data

The interviews identified the following as primary commodities characterising regional transit trade: containers, fuel, sulphur, fertilizer and general cargo. The Port of Durban is the dominant gateway port for interregional trade, servicing Botswana, Zambia, Zimbabwe, Malawi, Mozambique and the DRC.

The responses provided during the interview process are markedly qualitative in nature compared to the quantitative data gleamed during earlier interviews in other countries (Zimbabwe and Zambia). As a result these responses do not intuitively fit within the report structure in which for each commodity identified the following information is included: Production/Demand; Tariff and Charges; and Route Options.

Key findings support the view that road transport is increasingly the mode of choice – 75:25 modal split indicatively in favour of road. In South Africa the decline of rail market share is largely attributed to inefficiencies attributed to Transnet’s monopoly position coupled with high tariffs and capacity constraints. Although the legacy rail network is well integrated with port infrastructure and industrial clusters, there is a perception among customers that rail services and proposed future investments are primarily geared towards bulk industries (mining) characterised by large clients with significant bargaining power and regular freight loads. Against this backdrop road services are considered to be more flexible and better suited to meet a variety of transport needs.

Transnet identifies some inefficiency within its operations however internally the decline in market share is largely attributed to capacity constraints forcing freight to road. As such Transnets strategy to reverse modal shift involves investment in rollingstock to increase rail availability coupled with a corridor-based approach with multimodal terminals providing an interface between road and rail.

Commodity
Copper is a high-value, low-volume commodity beneficiated and exported as copper concentrate or cathodes to increase the value to weight ratio.

Production/Demand
762Kt of copper was produced in 2013. Forecast annual production is expected to double over the next 5 years (1.5Mt) owing to new mining investments. This included First Quantum Mines new mine with a capacity of 300 Mt per annum, scheduled to come online in 2015. Figure 3.1 below illustrates copper mining activity concentrated along the copperbelt in Zambia and the DRC. DRC produced 960Kt in 2013 however this is forecast to increase to 2Mtpa over the next 5 years.
Tariffs and charges

Trucking is the primary mode for handling both concentrate and cathodic copper. Although security remains a key concern with road haulage, good transit time is achieved at competitive charges – US$95 per tonne.

Route Options

Competition of the copper belt trade shows significant overlap due to corridor connectivity and copper trade characteristics. The relatively high price of beneficiated copper is able to absorb logistics costs over relatively long distances.

- Corridor Route: North South Corridor and Maputo Corridor, serving the hinterland:
- Countries Serviced: Botswana, Democratic Republic of Congo, Malawi, Mozambique, Zambia and Zimbabwe
- Port: Durban
- Commodities: Containers, Fertilizer, Sulphur, General Cargo, Fuel, Vehicles
- Mode of transport: Rail, Road
## 2. Customers and their views

Here are their views and perception about rail service:

<table>
<thead>
<tr>
<th>Customer</th>
<th>Company Type</th>
<th>Person Interviewed</th>
<th>Contact Details</th>
<th>Commodities Handled</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Concargo | Logistics, Forwarding and Clearing | Shane Korsten | +27219309160 Management@concargo.com | Fertilizer, Sulphur, Fuel, Containers, General Cargo | - Serve Botswana, DRC, Malawi, Mozambique, Zambia and Zimbabwe utilizing intermodal mix of rail and road.  
- Intermodal split is at 20% Rail and 80% Road in General for import and export of the commodities handled.  
- Tonnages for specific materials cannot be supplied as written permission is required.  
- Rail is used for the movement of goods inside South Africa. This is supported by a legacy system of having well serviced rail sidings at industrial areas where sulphur, fertilizer and fuel are produced. These are then moved to the interim warehouse facilities owned by the company, where they are uplifted mainly by road and partly by rail.  
- Rail is not favourable as it is operated by Transnet, which is seen to be inefficient. The efficiency of Transnet is 60-70%. Furthermore the tariffs are high. Furthermore Transnet will serve only to Zimbabwe and Mozambique. No through working by same operator or same locos and crews from origin to destination has negative impact, which results in increased costs to customers due to change over delays, and poor transit times |
| CSIR | Logistics Research | Nadia Viljoen | +27128412000 Csirtechnicalenquiries@csir.co.za | Logistics Research | - Research has shown that Transnet monopoly operation has resulted in great inefficiencies. However it must be stressed that Transnet is still the superior operator in the SADC region.  
- The intermodal rail system operates best within South Africa and Transnet has begun to structure its business to focus on corridors, which is supposed to improve efficiencies but is not really. It tends to work best for large clients within South Africa and not for cross border operations  
- Road vs Rail modal split is at 65:35 respectively, because of perceived rail inefficiencies.  
- Use of rail haulage is best decided by distance and volumes to be transported. When there is a high volume of goods to move over a long distance, it is best to use rail. However when the distance is relatively short (less than 500km) and the goods to be transported are of a low volume, road should be considered.  
- It is relatively difficult to get space/slots to transport goods on a train regardless of the commodity type. No plausible reason is given by Transnet |
<table>
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<tr>
<th>Company</th>
<th>Logistics Services Provided</th>
<th>Contact Person</th>
<th>Contact Details</th>
<th>Notes</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Nesh Freight Logistics,</td>
<td>Fertilizer, Sulphur, Fuel,</td>
<td>Ajith Satyapreya</td>
<td>+27118279561 <a href="mailto:info@neshfreight.co.za">info@neshfreight.co.za</a></td>
<td>Company hardly uses rail transportation. This is due to inefficiencies</td>
<td>Company hardly uses rail transportation. This is due to inefficiencies</td>
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<td>Forwarding and Clearing</td>
<td>Containers, General Cargo</td>
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<td>with rail. Rail transportation tends to support large regular clients,</td>
<td>with rail. Rail transportation tends to support large regular clients,</td>
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<td>within the country. Containers are received at Durban harbour and can</td>
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<td>be collected and driven to Lubumbashi using the same truck by road,</td>
<td>be collected and driven to Lubumbashi using the same truck by road,</td>
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<td>with only the driver having to be changed. Whereas with rail both</td>
<td>with only the driver having to be changed. Whereas with rail both</td>
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<td>locos and crews have to be changed at border or other inter-change</td>
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<td>points. Choice of road vs rail is largely determined by type of</td>
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<td>commodity packaging, distance to be travelled and volume to be</td>
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<td>transported. Furthermore the address of delivery is also important.</td>
<td>transported. Furthermore the address of delivery is also important.</td>
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<td>If it is far from the railway line, it makes sense to use intermodal</td>
<td>If it is far from the railway line, it makes sense to use intermodal</td>
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<td>transport or road. Rail should be used mainly for bulk goods, for</td>
<td>transport or road. Rail should be used mainly for bulk goods, for</td>
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<td>example when moving grain from Maydon Wharf in Durban to a client in</td>
<td>example when moving grain from Maydon Wharf in Durban to a client in</td>
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<td>Vereeniging. However if you are moving pelleted break bulk goods such</td>
<td>Vereeniging. However if you are moving pelleted break bulk goods such</td>
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<td>as sulphur and fertilizer which are usually packaged, then road is</td>
<td>sulphur and fertilizer which are usually packaged, then road is</td>
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<td>best. Nowadays you can even attach a collapsible forklift to a road</td>
<td>best. Nowadays you can even attach a collapsible forklift to a road</td>
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<td>truck for easy of delivery.</td>
<td>truck for easy of delivery.</td>
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<td>Transnet Freight Rail</td>
<td>Fertilizer, Sulphur, Fuel,</td>
<td>Itumeleng Mokoatle</td>
<td>+27115840615 <a href="mailto:Itumeleng.Mokoatle@transnet.net">Itumeleng.Mokoatle@transnet.net</a></td>
<td>Transnet is focused on rail transportation of commodities. Interfaces</td>
<td>Transnet is focused on rail transportation of commodities. Interfaces</td>
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<td></td>
<td>Containers, General Cargo</td>
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<td>with shipping at ports. With containers being handled mainly in</td>
<td>with shipping at ports. With containers being handled mainly in</td>
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<td>Durban harbour.</td>
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<td>Company services mainly large clients with regular loads. Provides</td>
<td>Company services mainly large clients with regular loads. Provides</td>
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<td>transit railage services for container and general freight cargo.</td>
<td>transit railage services for container and general freight cargo.</td>
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<td>Containers are moved to City Deep container facility in Johannesburg.</td>
<td>Containers are moved to City Deep container facility in Johannesburg.</td>
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<td>Then they are collected by truck. Transnet is implementing a turn</td>
<td>Then they are collected by truck. Transnet is implementing a turn</td>
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<td>around strategy called Market Demand Strategy (MDS)</td>
<td>around strategy called Market Demand Strategy (MDS)</td>
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<td>Transnet is not a total solutions logistics company.</td>
<td>Transnet is not a total solutions logistics company.</td>
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<td>There are inefficiencies that will be dealt with by the turn around</td>
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<td>strategy. Services South Africa, Mozambique, Botswana and Zimbabwe</td>
<td>strategy. Services South Africa, Mozambique, Botswana and Zimbabwe</td>
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<td>Transnet has increased the number of rolling stock wagons and is</td>
<td>Transnet has increased the number of rolling stock wagons and is</td>
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<td>procuring new locomotives to increase reliability of rail service.</td>
<td>procuring new locomotives to increase reliability of rail service.</td>
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<td>Rail capacity is constrained, thus forcing some freight to move to</td>
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<td>road.</td>
<td>road.</td>
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<td>Engineering News Research</td>
<td>Logistics Research</td>
<td>Irma Venter</td>
<td>+27116223744 <a href="mailto:newsdesk@creamermedia.co.za">newsdesk@creamermedia.co.za</a></td>
<td>Rail research shows that the intermodal split between road and rail is</td>
<td>Rail research shows that the intermodal split between road and rail is</td>
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<td>(Creamer Media)</td>
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<td>about 70% and 30% respectively.</td>
<td>about 70% and 30% respectively.</td>
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<td>Rail has been subject to under investment for almost 30 years. There</td>
<td>Rail has been subject to under investment for almost 30 years. There</td>
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<td>is now an increased investment in rail, but it is linked mainly to</td>
<td>is now an increased investment in rail, but it is linked mainly to</td>
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<td>mining and export of mined products, so in a sense ‘it’s too little</td>
<td>mining and export of mined products, so in a sense ‘it’s too little</td>
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<td>too late’. Roads are also not in the best of conditions in the SADC</td>
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<td>region; however they are still favourable when compared to the rail</td>
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<td>network. High rail tariffs and high inefficiencies in rail are factors</td>
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<td>that are causing the road/rail intermodal split to be imbalanced.</td>
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<td>Various government strategies are looking at readdressing this,</td>
<td>Various government strategies are looking at readdressing this,</td>
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<td>however it’ll take at 10 – 15 years to implement and see results.</td>
<td>however it’ll take at 10 – 15 years to implement and see results.</td>
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<td>Resolve Solution Partners</td>
<td>Fertilizer, Sulphur, Fuel,</td>
<td>Jackie van der Westhuizen</td>
<td>0860800000</td>
<td>Road transportation is most efficient as you can move goods without</td>
<td>Road transportation is most efficient as you can move goods without</td>
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<td>Containers, General Cargo</td>
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<td>having to changed vehicles.</td>
<td>having to changed vehicles.</td>
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<td>Road is favourable for break bulk goods, container and fuel transport.</td>
<td>Road is favourable for break bulk goods, container and fuel transport.</td>
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<td>Although Transnet transports fuel via the pipeline, trucks are still</td>
<td>Although Transnet transports fuel via the pipeline, trucks are still</td>
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<td>required to move the fuel to outlets. Recently Transnet’s pipeline</td>
<td>required to move the fuel to outlets. Recently Transnet’s pipeline</td>
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<td>burst resulting in delays.</td>
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<td>The road vs rail split is sitting at about 80:20.</td>
<td>The road vs rail split is sitting at about 80:20.</td>
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<td>Road transport is more efficient when compared to rail in South</td>
<td>Road transport is more efficient when compared to rail in South</td>
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<td>Africa. The delays with road transport tend to be at border crossings</td>
<td>Africa. The delays with road transport tend to be at border crossings</td>
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<td>such as Beitbridge where procedures and vehicle volumes result in</td>
<td>such as Beitbridge where procedures and vehicle volumes result in</td>
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<td>delays.</td>
<td>delays.</td>
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<td>Generally rail has high tariffs and low efficiency overall when</td>
<td>Generally rail has high tariffs and low efficiency overall when</td>
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<td>compared to road.</td>
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<td>In the past, goods have been lost on rail in some countries such as</td>
<td>In the past, goods have been lost on rail in some countries such as</td>
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<td>Zimbabwe and DRC.</td>
<td>Zimbabwe and DRC.</td>
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<td></td>
<td>Road is easier to trace.</td>
<td>Road is easier to trace.</td>
</tr>
</tbody>
</table>
2. General Comments Summary

- Rail transportation is inefficient when compared to road transportation. With rail transport having an efficiency of around 60%.
- Modal split in South Africa for road and rail is at about 70:30 split.
- Modal split changes once goods are moved to Botswana, DRC, Malawi, Mozambique, Zambia and Zimbabwe.
- Rail is best used for large volumes over a long distance and with regular volumes.
- Rail tariffs are high with the service not being very efficient. Value for money is low on rail.
- Road transportation is most favourable, more especially for break bulk cargo, liquid bulk and container traffic. Fertilizer and sulphur are generally packaged in pallets and thus are considered break bulk.
Analysis of customer responses

FINDINGS AND ANALYSIS OF CUSTOMER SERVICE DELIVERY BY RAILWAYS IN A CORRIDOR

1. BACKGROUND

There is concern amongst SARA members, specifically the rail operators, that the distribution/share of transit rail traffic to/from the SADC hinterland through the ports, to/from overseas markets, is not being fairly shared between the rail systems of the region. Railways believe that they are offering convenient and relatively cheaper transportation services to the market yet their market share has dwindled over the years from the highs of +60-75% in the mid eighties to a current of +/- 15% due to market perception of poor service and lack competitiveness.

In seeking to resolve the problem of service realignment the SARA Board simultaneously wants to identify and address the underlying problem of lost rail market share so that the usage of rail transport systems in the region can be optimized for the benefit of all. It is in this regard that a questionnaire was developed for customers to give feedback and their views on the reasons for the drop in rail market share and what, in their view, railway organizations needs to do to restore market confidence and grow market share. At the same time railways need to obtain a good feel of volume projections of future demand for railway services and the challenges customers face when dealing with the railways.

Each railway administration was to identify its top 5 customers engaged in import/export business and distribute a customer service delivery questionnaire. The customers were to be identified by active SARA members and the stratified sample size came out at 50 customers.
2. RESEARCH RESULTS

The research results would need to be complemented by further findings and clarifications, where necessary, from interviewing of some customers moving import/export cargo along specific corridors, perusal of pertinent historical literature/documentation from internal and external sources and analysis of the data gathered from railway operators through questionnaires and interviews.

2.1 Respondents

Respondents were received from customers of the active railway SARA members using the following corridors: Beitbridge, Beira, Goba, Limpopo, Namibia, Plumtree and Richards Bay. Total customers who responded were 27.

2.2 Distribution of the Respondents

The distribution of the response per corridor is shown in table 1 below. 48% (24) of the sample size (50) responded. National Railways of Zimbabwe (NRZ) had the highest number of customer responses.

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Active SARA members in a corridor</th>
<th>Railways whose Customers responded</th>
<th>No of customers that responded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beira</td>
<td>CFM,NRZ&amp; ZRL</td>
<td>NRZ</td>
<td>3</td>
</tr>
<tr>
<td>Beitbridge</td>
<td>NRZ, BBR, TFR, SNCC&amp; ZRL</td>
<td>NRZ &amp;ZRL</td>
<td>8</td>
</tr>
<tr>
<td>Dar es Salaam</td>
<td>TAZARA&amp; ZRL</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Goba</td>
<td>SR&amp; CFM</td>
<td>SR</td>
<td>1</td>
</tr>
<tr>
<td>Limpopo</td>
<td>NRZ, CFM &amp; BR, ZRL</td>
<td>NRZ</td>
<td>5</td>
</tr>
<tr>
<td>Namibia</td>
<td>TNHL &amp; TFR</td>
<td>TNHL</td>
<td>2</td>
</tr>
<tr>
<td>Plumtree</td>
<td>TFR, BR, NRZ &amp; ZRL</td>
<td>BR &amp; NRZ</td>
<td>3</td>
</tr>
<tr>
<td>Richards Bay</td>
<td>SR &amp; TFR</td>
<td>SR</td>
<td>2</td>
</tr>
<tr>
<td>Ressano Gracia</td>
<td>CFM &amp; TFR</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Local traffic</td>
<td>NRZ</td>
<td>NRZ</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>10 Railways</td>
<td>5 Railways</td>
<td>27 customers</td>
</tr>
</tbody>
</table>
2.3 Findings and Analysis

The findings were grouped according to themes derived from the research questions and the corridors the customers use to transport their import/export freight and the country they operate from. For exports traffic the origin was the country of registration for the exporting company whilst for imports the destination is the source market for imports. Based on the questionnaire the following indicators were identified as giving the feedback being sort from customers on rail service quality and traffic volume projections for the next four years.

i. Availability of appropriate facilities e.g. sidings and loading and unloading facilities
ii. Products exported and imported
iii. Distribution of traffic volumes
iv. Resources required and availability
v. Volumes projections for the next four years
vi. Rating of rail services
vii. Comparison of rail to road
viii. Determinants of mode of choice
ix. Relationship with Service Provider
x. Suggestions to improve services by rail

The analysis was based on these indicators.

2.3.1 The Research

Most railway administrations had problems in getting their top five customers respond to the questionnaire. Most RAs indicated that the resistance of customers was partly due to a general feeling of distrust in regards to railway administrations re confidentiality and the fact that most customers were aligned to and satisfied with road services for their imports and/or exports needs. The questionnaire was also considered too long, requiring consultations with more than one department. Hence customers felt that it was a cumbersome document to complete. The manner in which some of the questions were completed portrayed lack of seriousness of customers as some questions were half completed and there were contradictions noted especially on question 13 and
14. During visits by the secretariat three customers aired the same sentiments and only two completed the questionnaire after some persuasion. In general open-ended questions in a questionnaire are best completed through interviews.

It was also difficult to establish measurement units, i.e. whether they were monthly or annual figures and some conversions were required on some questions, especially 9 to 11. Some customers considered questions 11 and 16 confidential. On question 13 a customer would indicate that they did not require any wagons or ticked their resource requirements and on question 14 they would indicate that the railways supplied or could not supply the resources required. On question 10 the figures would need clarification during interviews, as it was not clear whether the figures were annual or monthly as in some questions. Question 24 was not answered by more than 50% of the respondents being 13 customers. In some cases where customers used more than one corridor there was no space within the questions to split the traffic. All these factors affected the quality of data and the analysis. The analysis needs to be followed up by face to face interviews to fill in the gaps and clarify issues not clearly stated in the questionnaire responses.

2.3.1 Beira Corridor
The findings and the analysis in this corridor were based on 3 customers from Zimbabwe who responded to the questionnaire.

Sidings, loading and off loading facilities
All customers using this corridor indicated availability of siding equipment for loading and off loading for both road and rail is not a problem. No comments were given indicating inadequacy of the facilities. Therefore both modes of transport were equally accessible as transport service provider.

Import and Export
Along the Beira corridor the main imports were containerized cargo and fertilizers into Zimbabwe while the top exports were granite, containerized
cargo, ferrochrome and other minerals. Ferrochrome and other minerals were predominantly exported on road.

*Distribution of traffic volumes*

The table below shows the distribution of cargo between rail and road by the respondents.

**Table 2: Market Share of Beira corridor per annum**

<table>
<thead>
<tr>
<th></th>
<th>Rail</th>
<th>Road</th>
<th>Total</th>
<th>Rail%</th>
<th>Road %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Import</td>
<td>66,150</td>
<td>100,800</td>
<td>166,950</td>
<td>40%</td>
<td>60%</td>
</tr>
<tr>
<td>Export</td>
<td>19,880</td>
<td>171,354</td>
<td>191,234</td>
<td>10%</td>
<td>90%</td>
</tr>
<tr>
<td>Total</td>
<td>86,030</td>
<td>272,154</td>
<td>358,184</td>
<td>24%</td>
<td>76%</td>
</tr>
</tbody>
</table>

A total of 191,234mt was exports from Zimbabwe of which 10% (19,880mt) was on rail. The revenue from the exports was shared between NRZ and CFM. For imports a total of 166,950 was moved of which 40% was on rail. In terms of market share only 24% was on rail.

The analysis indicates that there is business in the corridor. However the results of this questionnaire are not a true representative of the total corridor business. This is because only 3 out 20 customers responded.

*Resources required and availability*

Respondents did not indicate the resources they require from railways to handle the 24% of the available traffic except the granite exporter who requires 90 wagons per month (1080 wagons per annum) but did not indicate whether the requirement was met. In some comments customers indicated preference for road transportation as the trucks were always available.

*Business volume projection for the next four years*

Some customers failed to give projection for both import and export either for confidentiality reasons or simply lack of information. For the minerals the
current volumes were forecast to prevail over the next four years. The table below shows the projection of business volume from 2014 to 2018.

**Table 3: Projection of business volume**

<table>
<thead>
<tr>
<th>Product</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Import</td>
<td>Export</td>
<td>Import</td>
<td>Export</td>
<td>Import</td>
</tr>
<tr>
<td>Granite</td>
<td>36,000</td>
<td>36,500</td>
<td>37,000</td>
<td>38,000</td>
<td>40,000</td>
</tr>
<tr>
<td>Ferrochrome, granite &amp; other minerals</td>
<td>10,280</td>
<td>10,280</td>
<td>10,280</td>
<td>10,280</td>
<td>10,280</td>
</tr>
<tr>
<td>Fertilizer</td>
<td>10,000</td>
<td>10,000</td>
<td>10,000</td>
<td>10,000</td>
<td>10,000</td>
</tr>
<tr>
<td>Containers</td>
<td>54,600</td>
<td>54,600</td>
<td>54,600</td>
<td>54,600</td>
<td>54,600</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>64,600</strong></td>
<td><strong>46,280</strong></td>
<td><strong>64,600</strong></td>
<td><strong>46,780</strong></td>
<td><strong>64,600</strong></td>
</tr>
</tbody>
</table>

Based on the responses received from this corridor traffic volume for the respondents is forecast to increase from 111,380 in 2015 to 114,880 from Zimbabwe market in the next four years; see table 4 below:

**Table 4: Total projection of business volumes**

<table>
<thead>
<tr>
<th>Year</th>
<th>Business volume metric ton</th>
<th>Current Market Share %</th>
<th>Traffic available to Rail</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>111,380</td>
<td>24%</td>
<td>26,731</td>
</tr>
<tr>
<td>2016</td>
<td>111,880</td>
<td>24%</td>
<td>26,851</td>
</tr>
<tr>
<td>2017</td>
<td>112,880</td>
<td>24%</td>
<td>27,091</td>
</tr>
<tr>
<td>2018</td>
<td>114,880</td>
<td>24%</td>
<td>27,571</td>
</tr>
</tbody>
</table>

Based on the market share of 24% calculated in table 3, projected traffic on rail, for the respondents is projected to increase from 26,731 in 2015 to 27,571 in 2018. Had all the customers given the volume projections it was going to be easy to determine the market share or mobilize the resources required to move the aforesaid traffic.
Rating of Rail Services

Unavailability of rail resources when required made customers to opt for road. Ferrochrome and its associated minerals were all on road (what are is the estimate of total volume available – other sources should provide). Most respondents highlighted long transit times that negatively affected the whole supply chain. The train schedules in terms of exports were indicated as not synchronized with shipping times, and the tariffs were considered to be high. Furthermore rail services were considered to be inflexible. Of interest one respondent highlighted that rail service costing did not include road services at terminal and the sea freight leg for overseas shipment.

Comparison of rail to road

Road was considered to offer a one stop shop, hence it was faster, more predictable and flexible. The road pricing was said to be reasonable where as the rail was considered as economical in the long run.? While railway logistics were theoretically the mode of choice in terms of seamless services across borders, bulk movement and safety the reality on the ground was different because of poor transit times, unpredictability and poor customer care. Of specific concern to respondents were customer care issues where rail personnel were considered rude, showed no knowledge of supply chain logistics and customer queries were not attended timely.

Determinants of mode of choice

The customers indicated that their choice of transport mode was influenced by transit times, flexibility and arrival of cargo at the port in time for to shipment. Tariffs were also considered as important. Type of cargo and safety, minimal risk of accidents were mentioned as determinants as well.

Relationship with Service Provider

Customers have indicated that they were not happy with the services they receive from the railways. The following were highlighted: bureaucracy, poor customer care in terms of communication skills, professionalism of marketing
personal, lack of appreciation and knowledge of total logistics solutions. These points were not only mentioned but emphasized by all respondents.

**Issues to improve services by rail**

Customers raised the following as requiring attention in order to improve rail services through;

- Availing rolling stock on request
- Predetermining and adhering to set transit times
- Synchronizing train and shipping schedules
- Improving on customer care
- Installing a regional cargo tracking system
- Establishing one stop shop for cross border traffic and offer quotations within 3 hours
- Railways to offer total logistics solution as opposed to transportation
- Considering flexible market related pricing that takes cognizance of back loads
- Appreciating and understanding industry cost structures for its customers especially agriculture and mining
- Making railway services more predictable and reliable

**2.3.2 Beitbridge Corridor**

The findings and the analysis in this corridor were from only 8 customers who responded out of a sample of 25; hence it is not reflective of the total corridor and the analysis focused on NRZ and ZRL. One of the customers also used the Beira corridor. Statistics were also received from Zimbabwe Tobacco Association (ZTA) on tobacco exports.

**Sidings, loading and off loading facilities**

All customers indicated that they were satisfied with the siding and facilities for loading and off loading for road and rail. The customers however indicated that the designs of the siding were meant primarily for rail. The capacity was adequate for the current and projected business. One customer indicated that they used manual labour for loading on rail.
Import and Export

The customers who completed questionnaires imported mining chemicals, fertilizers and associated chemicals, fuels, containerized cargo, clinker, and exported copper, cathodes and copper concentrate, timber and cotton. ZTA is not a major customer of rail and all tobacco was exported as containerized or break-bulk on road.

Distribution of business volume

Of the customers interviewed that use the Beitbridge corridor the total imports by rail were 69% (299,414) and exports were 91% (119,400).

<table>
<thead>
<tr>
<th></th>
<th>Rail</th>
<th>Road</th>
<th>Total</th>
<th>Rail%</th>
<th>Road %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Import</td>
<td>299,414</td>
<td>136,800</td>
<td>436,214</td>
<td>69%</td>
<td>31%</td>
</tr>
<tr>
<td>Export</td>
<td>119,400</td>
<td>12,000</td>
<td>131,400</td>
<td>91%</td>
<td>9%</td>
</tr>
<tr>
<td>Total</td>
<td>418,814</td>
<td>148,800</td>
<td>567,614</td>
<td>74%</td>
<td>26%</td>
</tr>
</tbody>
</table>

The current market share of rail is 74% and is based on the traffic moved by rail for 7 of the 8 customers. One customer from Zambia did not state the business volumes moved as it was considered confidential. How do we treat this info re market share?

Resources required and availability

The resources necessary to handle the cargo, namely wagons, locomotives, wagon labels, tarpaulins and ropes, were considered inadequate. Some customers provided their own tarpaulins to meet own requirements. Shortage of rolling stock had forced customers to put some of their cargo on road. Shortage of fuel on rail has also affected the flow of traffic.

Business volume projection for the next four years

Increase in business volumes is expected with import of clinker expected to begin in 2016 thereby giving the railways enough time to plan for this traffic. Some customers failed to give projection for both imports and exports, as it was
either confidential or there was lack of information. Timber was exported from Zimbabwe to Zambia. Copper export and imports of chemicals for Zambia were expected to increase by 8 -10% in the next four years. The table below shows the projection of business volume from 2014 to 2018.

Table 6: Projection of business volume

<table>
<thead>
<tr>
<th>Product</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Import</td>
<td>Export</td>
<td>Import</td>
<td>Export</td>
<td>Import</td>
</tr>
<tr>
<td>Clinker</td>
<td>15,000</td>
<td>15,000</td>
<td>20,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Containers</td>
<td>164,724</td>
<td>163,848</td>
<td>163,848</td>
<td>163,848</td>
<td>163,848</td>
</tr>
<tr>
<td>Timber</td>
<td>10,500</td>
<td>12,000</td>
<td>10,800</td>
<td>12,000</td>
<td>12,000</td>
</tr>
<tr>
<td>Fertilizer</td>
<td>217,000</td>
<td>342,440</td>
<td>400,620</td>
<td>400,800</td>
<td>400,800</td>
</tr>
<tr>
<td>Copper</td>
<td>60,000</td>
<td>64,800</td>
<td>64,800</td>
<td>65,400</td>
<td>66,000</td>
</tr>
<tr>
<td>Fuels</td>
<td>8,011</td>
<td>8,011</td>
<td>8,011</td>
<td>8,011</td>
<td>8,011</td>
</tr>
<tr>
<td>Chemicals</td>
<td>24,000</td>
<td>25,920</td>
<td>26,160</td>
<td>26,400</td>
<td>26,400</td>
</tr>
<tr>
<td>Tobacco</td>
<td>8,750</td>
<td>15,000</td>
<td>20,000</td>
<td>20,000</td>
<td>20,000</td>
</tr>
<tr>
<td>Cotton</td>
<td>2,400</td>
<td>2,400</td>
<td>2,400</td>
<td>2,400</td>
<td>2,400</td>
</tr>
<tr>
<td>Total</td>
<td>413,735</td>
<td>540,219</td>
<td>94,200</td>
<td>613,639</td>
<td>95,600</td>
</tr>
</tbody>
</table>

According to the current market share of 74% business volume is expected to grow by 13% (80,040) from 634,419mt in 2015 to 714,459mt in 2018 and this is shown in table 7 below:

Table 7: Total projection of business volumes

<table>
<thead>
<tr>
<th>Year</th>
<th>Business metric ton</th>
<th>Current share %</th>
<th>Market</th>
<th>Traffic available to rail</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>634,419</td>
<td>74%</td>
<td></td>
<td>469,470</td>
</tr>
<tr>
<td>2016</td>
<td>712,239</td>
<td>74%</td>
<td></td>
<td>527,057</td>
</tr>
<tr>
<td>2017</td>
<td>714,459</td>
<td>74%</td>
<td></td>
<td>528,700</td>
</tr>
<tr>
<td>2018</td>
<td>714,459</td>
<td>74%</td>
<td></td>
<td>528,700</td>
</tr>
</tbody>
</table>

According to the current market share the traffic on rail will increase from 469,470mt in 2015 to 528,700mt in 2018. Had all the customers given the business volume projections it was going to be easy to determine the market.
share or mobilize the resources. The table above shows that there is growth in business volumes and railways need to prepare themselves to move this traffic.

**Rating of Rail Services**

In general rail performance in this corridor received negative comments. Respondents highlighted the long transit times that distort the entire supply chain, the poor maintenance of wagons rendering them unfit on regulated networks, resulting in delayed deliveries. Shortage of fuel and speed restrictions on some sections of the network due to non-maintenance had also been said to worsen the performance of railways. The railways did not stick to train schedules making them unpredictable and unreliable. All in all the lack of capacity and resources affected the production of some customers, as they had to wait for inputs.

The performance of railways was also affected by poor customer care. Most customers in the corridor complained about poor responses to their queries, bureaucracy, unprofessionalism by some marketing personnel and lack of appreciation of the total logistics in the supply chain. The customers also raised the issue of compensation on loss or/and damaged cargo.

**Comparison of rail to road**

The railways were considered more suitable for bulk and high-risk goods. Customers had different opinions on the security and safety, transit times, flexibility, predictability and reliability, some preferring road and others opting for rail. Overall there was unanimity on the point that road services were faster, more flexible and cheaper. Some customers indicated that Beitbridge corridor was more expensive compared to other corridors and road. The customers also commented that some railways priced the rail out of business by not considering road as alternative mode of transport available to customers if they set tariffs high.
Determinants of mode of choice
The following were considered as determinants, type of product, capacity, price, flexibility, lead time and customer’s choice. These were favourable to rail except cost and flexibility. One customer who uses both Beira and Beitbridge indicated that he might move all his traffic to Beira unless the Beitbridge corridor members change their attitude towards customers and reduce tariffs.

Relationship with Service Provider
Customer relations along the corridor were considered poor. Customers were not being updated on cargo position along the corridor or being provided with an accurate delivery or lead-time. The complaints of poor customer care was as per the Beira corridor. The interaction of customers and rail employees across the region showed unmotivated workforce and unskilled marketing personnel.

Issues to improve rail services
The following were highlighted as requiring attention to improve rail services by:

- Signing Customer Service Charter to improve customer relations
- Improving reliability and availability of rolling stock.
- Removing of bottlenecks along the corridor
- Establishing one stop shops for transit traffic
- Appreciating and understanding each industry’s cost structure
- Providing and maintaining train schedules and synchronizing the schedules with shipping times
- Ensuring that agreements with customers are attained
- Improving locomotive wagon ratios and increasing wagon supply across the region
- Using Information and Communication Technologies as communication and decision making tool
- Considering market prices when coming up with rates
- Motivating and recruiting qualified marketing personnel
2.3.3 Limpopo Corridor

The 4 customers who responded to the questionnaire were all from Zimbabwe. The analysis is not a full representative of the corridor business.

**Sidings, loading and off loading facilities**

All customers indicated that had sidings with off loading and off loading facilities for both road and rail.

**Import and Export**

The commodities exported by these customers were raw sugar, ferrochrome, ores, reductants and imports were fuels, fertilizer, lime and coal from Botswana.

**Distribution of business volume**

**Table 8: Market Share along Limpopo Corridor**

<table>
<thead>
<tr>
<th></th>
<th>Rail</th>
<th>Road</th>
<th>Total</th>
<th>Rail%</th>
<th>Road</th>
</tr>
</thead>
<tbody>
<tr>
<td>Import</td>
<td>96,000</td>
<td>21,600</td>
<td>117,600</td>
<td>82%</td>
<td>18%</td>
</tr>
<tr>
<td>Export</td>
<td>790,000</td>
<td>-</td>
<td>790,000</td>
<td>100%</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>886,000</strong></td>
<td><strong>21,600</strong></td>
<td><strong>907,600</strong></td>
<td><strong>98%</strong></td>
<td><strong>2%</strong></td>
</tr>
</tbody>
</table>

The current rail market share from data gathered from this corridor is 98% (886,000mt of 907,600mt)

**Resources required and availability**

Of the 4 customers only three indicated their resource requirements as 40 tankers and 1,100 high-sided iron wagons per month. Most of the customers indicated that the supply of the required resources was erratic and unreliable due to breakdowns and shortage of fuel.

**Business volume projection for the next four years**

Mineral production was expected to increase in the next four years and sugar was expected to increase by 10000mt. The sugar production and export volumes would dependent on rainfall partners and international market trends. Production of ferrochrome is expected to increase between 72,000 to 96,000mt
per annum as from 2015. Fuel importation by rail is expected to increase as well. These projections show that there would be business for the railways.

**Table 8: Projection of business volume**

<table>
<thead>
<tr>
<th>Product</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Import</td>
<td>Export</td>
<td>Import</td>
<td>Export</td>
<td>Import</td>
</tr>
<tr>
<td>Sugar</td>
<td>570,000</td>
<td>560,000</td>
<td>610,000</td>
<td>620,000</td>
<td>670,000</td>
</tr>
<tr>
<td>Ferrochrome</td>
<td>180,000</td>
<td>240,000</td>
<td>240,000</td>
<td>240,000</td>
<td>240,000</td>
</tr>
<tr>
<td>Coal</td>
<td>72,000</td>
<td>72,000</td>
<td>72,000</td>
<td>72,000</td>
<td>72,000</td>
</tr>
<tr>
<td>Fuels</td>
<td>24,000</td>
<td>24,000</td>
<td>45,600</td>
<td>45,600</td>
<td>45,600</td>
</tr>
<tr>
<td>Total</td>
<td>96,000</td>
<td>750,000</td>
<td>96,000</td>
<td>800,000</td>
<td>117,600</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>117,600</td>
<td>850,000</td>
<td>117,600</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>860,000</td>
<td>910,000</td>
</tr>
</tbody>
</table>

Imports are expected to increase from 96,000mt in 2014 to 117,600 by 2018 and exports would increase from 750,000mt to 910,000mt by 2018.

**Table 9: Total projection of business volumes**

<table>
<thead>
<tr>
<th>Year</th>
<th>Business volume metric ton</th>
<th>Current market share %</th>
<th>Projected traffic on rail</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>896,000</td>
<td>98%</td>
<td>878,080</td>
</tr>
<tr>
<td>2016</td>
<td>967,600</td>
<td>98%</td>
<td>948,248</td>
</tr>
<tr>
<td>2017</td>
<td>977,600</td>
<td>98%</td>
<td>958,048</td>
</tr>
<tr>
<td>2018</td>
<td>1,027,600</td>
<td>98%</td>
<td>1,007,048</td>
</tr>
</tbody>
</table>

As per table 9 above business projection will increase from 896,000mt in 2015 to 1,027,600mt in 2018. Based on the current rail market share of 98% the business volume on rail is expected to grow by 19% (128,968mt) from 846,000mt in 2015 to 1,007,048mt in 2018 as shown in table 9 above. Had all the customers responded to the questionnaire it was going to be easy to determine the market share or mobilize the resources. The table above shows that there is growth in business volumes and railways need to prepare themselves to move this traffic.
**Rating of Rail Services**

In rating the rail services according to tariffs, capacity, convenience, transit, predictability and safety most of the customers rated predictability as very poor and capacity. Transit times was not an issue but required to be improved. The age and constant breakdown of rolling stock affected the quality of service.

**Comparison of rail to road**

On Limpopo corridor most customers considered rail as cheap but unreliable and unpredictable. Most customers said road was faster, predictable, reliable and flexible but costly.

**Determinants of mode of choice**

Rail was the most preferred mode of transport in terms of cost and convenience.

**Relationship with Service Provider**

It was indicated that there was need to improve communication between the railways and customers and use internet was recommended.

**Issues to improve services by rail**

Railways need to improve on;

- Maintenance of locomotives regularly to reduce breakdowns
- Reliability by replacing or refurbish rolling stock
- Transit times
- Supply of wagons as and when requested
- Add ICT in the value chain

**2.3.4 Plumtree Corridor**

The findings and the analysis in this corridor were based on 2 customers from Botswana and one Zimbabwe.
Sidings, loading and off loading facilities

All customers indicated that had sidings with off loading and off loading facilities for both road and rail. The capacity and design were inadequate for the current and projected business.

Import and Export

Coal was exported to South Africa, Zimbabwe and Zambia from Botswana and fuel was imported in Botswana.

Distribution of business volume

The distribution of the business volumes between the road and rail is shown in the table below. The import of coal into Zimbabwe is included in the export from Botswana customer.

Table 10: Market Share along Plumtree Corridor

<table>
<thead>
<tr>
<th></th>
<th>Rail</th>
<th>Road</th>
<th>Total</th>
<th>Rail %</th>
<th>Road %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Import</td>
<td>213,960</td>
<td>13,440</td>
<td>227,400</td>
<td>94%</td>
<td>6%</td>
</tr>
<tr>
<td>Export</td>
<td>301,800</td>
<td>114,840</td>
<td>416,640</td>
<td>72%</td>
<td>28%</td>
</tr>
<tr>
<td>Total</td>
<td>515,760</td>
<td>128,280</td>
<td>644,040</td>
<td>80%</td>
<td>20%</td>
</tr>
</tbody>
</table>

The above table shows that the rail market share is 80% (515,760) of the traffic from the 3 customers totalling 644,040mt.

Resources required and availability

Resources required are tankers and both high and drop sided iron wagons. 1000 tankers are required per month and 46,500 wagons per month for coal. Wagons and tankers have been supplied when requested.

Business volume projection for the next four years

No projections were given for the fuels. It is projected that mining operations would expand to meet the demand of coal in the region and the customer considers the railways as strategic partners to manage the increased business volume. Railways are then expected to offer competitive rates.
Coal traffic is projected to grow from 52% from 312,000mt to 600,000mt in the next four years as per table 11 below:

Table11: Projection of business volume

<table>
<thead>
<tr>
<th>Product</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Import</td>
<td>Export</td>
<td>Import</td>
<td>Export</td>
<td>Import</td>
</tr>
<tr>
<td>Coal</td>
<td>312,000</td>
<td>400,000</td>
<td>450,000</td>
<td>500,000</td>
<td>600,000</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 12: Total projection of business volumes

<table>
<thead>
<tr>
<th>Year</th>
<th>Business volume metric ton</th>
<th>Current rail market share %</th>
<th>Projected traffic on rail</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>400,000, 80%</td>
<td>320,000</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>450,000, 80%</td>
<td>360,000</td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>500,000, 80%</td>
<td>400,000</td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>600,000, 80%</td>
<td>480,000</td>
<td></td>
</tr>
</tbody>
</table>

The table 12 above shows the projected rail traffic on the basis of the current rail market share of 80%.

Rating of Rail Services

The rating of rail services was dependent on the commodity where one customer indicated that safety was good the other with high-risk commodity ranking safety as poor. Customers expected seamless rail services across the region.

Comparison of rail to road

The type of commodities, fuels and coal required bulk movement hence they all preferred rail. Road is considered faster flexible but lack capacity for bulk movement and its costly for low value bulk commodities.

Determinants of mode of choice

The determinants for transport mode of choice were bulk movement, cost, convenience and transit times.
**Relationship with Service Provider**

Railways were considered as professionally run but would expect a customer centered approach to improve railway services.

**Issues to improve services by rail**

To improve rail services customers expected railways to review the way they do business by:

- Offering competitive rates
- Improving wagon turn around times
- Providing adequate, fit for purpose rolling stock
- Instil a more customer centered approach towards customers
- Develop and implement a more long term strategic marketing strategy
- Providing rail seamless service in the region
- Opening up rail operations to competition
- Adopting ICT for communication and decision making
- Addressing missing links

**2.3.5 Namibia Corridor**

The findings and the analysis in this corridor were based on two major customers of TNHL.

**Sidings, loading and off loading facilities**

All customers owned the sidings and have off loading and loading facilities for both road and rail. The capacity was adequate for the current and projected business.

**Import and Export**

Imported goods were food stuffs like maize, wheat, sugar, rice and mahangu and the exported goods were minerals, fuel, fertilizers and sulphuric acid.
Distribution of business volume

Table 13: Market Share along Namibia Corridor

<table>
<thead>
<tr>
<th></th>
<th>Rail</th>
<th>Road</th>
<th>Total</th>
<th>Rail%</th>
<th>Road %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Import</td>
<td>60,000</td>
<td>65,280</td>
<td>125,280</td>
<td>48%</td>
<td>52%</td>
</tr>
<tr>
<td>Export</td>
<td>7,392</td>
<td>-</td>
<td>7,392</td>
<td>100%</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>67,392</td>
<td>65,280</td>
<td>132,672</td>
<td>51%</td>
<td>49%</td>
</tr>
</tbody>
</table>

Current business volume available for road and rail is 132,762mt. Rail has 51% of the current market share.

Resources required and availability

The following resources were required per month for the current traffic, 50 drop-sided iron wagons, 29 flatbed wagons, 245 K-closed, 27 fuel tankers, 90 acid tankers and 31 fertilizer tankers. The resources are not always available when requested. One customer has cargo that requires FZ wagons and railways are not supplying.

Business volume projection for the next four years

Table 14: Projection of business volume

<table>
<thead>
<tr>
<th>Product</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Import</td>
<td>Export</td>
<td>Import</td>
<td>Export</td>
<td>Import</td>
</tr>
<tr>
<td>Wheat</td>
<td>44,000</td>
<td>44,000</td>
<td>45,700</td>
<td>46,700</td>
<td>47,600</td>
</tr>
<tr>
<td>Maize</td>
<td>30,000</td>
<td>30,600</td>
<td>31,200</td>
<td>31,800</td>
<td>32,400</td>
</tr>
<tr>
<td>Fuel</td>
<td>12,818</td>
<td>12,818</td>
<td>12,818</td>
<td>12,818</td>
<td>12,818</td>
</tr>
<tr>
<td>Sulphur</td>
<td>216,000</td>
<td>216,000</td>
<td>216,000</td>
<td>216,000</td>
<td>216,000</td>
</tr>
<tr>
<td>Fertilizers</td>
<td>11,040</td>
<td>11,040</td>
<td>11,040</td>
<td>11,040</td>
<td>11,040</td>
</tr>
<tr>
<td>Minerals</td>
<td>25,200</td>
<td>25,200</td>
<td>25,200</td>
<td>25,200</td>
<td>25,200</td>
</tr>
<tr>
<td>Mixed load</td>
<td>9,264</td>
<td>9,264</td>
<td>9,264</td>
<td>9,264</td>
<td>9,264</td>
</tr>
<tr>
<td>Total</td>
<td>313,858</td>
<td>34,464</td>
<td>314,458</td>
<td>34,464</td>
<td>316,758</td>
</tr>
</tbody>
</table>

Imports are expected to grow from 313,858mt to 319,858mt by 2018 and exports will remain the same.
Table 15: Total projection of business volumes

<table>
<thead>
<tr>
<th>Year</th>
<th>Business volume metric ton</th>
<th>Current market share</th>
<th>Projected Traffic on Rail</th>
</tr>
</thead>
<tbody>
<tr>
<td>201</td>
<td>348,922</td>
<td>51%</td>
<td>177,950</td>
</tr>
<tr>
<td>2016</td>
<td>351,222</td>
<td>51%</td>
<td>179,123</td>
</tr>
<tr>
<td>2017</td>
<td>352,822</td>
<td>51%</td>
<td>179,970</td>
</tr>
<tr>
<td>2018</td>
<td>354,322</td>
<td>51%</td>
<td>180,704</td>
</tr>
</tbody>
</table>

Projected traffic on rail is expected to increase by 2,754mt from 2015 to 2018.

Rating of Rail Services
There was a mixed perception on the rating of the rail services. What was common from both customers was unpredictability. On ranking the rail services against other modes of transport all customers indicated that tariffs, capacity and predictability were important when rating services on offer.

Comparison of rail to road
On comparing rail to road as the mode of choice for transportation of goods tariffs, availability, reliability and safety would be considered. Road was considered as being reliable and available. Because of poor services and lack of resources rail is no longer the transport mode of choice.

Determinants of mode of choice
Determinants considered for rail would be capacity, predictability, safety and cost where as road flexibility, reliability, faster and cheap would be considered.

Relationship with Service Provider
On all the responses no comment was made on customer relationship.

Issues to improve services by rail
Railways were requested to improve on reliability and supply of resources upon request.
2.3.6 Richards Bay Corridor

The findings and the analysis in this corridor were based on 2 major customers of SR.

*Sidings, loading and off loading facilities*

All customers have access to sidings and have loading and off loading facilities for road and rail. The capacity is adequate for the current and projected fuel volumes.

*Import and Export*

Imports on this corridor are wheat and fuels.

*Distribution of business volume*

**Table 16: Market Share along Richards Bay Corridor**

<table>
<thead>
<tr>
<th></th>
<th>Rail</th>
<th>Road</th>
<th>Total</th>
<th>Rail%</th>
<th>Road</th>
</tr>
</thead>
<tbody>
<tr>
<td>Import</td>
<td>9,212</td>
<td>35,243</td>
<td>44,455</td>
<td>21%</td>
<td>79%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>9,212</strong></td>
<td><strong>35,243</strong></td>
<td><strong>44,455</strong></td>
<td><strong>21%</strong></td>
<td><strong>79%</strong></td>
</tr>
</tbody>
</table>

Current business volume available for road and rail is 44,455mt. Rail has 21% (9,212) of the current market share.

*Resources required and availability*

The resources required for the current traffic were 160 bottom discharge wagons and 160 tankers per month. Supply of resources was lower than what was required and the services were below expectation.

*Business volume projection for the next four years*

No projection was given for wheat as the customer was still new in business.

**Table 17: Projection of business volume**

<table>
<thead>
<tr>
<th>Product</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Import</td>
<td>Export</td>
<td>Import</td>
<td>Export</td>
<td>Import</td>
</tr>
<tr>
<td>Wheat</td>
<td>No projections as the customer is new in business</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel</td>
<td>52,350</td>
<td>40,813</td>
<td>45,710</td>
<td>45,939</td>
<td>46,169</td>
</tr>
<tr>
<td>Total</td>
<td>52,350</td>
<td>40,813</td>
<td>45,710</td>
<td>45,710</td>
<td>46,169</td>
</tr>
</tbody>
</table>
Due to phasing out of LRP the fuel volumes are expected to drop from 52,350mt in 2014 to 46,169 in 2018.

**Table 18: Total projection of business volumes**

<table>
<thead>
<tr>
<th>Year</th>
<th>Business volume metric ton</th>
<th>Current Rail market Share %</th>
<th>Projected Traffic on rail</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>40,813</td>
<td>21%</td>
<td>8,570</td>
</tr>
<tr>
<td>2016</td>
<td>45,710</td>
<td>21%</td>
<td>9,599</td>
</tr>
<tr>
<td>2017</td>
<td>45,710</td>
<td>21%</td>
<td>9,599</td>
</tr>
<tr>
<td>2018</td>
<td>46,169</td>
<td>21%</td>
<td>9,695</td>
</tr>
</tbody>
</table>

The projected traffic on the corridor is anticipated to increase from 40,813mt in 2015 to 46,169mt in 2018. According to the current market share of 21% the projected traffic on rail will be 8,570mt in 2015 increasing to 9,695mt in 2018.

*Rating of Rail Services*

Safety, predictability and transit times were variables that the customers highlighted to be poorly addressed by railways when providing services. On ranking the variables tariffs and safety were ranked as very important followed by predictability and transit times. Customers complained of transit lose that the railways are refusing to compensate.

*Comparison of rail to road*

Due to bulkiness and security required for the cargo rail was considered the desirable mode of transport although it was unpredictable and unreliable. Rail was also considered to be cost effective. Road was said to be predictable and faster and flexible.

*Determinants of mode of choice*

The customers identified the following factors as determinants of mode of choice, cost effectiveness, past experiences and resource availability.

*Relationship with Service Provider*

No problems were raised under this regard.
Issues to improve services by rail

Railways were requested to improve on turnaround times and reduce in-transit losses. Railways were expected to ensure that the tarpaulins were clean and intact. Railways were to ensure that contracts with customers have not lapsed. Railways were requested to inspect their tarpaulins for cleanliness and intact before supplying to customers to minimize transit losses.

2.4 Recommendations and Conclusion

The data gathered through the customer questionnaire was not conclusive on its own to resolve service realignment problem. The above analysis would require to be complemented by review of other literature available on railway operations including the analysis from the railway operator questionnaire.

The analysis was not a reflection of the total corridor business as few customers in a corridor responded. The outcomes given above can give the railways a starting point in improving services and become a competitive alternative to road services.

2.4.1 Recommendation

i. It is important that corridors use the CMG platform to implement joint planning and marketing and increase the market share. With the current resources the corridor should set targets on tonnage to move and percentage to increase the market share

ii. SARA developed a MYSQL database for commercial information sharing across the region and RAs could implement it for tracking cargo and be able to answer customers’ queries on cargo locations along the corridor. The database is ready for roll out

iii. The outcomes and the analysis above can be used as a starting point in improving rail services and become a competitive alternative to road services

iv. In the Zimbabwean market the information derived from the questionnaires can be used by NRZ and other railways in the corridor to identify business opportunities and improve their service delivery

v. The railways could consider refresher courses on marketing and customer care to improve service provision and customer relationships

vi. Railways could also consider and implement the regional resource sharing framework to improve on availability of resources in a corridor.

vii. SARA has ratified a number of policy frameworks, safety, technical and operational standards that railways should use to ensure compliance in
the region and reduce delays through condemning of rolling stock on other networks
Annexure A.11

Analysis of Rail operator Questionnaire

ANALYSIS OF RESPONSES TO THE RAILWAY OPERATOR AND CUSTOMER SERVICE DELIVERY QUESTIONNAIRES

1. BACKGROUND

There is concern amongst SARA members, specifically the rail operators, that the distribution/share of transit rail traffic to/from the SADC hinterland through the ports, to/from overseas markets, is not being fairly shared between the rail systems of the region. Railways believe that they can offer convenient and relatively cheaper transportation services if they align themselves with the market.

In seeking to resolve the problem of service realignment the SARA Board simultaneously wants to identify and address the underlying problem of lost rail market share so that the usage of rail transport systems in the region can be optimized for the benefit of all. It is in this regard that two questionnaires (here enclosed) were designed for railway operators and customers to give feedback respectively on challenges they were facing for the first ones and their views on the quality of rail services for the second.

Questionnaires to customers were sent through RAs: each railway administration was to identify its top 5 customers and distribute them the customer service delivery questionnaire.

2. METHODOLOGY

The analysis of responses per corridor was done separately for the railway operators and customers. Actually, the analysis includes;

i. The quality of responses,
ii. The findings,
iii. The data analysis itself,
iv. The comments & observations, and
v. The recommendations and/or conclusion.

Due to lack of information from the two groups (railway operators and customers), the Optimization Committee found opportune to request an external consultancy for a period of fourteen days in order to get more data for a consistent analysis and, further for trustable recommendations.

2.1 Analysis of responses from Railway Operators

2.1.1 Rates of responses

Responses to the Railway Operator Questionnaire were received from nine of the ten Railway Administrations and, for nine of the eleven corridors which exist in the region.

The rates of responses are summarised in the below template which figures' explanation is given thereafter.
As per the above template,

i. Responses were received from nine of the ten RAs (90%) viz BBR, BR, CFM, NRZ, SNCC, SR, TFR, TNHL and ZRL.

ii. Responses are covering nine of the twelve corridors of the region and those are;
   • Beira: two of the four members responded (2/4),
   • Beitbridge: 5/5,
   • Dar es Salaam: 1/3,
   • Goba: 2/2,
   • Limpopo: 2/3,
   • Namibian: 2/2,
   • Plumtree: 3/5, and
   • Ressano Garcia: 3/3.

iii. The responses' rates per RA according to the number of corridors the Railway belongs to;
   • Five of the nine RAs (BBR, BR, CFM, NRZ and TNHL) responded on 100% of the corridors they are belonging to,
   • One (TFR) on 80%,
   • One (SR) on 50%,
   • One (ZRL) on 33%, and
   • One (SNCC) on 25% of the corridor it belongs to.

iv. The responses’ rates per Corridor according to the number of their members;
   • 100% of members responded for four (Beitbridge, Goba, Namibian and Ressano Garcia) of the nine corridors,
   • 60% for one (Plumtree),
v. The total number of responses received is 21 of the 31 which were expected: the proportion is of 67.74%.

2.1.2 Analysis per Corridor

2.1.2.1 Beira

On the four RAs constituting the Corridor (CFM, NRZ, ZRL and SNCC), only 50% responded (CFM and NRZ).

Quality of responses
Good in general with some exceptions for customers’ names which are different and the utilisation of the design track line capacity which is given in a unit of measurement different from the one to be compared to.

Findings, data analysis and observations
They have been listed as per the questions;
- Commodities carried are Granite, Fertilizer, Wheat and Containers
- No commun customers for the two RAs (DPSA, Medlog, PHI, Dynvet/Zimphos, Omnia Ferts, Crodum Ent for NRZ and MA, Granito de Mozambique, Beira Grain Terminal, Mocargo, MSC for CFM)
- Potential Business: 14897T Import and 7088T Export from NRZ only
- Current Monthly Business: 12800T Import and 7500T Export for NRZ (Total of 20300T) while CFM indicated 19255T as total for both directions
- Competition from the road very stiff due to shortage of equipment and track bad condition
- No collaboration with road
- No Backhaul
- Same challenges faced on the two RAs: Long Terminal and Transit times, Thefts or pilferages, documentation, Equipment’s shortage, Poor Infrastructure (Track, S & T) condition, etc.
- Proportion of the line design capacity in utilisation: 25% for NRZ and not known for CFM as the two parameters were given in different units of measurement
- Existing interchange arrangements: Joint Inspection
- Service Level Agreements: between RAs and between them and the Customers
- Through working timetable for international traffic: contradiction between the two; No for NRZ and Yes for CFM
Existing organisational cargo tracking information system: Yes for both RAs, but not linked to Customers

No capacity adequacy for Rolling Stock and Infrastructure for both RAs

The CMG is functional

The predetermined tariff (based among others on the state of the economy and the market price) can be negotiated with Customers

Less than 48 Hours for quotation for international traffic with one stop shop

Joint Marketing meetings twice per quarter or when necessary

SARA Marketing Policy (SMP) strengths: Joint Marketing Strategy, Equity and Shortest Route Principles

SMP’s Weaknesses: SARA is not in a position to enforce implementation of agreed policies

Measures to improve railway competitiveness: Joint Marketing, competitive rates, terminal and transit times’ minimisation, improvement of communications, one stop shop, etc.

The solution should be the dialogue on the corridor

Challenges beyond RAs: theft and pilferage of vulnerable cargo, bad condition of infrastructure including track, workshops, S & T, and shortage of equipment including locomotives, wagons and mobile plants.

The solution should come from Governments’ investments and subsidies

Recommendations

- RAs should be encouraged for all initiatives taken for the relaunch of the corridor
- They should now try to target some major customers especially in Zambia and DRC and plan joint marketing visits to them: this will show the commitment of each RA before the customers instead of individuals who may not be reliable.

2.1.2.2 Beitbridge

All the five RAs composing the Corridor (TFR, BBR, NRZ, ZRL and SNCC), responded

Quality of responses

Not good as it is shown here below: some data cannot be used due to incoherence

Findings, data analysis and observations

They have been listed as per the questions;

- Commodities carried are General Goods, Copper, Sulphur, Fertilizer, Grain, Sugar and Fuel
• Commun customers for TFR, BBR and ZRL (Transchem, Tradimex, Freightmax, Bridge Shipping, ETC Agro and SA Cargo); NRZ and SNCC have other names

By having different customers as PPC, GMB and Coal Brick for NRZ and Edouard Mulumba for SNCC, it is likely that;
  - NRZ reported only on goods originating or destining to Zimbabwe,
  - There is almost nothing which is carried by rail to and from DRC

• Potential (Annual) Business: 500000 to 750000T Import and 30000 to 72000T Export

1200000T in Export and the double in Import from BBR are not realistic when compared to the figures from other RAs and to the current ones: the discrepancy is too big that the figures cannot be reliable

• Current Business: deep disparity of figures between the RAs. Yearly, for TFR 17000T are coming from the North and 400000T from them to the North; ZRL are importing and exporting respectively 280000T and 60000T while according to BBR, tonnages transiting via Zimbabwe are 108000T to the South and 348000T to the North. Figures from NRZ are too low to be considered (3324T incoming and 33192T outgoing)

The analysis of the annual figures shows that;
  - Of the 400000T from South to North, 52000T are destined to Zimbabwe, 280000T to Zambia and the rest 68000T (348000-280000) to DRC, but on the ground, the 68000T of DRC do not appear in statistics!
  - From North to South, to the 60000T from Zambia, Zimbabwe is adding 48000T while TFR are receiving 17000T instead of 108000T! There is no consistency in the figures

• Competition from the road is real and tangible at such extent that for some commodities like Copper, the rail market share is around 5%.

The road is the mode of choice on this corridor mainly due to lack of dialogue between RAs with as consequences high rates, no one stop shop, long terminal and transit delays, etc.

• There is collaboration with road especially in Zambia, to avoid TFR wagons to proceed to SNCC

• No Backhaul

• Same challenges faced on the five RAs: Long Terminal and Transit times, Thefts or pilferages, documentation, Equipment’s shortage, Poor Infrastructure (Track, S & T) condition, high rates, no coordination on the corridor, State owned RAs are less business oriented.

The solution should be found in the dialogue between RAs to overcome challenges which are under their control
• Proportion of the line design capacity in utilisation: 30 to 40% as average for the corridor due to the same reasons as above

• Existing interchange arrangements: Joint Inspection in general and, Locomotives and Crew through working at some borders

This is an encouraging sign for the business

• Service Level Agreements: between RAs and between them and the Customers

• No through working timetable for international traffic on the corridor

• There are individual organisational cargo tracking information system that are not, unfortunately, linked to Customers except for TFR who are linked to Customers only for containerised traffic

• Inadequate capacity of Rolling Stock and Infrastructure for three of the RAs (NRZ, ZRL and SNCC), adequate capacity of Locomotives and track for TFR and BBR, and adequate capacity of wagons only for TFR

• The CMG is not functional and therefore, no coordination of the business on the corridor

This is the main cause of weakness of the rail compared to the road for the challenges under the control of RAs

• The predetermined tariff (based among others on the state of the economy and the market price) can be negotiated with Customers

• It takes less than 48 Hours for individual quotation for international traffic and there is no one stop shop

Reluctance is mostly from TFR who do not cooperate

• No Joint Marketing meetings

• SARA Marketing Policy (SMP) strengths: Joint Marketing Strategy, Equity and Shortest Route Principles

• SMP’s Weaknesses: SARA is not in a position to enforce implementation of agreed policies

• Measures to improve railway competitiveness: Joint Marketing, competitive rates, terminal and transit times’ minimisation, improvement of communications, one stop shop, etc.

• Challenges beyond RAs: theft and pilferage of vulnerable cargo, bad condition of infrastructure including track, workshops, S & T, and shortage of equipment including locomotives, wagons and mobile plants.

The solution should come from Governments’ investments and subsidies

Recommendations

• All RAs on the Beitbridge Corridor could strive together, in a coordinated way, to recover the rail market share by approaching mining people in Zambia and DRC
Figures sent out by RAs should be first seriously examined before being released.

The dialogue between RAs should be their first concern: they should resume the CMG meetings with the support of the JOC activities. This could therefore allow:

- The conversion of bilateral agreements to a corridor agreement,
- The setting up of through working timetable for international traffic on the corridor, one stop shop, joint inspections, locomotives & Crew through working, etc. for the improvement of the business
- The standardization of the cargo tracking information system on the corridor (RFID)

2.1.2.3 Dar es Salaam

Only one (ZRL) of the three (SNCC, ZRL and TAZARA) RAs forming the Corridor, responded

Quality of responses

Not good as it is shown here below: some data cannot be used due to inconsistency

Findings, data analysis and observations

They have been listed as per the questions;

- Commodities carried are Copper, Sulphur, Fertilizer, Diesel and Steel
- Customers are KCM, IMPALA, NYIOMBO, MM STEEL and PMme Fuels
- Potential Annual Business: 3000000T Import and 2000000T Export
- Current Annual Business: 60000T Import and same at Export

The gap is very big between the potential and the current. This shows that the estimation of the potential is not reliable
- Competition from the road is too high: only 12% of the market share for the rail
- There is no collaboration with road
- There is backhaul
- Poor Signalling and Infrastructure, Old wagons
- Proportion of the line design capacity in utilisation: 25%
- Existing interchange arrangements: Joint Inspection in general
- Service Level Agreements: with other RAs and not with Customers
- No through working timetable for international traffic on the corridor
- Individual organisational cargo tracking information system not linked to Customers
• Inadequate capacity of Rolling Stock and Infrastructure
• The CMG is irregularly meeting
• The predetermined tariff can be negotiated with Customers
• It takes less than 48 Hours for individual quotation and up to 72 hours to get quotation from other RAs for international traffic and there is no one stop shop
• No Joint Marketing meetings
• SARA Marketing Policy (SMP) strengths: Joint Marketing Strategy, Equity and Shortest Route Principles
• SMP's Weaknesses: SARA is not in a position to enforce implementation of agreed policies
• Measures to improve railway competitiveness: Joint Marketing, competitive rates, terminal and transit times' minimisation, improvement of communications, one stop shop, etc.
• Challenges beyond RAs: theft and pilferage of vulnerable cargo, bad condition of infrastructure including track, workshops, S & T, and shortage of equipment including locomotives, wagons and mobile plants.

The solution should come from Governments' investments and subsidies

Recommendations
• Budgets should be more realistic and not based on non-existing cargo

2.1.2.4 Goba

Both the RAs composing the Corridor (CFM and SR) responded

Quality of responses
Good in general except for some data as shown here below
Findings, data analysis and observations
They have been listed as per the questions;
• Main Commodities carried are Hematite and Sugar
• Commun customers for both RAs are Swaziland Sugar Association and Salgaocar
• Potential Annual Business: expressed in the Swazi Currency, and therefore could not be converted in Tons
• Current Business: disparity of figures between the RAs. Yearly, for SR 14070T are imported and 1527000T exported, while for CFM, it is 13000T at Import and 1200000T at Export

The analysis of the annual figures shows that 327000T of Hematite from SR are not traversing the CFM network!
• No real competition from the road except for general goods at Import
• There is no collaboration with road
No Backhaul

Challenges faced on the RAs: Rigid operating procedures between RAs, sluggish approach to investment, language barrier, Government support, low volumes offered

Proportion of the line design capacity in utilisation: about 60% as average for the corridor due to the reasons here above

Existing interchange arrangements: Joint Inspection and, Locomotives and Crew through working

Service Level Agreements: between RAs and between SR and the Customers (it should be a problem of language for the CFM response as they have joint marketing activities)

Through working timetable for international traffic on the corridor

SR has an organisational cargo tracking information system while CFM has not

Adequate capacity of Rolling Stock and Infrastructure for both RAs

The CMG is functional

This is the main strength of the corridor and resolves most of the problems they should be facing if they were not meeting

The predetermined tariff can be negotiated with Customers

It takes less than 48 Hours for the individual RA and up to 72 Hours from the other Railway to quote international cargo and there is a one stop shop

There are Joint Marketing meetings

SARA Marketing Policy (SMP) strengths: Joint Marketing Strategy, Equity and Shortest Route Principles

SMP’s Weaknesses: SARA is not in a position to enforce implementation of agreed policies

Measures to improve railway competitiveness: Joint investment in infrastructure and key assets, Minimizing transit delays, Improvement of communications

Challenges beyond RAs: Legislation, Government Policies, Uneven playing field, Transport of commodities with environmental impact on communities.

Recommendations

- Figures sent out by RAs should be more reliable
- Governments should increase their investments in the Railways
2.1.2.5 Limpopo

Only two (CFM and NRZ) of the four RAs composing the Corridor (CFM, NRZ, ZRL and SNCC) responded

**Quality of responses**

Not good as it is shown here below: some data cannot be used due to incoherence

**Findings, data analysis and observations**

They have been listed as per the questions;

- Commodities carried are Raw Sugar, Diesel, Ferro-Chrome, Wheat, Anhydrous Ammonia

- Common customers for both RAs are Zimasco, Zim Sugar and Strauss Logistics

- Potential Monthly Business: figures only from NRZ, 6000T Import and 21700T Export

- Current Monthly Business: 9000T Import and 30000T Export for NRZ, and 7700T to NRZ and 22500T from NRZ for CFM.

The analysis of the figures shows that;

- The potential is less than the current showing that either the market offered more than expected or the potential was not updated with the clients

- The current shows that NRZ are importing more than what is transiting by CFM and CFM is carrying to the port less than what NRZ are exporting. This may be interpreted as there is a surplus from road, handed over to rail in import at the Border Point, and the same in export where some load is handed over by rail to road at the same Border. The other way of thinking is that figures from one or both RAs are not true as there is road haulier on this corridor

- No competition from road

- No collaboration with road

- No Backhaul

- Challenges faced by both RAs: Long Terminal and Transit times, Thefts or pilferages, documentation, Equipment's shortage, Poor Infrastructure (Track, S & T) condition

- Daily proportion of the line design capacity in utilisation: 6 trains for NRZ and 2 for CFM!

  The figure from CFM seems to be more realistic than the one from NRZ

- Existing interchange arrangements: Joint Inspection

- Service Level Agreements: between RAs and between NRZ only and the Customers
• No through working timetable for international traffic on the corridor
  This is in contradiction to the commitment of RAs in the CMG’s activities!
• Organisational cargo tracking information system only for NRZ and not linked to Customers
• Inadequate capacity of Rolling Stock and Infrastructure for the two RAs
• The CMG is functional
• The predetermined tariff can be negotiated with Customers
• It takes less than 24 Hours for individual quotation or from the other RA for international traffic and there is one stop shop
• Twice Joint Marketing meetings per quarter or when necessary
• SARA Marketing Policy (SMP) strengths: Joint Marketing Strategy, Equity and Shortest Route Principles
• SMP’s Weaknesses: SARA is not in a position to enforce implementation of agreed policies
• Measures to improve railway competitiveness: Joint Marketing, competitive rates, terminal and transit times’ minimisation, improvement of communications, offer of better service delivery, etc.
• Challenges beyond RAs: theft and pilferage of vulnerable cargo, line on CFM side prone to flooding during rainy season resulting in traffic diversion to other routes, transport of commodities with environmental impact on communities.

Recommendations
• Figures sent out by RAs should be more reliable
• To improve the business on the corridor;
  – RAs could set up through working timetables for international traffic
  – CFM should endeavour to acquire a wagon tracking system and sign agreements with customers

2.1.2.6 Namibian

Both RAs (TFR and TNHL) forming the corridor responded to the questionnaire

Quality of responses
Not good as it is shown here below: some data cannot be used due to incoherence

Findings, data analysis and observations
They have been listed as per the questions;
• Commodities carried are Containers, Maize and (Ammonium Nitrate)
Customers are completely different: these are Veekos, Dynvet and Gordonia Mills for TFR, and Rossing Uranium, Sasol, Afrox, Feedmaster and Namib Mills for TNHL.

It is likely there is one stop shop so that each RA can deal with customers on behalf of the other when goods are originating from its country. But, it is not the case, there is no one stop shop.

Potential Annually Business: Nil from Namibia to SA and 42200T from SA to Namibia according to TFR, and 5000000T from SA to Namibia and 600000T from Namibia to SA according to TNHL.

Very big gap between the figures received from the two Railways. The high potential for TNHL may find its explanation in the fact that customers prefer now to carry their goods through ports (Walvis Bay or Luderitz) rather than using the formal rail line linking the two countries.

Current Annually Business: same as the potential here above for TFR, and 200000T Import and 100000T Export for TNHL.

The analysis of the figures shows that the gap is as big between the potential and the current as from TNHL’s data: figures are not realistic unless some customers did not fulfil their initial commitment.

Rail still have a competitive advantage despite the quite huge and massive road competition.

There is collaboration with road.

No Backhaul for TFR and backhaul for TNHL.

There is contradiction between the two RAs: TFR response could be the right one as goods carried in the two directions are different and therefore, require different wagon types.

Challenges faced by both RAs: Decrease of import loads and almost no export for TNHL due to high rates, long transit times and inadequate asset capacity.

Proportion of the line design capacity in utilisation: 14% which represent 2 trains per week and this is due to the challenges above.

Existing interchange arrangements: Joint Inspection, locomotives and Crew through working.

Service Level Agreements: between RAs and between themselves and the Customers.

Through working timetable for international traffic on the corridor.

Organisational cargo tracking information system for both RAs but only the TFR one is linked to the Customers for tracking of containers only.

Capacity of Rolling Stock and Infrastructure: adequate for TFR and inadequate for TNHL.

RAs meet on bilateral basis.

They should be sensitised to meet on CMG basis.
The predetermined tariff can be negotiated with Customers
It takes 1 day to TNHL and 7 to 14 days to TFR to quote for international traffic and there is no one stop shop
No Joint Marketing meetings
SARA Marketing Policy (SMP) strengths: Consistent customer engagements through customer care feedback and customer visits
SMP’s Weaknesses: the document is unknown in some RAs like TNHL
Measures to improve railway competitiveness: Explore possible ways of going up against competition i.e. attract alternative traffic, Need of a regional costing model, Cut down on tariffs during slack periods, Have joint corridor marketing events and customer days.
Challenges beyond RAs: Lack of an integrated planning approach, No transparency in the challenges experienced, Ageing infrastructure and staff, No enough investment.

Recommendations
Figures sent out by RAs should be more reliable
To improve the business on the corridor;
- RAs could be sensitised to meet on a CMG basis instead of bilateral
- RAs could review their high rates and minimize the quoting time for international traffic

2.1.2.7 Plumtree
Three (TFR, BR and NRZ) of the five RAs (+ ZRL and SNCC) forming the corridor responded to the questionnaire
Quality of responses
Not good as it is shown here below: some data cannot be used due to incoherence
Findings, data analysis and observations
They have been listed as per the questions;
Main commodities carried are Fuel, Salt, Soda Ash, Containers and Coal
Customers are: Fuel Companies (Engen, Shell and Sasol), Botswana Ash, Morupule Colliery
Potential Annually Business: North to South, 89200T according to NRZ and 796300T as per TFR. South to North, 500000T according to TFR and 338600T as per NRZ. No data from BR.
Interpreting the data here above, it can be noted that;
- Most of the southbound cargo is from Botswana while the northbound one is going beyond Botswana
• Current Annually Business: Southbound, 346300T-5960T according respectively to TFR and NRZ. Northbound, 406000T-262000T as per TFR and NRZ. BR is receiving and sending from/to both sides respectively 1390000T and 675000T

The analysis of the figures shows that;

- That the gap is so big between the potential and the current as from TFR and NRZ’s data: figures are not realistic unless some customers did not fulfil their initial commitment to bring goods to the rail

- BR is receiving (1390000T) more than NRZ southbound tonnage (5960T) and TFR northbound cargo (406000T) put together. The same, BR is sending (675000T) out more than what NRZ northbound tonnage (262000T) and TFR southbound cargo (346300T).

- Gaps are so big that all the figures are not reliable

• Competition from road is very hard

• There is collaboration with road

• No Backhaul for most commodities except Anthracite and Copper

• Challenges faced: Competition from road (or low traffic volumes), Inadequate Assets, Customers’ accessibility

• Proportion of the line design capacity in utilisation: varying from 50 to 100% according to the network due to challenges above

• Existing interchange arrangements: Joint Inspection everywhere, locomotives through working at TFR-BR border only

• Service Level Agreements: between the three RAs and between only two (TFR and NRZ) of them and the Customers

• Through working timetable for international traffic on the corridor only between TFR and BR

• Organisational cargo tracking information system for all the RAs but only TFR is linked to the Customers for tracking of containers only

• Capacity of Rolling Stock and Infrastructure: adequate for BR and inadequate for NRZ. No comment from TFR

• RAs meet on bilateral basis

They should be sensitised to meet on CMG basis

• The predetermined tariff can be negotiated with Customers

• To quote for international traffic, it takes up to two days for own or from the other RA for BR and NRZ while TFR takes one to two weeks and there is no one stop shop

• There are Joint Marketing meetings
- SARA Marketing Policy (SMP) strengths: Consistent customer engagements through customer care feedback, customer visits, Joint marketing, Traffic monitoring, Collaboration through bilateral meetings and Pooling of resources

- SMP’s Weaknesses: SARA is not in the position to enforce implementation of agreed policies

- Measures to improve railway competitiveness: Explore possible ways of going up against competition i.e. attract alternative traffic, Improved network through working, Customer route preference, Adherence to service standards.

- Challenges beyond RAs: Lack of an integrated planning approach, No transparency in the challenges experienced, Ageing infrastructure and staff, No enough investment.

**Recommendations**
- Figures sent out by RAs should be more reliable
- To improve the business on the corridor;
  - RAs could be sensitised to meet on a CMG basis instead of bilateral
  - SARA should play a more visible role by lobbying Governments to effect some changes and also ensure parity amongst RAs

**2.1.2.8 Ressano Garcia**

All the three (CFM, TFR and NRZ) RAs forming the corridor responded to the questionnaire. Actually NRZ is not part of this corridor but as they filled a questionnaire for traffic between Harare and Beitbridge, one of the possible route we could align that traffic was this corridor: that is what we did.

**Quality of responses**
Not good as it is shown here below: some data cannot be used due to incoherence

**Findings, data analysis and observations**
They have been listed as per the questions;
- Main commodities carried are Magnetite, Coal, Containers, Rock Phosphate, Maize and Fertilizer

- CommunCustomer is one for TFR and CFM, Foskor; all the rest are different: Glencore, Grindrod, Medlog, Exxaro, Omnia Fertilizer and Sappi

- Potential Annual Business: from Maputo to Beitbridge, Nil for TFR, 223700T for NRZ and no data for CFM; from Beitbridge to Maputo, 2500000T (Coal) for TFR, Nil for NRZ and no data for CFM.

Interpreting the data here above, it can be noted that;
- There are some contradictions in Import and Export unless goods from/to Zimbabwe are either taking another route (Durban or Richards Bay) or originating from SA like Maize
• Current Annually Business: in Import; Nil for TFR, 206000T for NRZ and 20000T for CFM; and in Export, 5800000T (Coal & Magnetite) for TFR, 62T for NRZ and 4300000T for CFM

The analysis of the figures shows that;
  – The nil of TFR in import confirms that the traffic to Zimbabwe is originating from SA. TFR does not confirm the 20000T from CFM which may push us to think that it can be a local good.
  – For export, the gap between TFR and CFM figures is so big that they have to be checked and find where the gap of about 1500000T is from

• The competition from road is high

• There is no collaboration with road

• No Backhaul

• Challenges faced: Shortage of Rolling Stock, Terminal and Transit delays, Bad track, Theft/Loss of goods in Transit

• Proportion of the line design capacity in utilisation: varying from 30 to 70% according to the network due to challenges above

When analysing the actual numbers of trains, 20 trains are running between TFR and CFM according to TFR while, for CFM, those are 7?

• Existing interchange arrangements: Joint Inspection and locomotives & Crew through working at TFR-CFM border

• Service Level Agreements: only between TFR and CFM. CFM have no agreement with the Customers

• Through working timetable for international traffic on the corridor only between TFR and CFM

• Organisational cargo tracking information system for only TFR and NRZ. The TFR system is linked to the Customers for tracking of containers only

• Capacity of Rolling Stock and Infrastructure: adequate for TFR and CFM and inadequate for NRZ.

• RAs meet on JOC basis

• The predetermined tariff can be negotiated with Customers

• To quote for international traffic, it takes up to one hour for NRZ while TFR takes one to two weeks and there is no one stop shop according to TFR. No data on CFM quotation time

• There are Monthly or twice per quarter Joint Marketing meetings

• SARA Marketing Policy (SMP) strengths: Consistent customer engagements through customer care feedback, customer visits, Joint marketing Strategy
• SMP’s Weaknesses: SARA is not in the position to enforce implementation of agreed policies

• Measures to improve railway competitiveness: Explore possible ways of going up against competition i.e. attract new business, Competitive rates, Better transit times.

• Challenges beyond RAs: Lack of an integrated planning approach, No transparency in the challenges experienced, Security for vulnerable cargo.

Recommendations
• Figures sent out by RAs should be more reliable

• To improve the business on the corridor, RAs could;
  – Have an integrated planning approach,
  – Be transparent in the challenges experienced,
  – Secure vulnerable cargo,
  – Reduce their quotation delays for new business, and
  – Have a one stop shop.

2.1.2.9 Richards Bay

No data has been received from the two RAs (SR and TFR) constituting the corridor

2.1.2.10 Nacala

Information was received only from CFM (CDN). The corridor comprises CFM and ZRL (through CEAR that is no more SARA Member).

Quality of responses
Not good as it is shown here below: some data cannot be used due to incoherence

Findings, data analysis and observations
They have been listed as per the questions;
• Main commodities carried are Fertilizer, Containers and Tobacco.

• Customers are: Bakhresa G.M., Bolloré, Transcargo and Donadar

• Potential Annual Business: Export 700000T and Import 450000T.

• Current Annual Business: in Import 360000T and in Export, 120000T

The analysis of the figures shows that;
  – The gap between the potential and the current is big and can find its explanation in the non-observance of some clients of their commitment

• There is competition from road but the market share is still on the advantage of rail (60%)

• There is no collaboration with road
There is Backhaul

Challenges faced: track poor condition, Bad wagons’ rotation

Proportion of the line design capacity in utilisation: 25%

No-existing interchange arrangements: Single Inspections

Service Level Agreements: with contiguous RAs and with Customers

No Through working timetable for international traffic on the corridor

No organisational cargo tracking information system

Adequate capacity of Rolling Stock and Infrastructure

CMG not functional

The predetermined tariff can be negotiated with Customers

To quote for international traffic, it takes 1 to 3 days and there is one stop shop.

There are Joint Marketing meetings

SARA Marketing Policy (SMP) strengths: No comment linked to the subject (existence of a natural profound port)

SMP’s Weaknesses: No comment related to the subject (No enough connection with others for the use as corridor)

Measures to improve railway competitiveness: Improve the quality of the customer’s service delivery.

Challenges beyond RAs: No comment

Recommendations

Figures sent out by RAs should be more reliable

To improve the business on the corridor, RAs could;
  – Have an integrated planning approach,
  – Be transparent in the challenges experienced,
  – Secure vulnerable cargo,
  – Reduce their quotation delays for new business, and
  – Have a one stop shop.

2.2 Recommendations and Conclusion

The final conclusion can consist in a summary of the above corridor recommendations,

- RAs should be encouraged for all initiatives taken on their respective corridors for the improvement of the rail market share
• They should target now some major customers especially and plan joint marketing visits to them: this will show the commitment of each RA before the customers instead of individuals who may not be reliable.

• All RAs on all Corridors could strive together, in a coordinated way, to recover the rail market share by seeking for new business starting in the region (Mozambique, DRC, Zambia, Botswana, etc.)

• Figures sent out by RAs should be first seriously examined before being released for more reliability

• Governments should increase their investments in the Railways and set up policies to increase the rail market share to decongest roads

• RAs should endeavour to acquire a wagon tracking system and sign agreements with customers

• RAs should review their high rates and minimize the quoting time for international traffic

• SARA should play a more visible role by lobbying Governments to effect some changes and also ensure parity amongst RAs

• On all corridors, the dialogue between RAs should be their first concern: they should either resume the CMG meetings with the support of the JOC activities where CMGs are not meeting or convert their bilateral meetings in CMGs’ meetings.

• This should contribute to the improvement of the business by allowing;
  – the setting up of;
    o Through working timetable for international traffic on corridors,
    o One stop shop,
    o Joint inspections,
    o Locomotives & Crew through working, etc.
    o An integrated planning approach,
    o Security of vulnerable cargo,
  – The standardization of the cargo tracking information system by adopting the RFI